Form OP-CRO1
Certification by Responsible Official
Federal Operating Permit Program
Texas Commission on Environmental Quality

All initial issuance, revision, renewal, and reopening permit application submittals requiring certification must be addressed using this form. Updates to site operating permit (SOP) and temporary operating permit (TOP) applications, other than public notice verification materials, must be certified prior to authorization of public notice or start of public announcement. Updates to general operating permit (GOP) applications must be certified prior to receiving an authorization to operate under a GOP.

I. Identifying Information	
RN: **RN100225945**	
CN: **CN600356976**	
Account No.: **BL-0082-R**	
Permit No.: **O2213**	
Project No.: **35544**	
Area Name: **Hydrocarbons**	
Company Name: **The Dow Chemical Company**	
II. Certification Type *(Please mark appropriate box)*	
☐ Responsible Official Representative	☒ Duly Authorized Representative
III. Submittal Type *(Please mark appropriate box) (Only one response can be accepted per form)*	
☐ SOP/TOP Initial Permit Application	☐ Permit Revision, Renewal, or Reopening
☐ GOP Initial Permit Application	☐ Update to Permit Application
☒ Other: **Working Draft Permit Certification**	

Form OP-CRO1
Certification by Responsible Official
Federal Operating Permit Program
Texas Commission on Environmental Quality

All initial issuance, revision, and renewal permit application submittals requiring certification must be accompanied by this form. Updates to acid rain or CSAPR (other than public notice verification materials) must be certified prior to authorization of public notice for the draft permit.

IV. Certification of Truth
This certification does not extend to information which is designated by TCEQ as information for reference only.
I, **Fran Falcon** certify that I am the **DAR** *(Certifier Name printed or typed)* *(RO or DAR)* and that, based on information and belief formed after reasonable inquiry, the statements and information dated during the time period or on the specific date(s) below, are true, accurate, and complete: *Note: Enter Either a Time Period or Specific Date(s) for each certification. This section must be completed. The certification is not valid without documentation date(s).*
Time Period: From **August 29, 2023** to **June 4, 2025** *(Start Date)* *(End Date)*
Specific Dates: ________ ________ ________ ________ *(Date 1)* *(Date 2)* *(Date 3)* *(Date 4)*
________ ________ *(Date 5)* *(Date 6)*
Signature: ________ Signature Date: **June 4, 2025** Title: **Texas Regional Environmental Leader**

Mark McDonald

From: Schmidt, Crystal (C) <cschmidt6@dow.com>
Sent: Monday, June 2, 2025 1:33 PM
To: Mark McDonald
Subject: RE: Working Draft Permit FOP O-2055 / Project 36624 The Dow Chemical Company - C/D/G Unit.(Minor Revision)
Attachments: 06-02-2025_OP-UA3_D91_D97.pdf

Mark,

Please see our updated Form OP-UA3 for D91 and D97. Both storage drums can vent to the flares, so they both need the AMOC requirements. Sorry for all of the confusion. I'm going to work with the specialists to make sure all of our other control devices are listed correctly for the renewal project.

I will get the Form OP-CRO1 uploaded into STEERS today for our DAR to sign.

Thanks!

Crystal Schmidt

Crystal Schmidt
Air Permit Manager
The Dow Chemical Company
332 SH 332 E
cell phone: 409.392.5054
phone: 979.238.1742 | email: cschmidt6@dow.com

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Seek Together™

General Business

From: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Sent: Monday, June 2, 2025 11:20 AM
To: Schmidt, Crystal (C) <cschmidt6@dow.com>
Subject: RE: Working Draft Permit FOP O-2055 / Project 36624 The Dow Chemical Company - C/D/G Unit.(Minor Revision)
Importance: High

Crystal,

I have fixed the issues on number 2,3, and 4, as they were errors feeding to the WDP Macro. So I just need to know how you want to handle item # 5? Let me know once you have had a chance to review it. Management is ready to move forward after the OP-CRO1 is received.

Thanks,
Mark

5. OC6L8D91; OC6L8D97: I believe these two 30 TAC Chapter 115, Storage of VOCs applicability needs to be swapped. D91 has two operating scenarios: one that has the alternate requirement and one that vents to a DIRFLM (OC6L8TO). D97 just has one that has the alternate requirement. Can you double check this out below? This was on the 11-9 update shows 91 with one and 97 with two. Let me know, what you think. (Also note that the UA3 has been updated, not sure if it will affect these units.

Storage Tank/Vessel Attributes – Form OP-UA3 (Page 4)
Federal Operating Permit Program

Table 4a: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B: Storage of Volatile Organic Compounds (VOCs)

Date	Permit No.	Regulated Entity No.
November 9, 2023	O2213	RN100225945

Unit ID No.	SOP/GOP Index No.	Alternate Control Requirement	ACR ID No.	Product Stored	Storage Capacity	Throughput	Potential to Emit	Uncontrolled Emissions
~~OC6L8D91~~	~~R5112-01~~	~~YES~~	~~09/21/2022~~	~~VOC1~~	~~A1K-25K~~			
OC6L8D91	R5112-02	NO		VOC1	A1K-25K			
OC6L8D97	R5112-01	YES	09/21/2022	VOC1	A1K-25K			
OC6L8D97	***R5112-02***	***NO***		***VOC1***	***A1K-25K***			

Storage Tank/Vessel Attributes – Form OP-UA3 (Page 5)
Federal Operating Permit Program

Table 4b: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B: Storage of Volatile Organic Compounds (VOCs)

Date	Permit No.	Regulated Entity No.
November 9, 2023	O2213	RN100225945

Unit ID No.	SOP/GOP Index No.	Construction Date	Tank Description	True Vapor Pressure	Primary Seal	Secondary Seal	Control Device Type	Control Device ID No.
OC6L8D91	R5112-02		VRS1	1.5+A			DIRINC	OC6L8TO
OC6L8D97	***R5112-02***		***VRS1***	***1.5+A***			***DIRINC***	***OC6L8H1, OC6L8H2 OC6L8H3, OC6L8H4 OC6L8H5, OC6L8H6 OC6L8H7, OC6L8H8 OC6L8H9, OC6L8H10 OC6L9H120 (O3949) OC6L9H121 (O3949) OC6L9H122 (O3949) OC6L9H123 (O3949) OC6L9H124 (O3949) OC6L9H125 (O3949) OC6L9H126 (O3949) OC6L9H127 (O3949) OC6L9H128 (O3949) OC6L9H129 (O3949)***

General Business

From: Mark McDonald
Sent: Wednesday, May 28, 2025 12:39 PM
To: 'Schmidt, Crystal (C)' <cschmidt6@dow.com>
Subject: RE: Working Draft Permit FOP O-2055 / Project 36624 The Dow Chemical Company - C/D/G Unit.(Minor Revision)

Crystal,
Actually, after you have a chance to review this and are ready to I just have a couple of quick clarifications, that warrant a call. The issue on my side was some things needed multiple places, including the RRR.

Thanks!
Mark

From: Mark McDonald
Sent: Wednesday, May 28, 2025 11:24 AM
To: Schmidt, Crystal (C) <cschmidt6@dow.com>
Subject: RE: Working Draft Permit FOP O-2055 / Project 36624 The Dow Chemical Company - C/D/G Unit.(Minor Revision)

Crystal,
See my comments in Red, and let me know if you want to have a quick chat about it.

Thanks,
Mark

1. BSRSRLR615; BSRSRST615; BSRSRST616; OC6L8D97: The 40 CFR Part 63, Subpart EEEE citations do not match what we submitted on the OP-REQ3. I know y'all have been working on flowcharts, but I would like to do a more in depth review during the renewal process. Yes, the **OP-UA3, OP-UA4 and OP-UA12** have been updated to include 40 CFR Part 63, Subpart EEEE for tanks. loading and leaks. It may be best to update these by and adding these to the original OP-2 & OP-SUM on the renewal project 37218.
2. OC2L8GF500; OC6L8F1; OC6L8F1018: We requested to remove the 60.18 reference in the 30 TAC Chapter 115, HRVOC Vent Gas "Textual Description" in the ARS, and we requested to add reference to 63.1103(e)(4) since we are complying with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart A. This was not completed in the WDP. I assume this is something you cannot do. Can we add 63.1103(e)(4) to the Standards column instead? Yes, I will add 63.1103(e)(4) to the Standards column. We discussed this with Alfredo as we cannot change "Textual Description" in the ARS, as they are not enforceable.
3. OC6L8RX2; OC6L8RX3; OC6L8RX4: We need to add 63.1103(e)(4)(xii)-(xiii) to the 30 TAC Chapter 115, Vent Gas Controls Standards like we did for OC6L8RX1. Yes, I will add these like others.
4. GRP2L8PF: We need to remove 40 CFR Part 60, Subpart RRR applicability from this group. We are complying with 40 CFR Part 63, Subpart YY in lieu of RRR. See if I can kill all of RRR on UA48 or Permit side?? Worried about if I run the engine. Check into more before run, When last update.
5. OC6L8D91; OC6L8D97: I believe these two 30 TAC Chapter 115, Storage of VOCs applicability needs to be swapped. D91 has two operating scenarios: one that has the alternate requirement and one that vents to a DIRFLM (OC6L8TO). D97 just has one that has the alternate requirement. Can you double check this out below? This was on the 11-9 update shows 91 with one and 97 with two. Let me know, what you think. (Also note that the UA3 has been updated, not sure if it will affect these units.

Storage Tank/Vessel Attributes – Form OP-UA3 (Page 4)
Federal Operating Permit Program

**Table 4a: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B: Storage of Volatile Organic Compounds (VOCs)**

Date	Permit No.	Regulated Entity No.
November 9, 2023	O2213	RN100225945

Unit ID No.	SOP/GOP Index No.	Alternate Control Requirement	ACR ID No.	Product Stored	Storage Capacity	Throughput	Potential to Emit	Uncontrolled Emissions
~~OC6L8D91~~	~~R5112-01~~	~~YES~~	~~09/21/2022~~	~~VOC1~~	~~A1K-25K~~			
OC6L8D91	R5112-02	NO		VOC1	A1K-25K			
OC6L8D97	R5112-01	YES	09/21/2022	VOC1	A1K-25K			
OC6L8D97	***R5112-02***	***NO***		***VOC1***	***A1K-25K***			

Storage Tank/Vessel Attributes – Form OP-UA3 (Page 5)
Federal Operating Permit Program

**Table 4b: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B: Storage of Volatile Organic Compounds (VOCs)**

Date	Permit No.	Regulated Entity No.
November 9, 2023	O2213	RN100225945

Unit ID No.	SOP/GOP Index No.	Construction Date	Tank Description	True Vapor Pressure	Primary Seal	Secondary Seal	Control Device Type	Control Device ID No.
OC6L8D91	R5112-02		VRS1	1.5+A			DIRINC	OC6L8TO
OC6L8D97	***R5112-02***		***VRS1***	***1.5+A***			***DIRINC***	***OC6L8H1, OC6L8H2 OC6L8H3, OC6L8H4 OC6L8H5, OC6L8H6 OC6L8H7, OC6L8H8 OC6L8H9, OC6L8H10 OC6L9H120 (O3949) OC6L9H121 (O3949) OC6L9H122 (O3949) OC6L9H123 (O3949) OC6L9H124 (O3949) OC6L9H125 (O3949) OC6L9H126 (O3949) OC6L9H127 (O3949) OC6L9H128 (O3949) OC6L9H129 (O3949)***

Mark McDonald
Operating Permits Section
Air Permits Division, Office of Air,
Texas Commission on Environmental Quality (TCEQ)
(512) 239-1357

[How is our customer service?](#)

mark.mcdonald@tceq.texas.gov

From: Schmidt, Crystal (C) <cschmidt6@dow.com>
Sent: Tuesday, May 27, 2025 11:41 AM
To: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Subject: RE: Working Draft Permit FOP O-2055 / Project 36624 The Dow Chemical Company - C/D/G Unit.(Minor Revision)

Mark,

I went through the WDP to ensure all of the changes were requested. I wanted to make sure we didn't have any huge gaps between the WDP and the revisions we requested. I also thought it would help the renewal process if I already went through this exercise. I have the following comments. I would like to address the items highlighted in green in this minor revision if all possible.

1. BSRSRLR615; BSRSRST615; BSRSRST616; OC6L8D97: The 40 CFR Part 63, Subpart EEEE citations do not match what we submitted on the OP-REQ3. I know y'all have been working on flowcharts, but I would like to do a more in depth review during the renewal process.
2. OC2L8GF500; OC6L8F1; OC6L8F1018: We requested to remove the 60.18 reference in the 30 TAC Chapter 115, HRVOC Vent Gas "Textual Description" in the ARS, and we requested to add reference to 63.1103(e)(4) since we are complying with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart A. This was not completed in the WDP. I assume this is something you cannot do. Can we add 63.1103(e)(4) to the Standards column instead?
3. OC6L8RX2; OC6L8RX3; OC6L8RX4: We need to add 63.1103(e)(4)(xii)-(xiii) to the 30 TAC Chapter 115, Vent Gas Controls Standards like we did for OC6L8RX1.
4. GRP2L8PF: We need to remove 40 CFR Part 60, Subpart RRR applicability from this group. We are complying with 40 CFR Part 63, Subpart YY in lieu of RRR.
5. OC6L8D91; OC6L8D97: I believe these two 30 TAC Chapter 115, Storage of VOCs applicability needs to be swapped. D91 has two operating scenarios: one that has the alternate requirement and one that vents to a DIRFLM (OC6L8TO). D97 just has one that has the alternate requirement.

I didn't do a deep dive comparison to make sure nothing else changed, but I will definitely do that during the renewal. Please let me know what you think about the green highlights. I will work on an OP-CRO1 once I hear back from you. Thanks!

Crystal Schmidt

Crystal Schmidt
Air Permit Manager
The Dow Chemical Company
332 SH 332 E
cell phone: 409.392.5054
phone: 979.238.1742 | email: cschmidt6@dow.com

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General Business

From: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Sent: Monday, May 19, 2025 3:10 PM
To: Schmidt, Crystal (C) <cschmidt6@dow.com>
Subject: Working Draft Permit FOP O-2055 / Project 36624 The Dow Chemical Company - C/D/G Unit.(Minor Revision)
Importance: High

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Crystal,
We got all of your final comments and updates into the working draft permit (WDP.) The document has been through our QA/QC checklist and in final review. Please see your courtesy copy attached.
I will need a final OP-CRO1 with the Date range of **08/29/2023 to 4/01/2025**, to issue the Public Announcement letter, but please check you records to verify the dates. If the **OP-CRO1** is uploaded via STEERS, it will just need the date range. The signature will be electronic via the copy of record (COR) in STEERS.

Although I can't start entering any data while on the renewal project. We can add any other needed changes or updates to the original OP-2 for project 37218 / Renewal. We can discuss this in more detail at your convenience.

Let me know if you have any questions.

Regards,
Mark

Mark McDonald
Operating Permits Section
Air Permits Division, Office of Air,
Texas Commission on Environmental Quality (TCEQ)
(512) 239-1357

How is our customer service?

mark.mcdonald@tceq.texas.gov

General Business

From: Schmidt, Crystal (C) <cschmidt6@dow.com>
Sent: Tuesday, April 1, 2025 2:18 PM
To: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Subject: RE: Last outstanding question for WDP from 2025-01-08 NOD response. Title V O2213 Dow (Minor, 35544)

Mark,

Sorry for the delay. I was getting confirmation on the temperature for the TOX. Please let me know if there is anything else you need from me. Thanks!

Crystal Schmidt

Crystal Schmidt
Air Permit Manager
The Dow Chemical Company

332 SH 332 E
cell phone: 409.392.5054
phone: 979.238.1742 | email: cschmidt6@dow.com

General Business

From: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Sent: Monday, March 24, 2025 2:20 PM
To: Schmidt, Crystal (C) <cschmidt6@dow.com>
Subject: RE: Last outstanding question for WDP from 2025-01-08 NOD response. Title V O2213 Dow (Minor, 35544)

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Great,
I'll plan on calling you about 10 am tomorrow. I'm hopeful that we can hammer out these last few items.
OC6L8RX1-4
I'm looking at the "Alter" and "DIRFLM" particularly at OC6L8RX2 index numbers – but need to make sure all four units & OP-MONs.
We can go over in in more detail then.

Thanks,
Mark

General Business

From: Schmidt, Crystal (C) <cschmidt6@dow.com>
Sent: Monday, March 24, 2025 1:57 PM
To: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Subject: RE: Last outstanding question for WDP from 2025-01-08 NOD response. Title V O2213 Dow (Minor, 35544)

Of course!

I am available during the following times this week:
Tuesday: Any time after 9:30 am
Wednesday: Any time after 11 am
Thursday: 9 am to 2 pm
Friday: Any time

Crystal Schmidt

Crystal Schmidt
Air Permit Manager

The Dow Chemical Company
332 SH 332 E
cell phone: 409.392.5054
phone: 979.238.1742 | email: cschmidt6@dow.com

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General Business

From: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Sent: Monday, March 24, 2025 1:52 PM
To: Schmidt, Crystal (C) <cschmidt6@dow.com>
Subject: RE: Last outstanding question for WDP from 2025-01-08 NOD response. Title V O2213 Dow (Minor, 35544)

Crystal.
Could we have a quick (5 or 10 minute) meeting about the OP-UA15 for units OC6L8RX1, OC6L8RX2, OC6L8RX3 and OC6L8RX4)??

It appears it we need to clarify some inconsistencies on some units, index numbers, and missing information on the OP-MON's.

OC6L8RX1 – OP-UA15 update 11-9-2023
OC6L8RX2, OC6L8RX3 and OC6L8RX4 - OP-UA15 update 8-28-2023

Please let me know your availability.

Thanks,
Mark

General Business

From: Schmidt, Crystal (C) <cschmidt6@dow.com>
Sent: Wednesday, March 19, 2025 10:01 AM
To: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Subject: RE: Last outstanding question for WDP from 2025-01-08 NOD response. Title V O2213 Dow (Minor, 35544)

Mark,

I apologize; I forgot to include the Form OP-MON for the TOX scenario. Please see the attached and let me know if you have any questions. Thanks!

Crystal Schmidt

Crystal Schmidt
Air Permit Manager
The Dow Chemical Company
332 SH 332 E
cell phone: 409.392.5054
phone: 979.238.1742 | email: cschmidt6@dow.com

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General Business

From: Schmidt, Crystal (C) <cschmidt6@dow.com>
Sent: Tuesday, March 18, 2025 2:43 PM
To: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Subject: RE: Last outstanding question for WDP from 2025-01-08 NOD response. Title V O2213 Dow (Minor, 35544)

Mark,

Please see our attached response and let me know if you have any questions. Thanks!

Crystal Schmidt

Crystal Schmidt
Air Permit Manager
The Dow Chemical Company
332 SH 332 E
cell phone: 409.392.5054
phone: 979.238.1742 | email: cschmidt6@dow.com

Seek Together™

From: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Sent: Friday, March 7, 2025 5:57 PM
To: Schmidt, Crystal (C) <cschmidt6@dow.com>
Subject: RE: Last outstanding question for WDP from 2025-01-08 NOD response. Title V O2213 Dow (Minor, 35544)

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Crystal,

Sorry, I forgot to include the required due date. Let me know if you have any questions.

Please review the submit OP-MON's at your earliest opportunity, but no later than **March 18, 2025**.

Let me know if you have any questions.
Regards,
Mark

From: Mark McDonald
Sent: Tuesday, March 4, 2025 2:40 PM
To: Schmidt, Crystal (C) <cschmidt6@dow.com>
Subject: Last outstanding question for WDP from 2025-01-08 NOD response. Title V O2213 Dow (Minor, 35544)

Crystal,
I have received a determination from our technical staff, on the last outstanding question. and we will need an OP-MON for the Ch 115, see the response below.
I am currently wrapping up the final updates. citation cleanup for the final working draft permit (WDP,) and these OP-MON's should be the last piece. Let me know if you have any questions.

Thanks,
Mark

Dow: Has Alfredo had a chance to review AMOC 62 to see if the monitoring listed in the document will be sufficient? I have attached it to the email for your reference. The AMOC states we have to comply with 63.670(g)-(j), found in 40 CFR Part 63, Subpart CC. 63.670(g) requires the continuous monitoring of the presence of a pilot flame. 63.670(i) requires us to maintain a monitoring system that is capable of continuously measuring, calculating, and recording the volumetric flow rate in the flare header. Please let me know if the AMOC isn't sufficient enough, and we will provide a Form OP-MON for additional Periodic Monitoring.

TCEQ: If DOW is complying with the flare requirements of MACT CC to satisfy CAM or periodic monitoring for 30 TAC Chapter 115, Vent Gas Control; then this should still be identified on the OP-MON as they are not clearly listed in the AMOC in conjunction with the EPNs below.

- These units will be noted to comply with 63.670(g)-(j), found in 40 CFR Part 63, Subpart CC. 63.670(g) requires the continuous monitoring of the presence of a pilot flame.
    - Ch 115, Vent Gas Control - PM was requested for units:
        - OC6L8RX1 (R5121-01) *(Unit name - Process vents for vent to Flares OC2F500 and OC6F1)*
        - OC6L8RX2 (R5121-01 and R5121-02)) *(Unit name - Process vents for vent to TOX FX-2000)*
        - OC6L8RX3 (R5121-01)) (*Unit name - Process vents for vent to F-902 Flare)*
        - OC6L8RX4 (R5121-01)) (*Unit name - Process vents for vent to Flare FS-1018)*

Mark McDonald
Operating Permits Section
Air Permits Division, Office of Air,
Texas Commission on Environmental Quality (TCEQ)
(512) 239-1357

mark.mcdonald@tceq.texas.gov

How is our customer service?

Storage Tank/Vessel Attributes
Form OP-UA3 (Page 4)
Federal Operating Permit Program

Table 4a: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B, Division 1: Storage of Volatile Organic Compounds (VOCs)
Texas Commission on Environmental Quality

Date	Permit No.	Regulated Entity No.
June 2, 2025	O2213	RN100225945

Unit ID No.	SOP/GOP Index No.	Alternate Control Requirement	ACR ID No.	Product Stored	Storage Capacity	Throughput	Potential to Emit	Uncontrolled Emissions
OC6L8D91	R5112-01	YES	09/21/2022					
OC6L8D91	R5112-02	NO		VOC1	A1K-25K			
OC6L8D97	R5112-01	YES	09/21/2022					
OC6L8D97	R5112-02	NO		VOC1	A1K-25K			

Storage Tank/Vessel Attributes
Form OP-UA3 (Page 5)
Federal Operating Permit Program

Table 4b: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B, Division 1: Storage of Volatile Organic Compounds (VOCs)
Texas Commission on Environmental Quality

Date	Permit No.	Regulated Entity No.
June 2, 2025	O2213	RN100225945

Unit ID No.	SOP/GOP Index No.	Construction Date	Tank Description	True Vapor Pressure	Primary Seal	Secondary Seal	Control Device Type	Control Device ID No.
OC6L8D91	R5112-02		VRS1	1.5+A			DIRINC	OC6L8TO
OC6L8D97	R5112-02		VRS1	1.5+A			DIRINC	GRP1L8PF GRP2L8PF OC6L9H120-H129 (O3949)

Mark McDonald

From: Schmidt, Crystal (C) <cschmidt6@dow.com>
Sent: Tuesday, April 1, 2025 2:18 PM
To: Mark McDonald
Subject: RE: Last outstanding question for WDP from 2025-01-08 NOD response. Title V O2213 Dow (Minor, 35544)
Attachments: 2025-04-01_Application_Update_O2213.pdf

Follow Up Flag: Follow up
Due By: Friday, April 4, 2025 2:00 PM
Flag Status: Flagged

Mark,

Sorry for the delay. I was getting confirmation on the temperature for the TOX. Please let me know if there is anything else you need from me. Thanks!

Crystal Schmidt

Crystal Schmidt
Air Permit Manager
The Dow Chemical Company
332 SH 332 E
cell phone: 409.392.5054
phone: 979.238.1742 | email: cschmidt6@dow.com

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General Business

From: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Sent: Monday, March 24, 2025 2:20 PM
To: Schmidt, Crystal (C) <cschmidt6@dow.com>
Subject: RE: Last outstanding question for WDP from 2025-01-08 NOD response. Title V O2213 Dow (Minor, 35544)

Great,
I'll plan on calling you about 10 am tomorrow. I'm hopeful that we can hammer out these last few items.
OC6L8RX1-4
I'm looking at the "Alter" and "DIRFLM" particularly at OC6L8RX2 index numbers – but need to make sure all four units & OP-MONs.

We can go over in in more detail then.

Thanks,
Mark

General Business

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Sent: Monday, March 24, 2025 1:57 PM
To: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Subject: RE: Last outstanding question for WDP from 2025-01-08 NOD response. Title V O2213 Dow (Minor, 35544)

Of course!

I am available during the following times this week:
Tuesday: Any time after 9:30 am
Wednesday: Any time after 11 am
Thursday: 9 am to 2 pm
Friday: Any time

Crystal Schmidt

Crystal Schmidt
Air Permit Manager
The Dow Chemical Company
332 SH 332 E
cell phone: 409.392.5054
phone: 979.238.1742 | email: cschmidt6@dow.com

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General Business

From: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Sent: Monday, March 24, 2025 1:52 PM
To: Schmidt, Crystal (C) <cschmidt6@dow.com>
Subject: RE: Last outstanding question for WDP from 2025-01-08 NOD response. Title V O2213 Dow (Minor, 35544)

Crystal.
Could we have a quick (5 or 10 minute) meeting about the OP-UA15 for units OC6L8RX1, OC6L8RX2, OC6L8RX3 and OC6L8RX4)??

It appears it we need to clarify some inconsistencies on some units, index numbers, and missing information on the OP-MON's.

OC6L8RX1 – OP-UA15 update 11-9-2023
OC6L8RX2, OC6L8RX3 and OC6L8RX4 - OP-UA15 update 8-28-2023

Please let me know your availability.

Thanks,
Mark

General Business

From: Schmidt, Crystal (C) <cschmidt6@dow.com>
Sent: Wednesday, March 19, 2025 10:01 AM
To: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Subject: RE: Last outstanding question for WDP from 2025-01-08 NOD response. Title V O2213 Dow (Minor, 35544)

Mark,

I apologize; I forgot to include the Form OP-MON for the TOX scenario. Please see the attached and let me know if you have any questions. Thanks!

Crystal Schmidt

Crystal Schmidt
Air Permit Manager
The Dow Chemical Company
332 SH 332 E
cell phone: 409.392.5054
phone: 979.238.1742 | email: cschmidt6@dow.com

Seek Together™

General Business

From: Schmidt, Crystal (C) <cschmidt6@dow.com>
Sent: Tuesday, March 18, 2025 2:43 PM
To: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Subject: RE: Last outstanding question for WDP from 2025-01-08 NOD response. Title V O2213 Dow (Minor, 35544)

Mark,

Please see our attached response and let me know if you have any questions. Thanks!

Crystal Schmidt

Crystal Schmidt
Air Permit Manager
The Dow Chemical Company
332 SH 332 E
cell phone: 409.392.5054
phone: 979.238.1742 | email: cschmidt6@dow.com

Seek Together™

From: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Sent: Friday, March 7, 2025 5:57 PM
To: Schmidt, Crystal (C) <cschmidt6@dow.com>
Subject: RE: Last outstanding question for WDP from 2025-01-08 NOD response. Title V O2213 Dow (Minor, 35544)

Crystal,
Sorry, I forgot to include the required due date. Let me know if you have any questions.

Please review the submit OP-MON's at your earliest opportunity, but no later than **March 18, 2025**.

Let me know if you have any questions.
Regards,
Mark

From: Mark McDonald
Sent: Tuesday, March 4, 2025 2:40 PM
To: Schmidt, Crystal (C) <cschmidt6@dow.com>
Subject: Last outstanding question for WDP from 2025-01-08 NOD response. Title V O2213 Dow (Minor, 35544)

Crystal,
I have received a determination from our technical staff, on the last outstanding question. and we will need an OP-MON for the Ch 115, see the response below.
I am currently wrapping up the final updates. citation cleanup for the final working draft permit (WDP,) and these OP-MON's should be the last piece. Let me know if you have any questions.

Thanks,
Mark

Dow: Has Alfredo had a chance to review AMOC 62 to see if the monitoring listed in the document will be sufficient? I have attached it to the email for your reference. The AMOC states we have to comply with 63.670(g)-(j), found in 40 CFR Part 63, Subpart CC. 63.670(g) requires the continuous monitoring of the presence of a pilot flame. 63.670(i) requires us to maintain a monitoring system that is capable of continuously measuring, calculating, and recording the volumetric flow rate in the flare header. Please let me know if the AMOC isn't sufficient enough, and we will provide a Form OP-MON for additional Periodic Monitoring.

TCEQ: If DOW is complying with the flare requirements of MACT CC to satisfy CAM or periodic monitoring for 30 TAC Chapter 115, Vent Gas Control; then this should still be identified on the OP-MON as they are not clearly listed in the AMOC in conjunction with the EPNs below.

- These units will be noted to comply with 63.670(g)-(j), found in 40 CFR Part 63, Subpart CC. 63.670(g) requires the continuous monitoring of the presence of a pilot flame.
    - Ch 115, Vent Gas Control - PM was requested for units:
        - OC6L8RX1 (R5121-01) *(Unit name - Process vents for vent to Flares OC2F500 and OC6F1)*
        - OC6L8RX2 (R5121-01 and R5121-02)) *(Unit name - Process vents for vent to TOX FX-2000)*
        - OC6L8RX3 (R5121-01)) (*Unit name - Process vents for vent to F-902 Flare)*
        - OC6L8RX4 (R5121-01)) (*Unit name - Process vents for vent to Flare FS-1018)*

Mark McDonald
Operating Permits Section
Air Permits Division, Office of Air,
Texas Commission on Environmental Quality (TCEQ)
(512) 239-1357

mark.mcdonald@tceq.texas.gov

April 1, 2025

E-MAIL RESPONSE
Texas Commission on Environmental Quality
ATTN: Mr. Mark McDonald
Air Permits Division, MC-163
P.O. Box 13087
Austin, TX 78711-3087

The Dow Chemical Company, CN600356976
Hydrocarbons, RN100225945
Title V Operating Permit Application Update for Hydrocarbons Plant, O2213
TCEQ Project Number: 37218

Dear Mr. McDonald,

The Dow Chemical Company is submitting an application update for the Hydrocarbons Title V Permit Minor Revision application that was received by TCEQ on August 28, 2023 (Project #35544).

Please do not hesitate to contact me at (979) 238-1742 or cschmidt6@dow.com if you require additional information regarding this submittal.

Sincerely,

Crystal Schmidt

Crystal Schmidt
Air Permit Manager

enclosure

cc:

US EPA Region 6	R6AirPermitsTX@epa.gov
TCEQ Air Section Manager, Region 12	R12apdmail@tceq.texas.gov
Brazoria County Environmental Health Director	jodiev@brazoria-county.com

Emission Point/Stationary Vent/Distillation Operation Vent/Process Vent Attributes – Form OP-UA15 (Page 3)
Federal Operating Permit Program

Table 2a: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B: Vent Gas Control

Date	Permit No.:	Regulated Entity No.
April 1, 2025	O2213	RN100225945

Emission Point ID No.	SOP/GOP Index No.	Chapter 115 Division	Combustion Exhaust	Vent Type	Total Uncontrolled VOC Weight	Combined 24-Hour VOC Weight	VOC Concentration	VOC Concentration or Emission Rate at Maximum Operating Conditions
OC6L8RX1	R5121-01	NO	NO	DISTOPER				
OC6L8RX1	R5121-02	NO	NO	DISTOPER				
OC6L8RX2	R5121-01	NO	NO	DISTOPER				
OC6L8RX2	R5121-02	NO	NO	DISTOPER				
OC6L8RX3	R5121-01	NO	NO	DISTOPER				
OC6L8RX4	R5121-01	NO	NO	REGVAPPL				

Emission Point/Stationary Vent/Distillation Operation Vent/Process Vent Attributes – Form OP-UA15 (Page 4)
Federal Operating Permit Program

Table 2b: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B: Vent Gas Control

Date	Permit No.:	Regulated Entity No.
April 1, 2025	O2213	RN100225945

Emission Point ID No.	SOP Index No.	Alternate Control Requirement	ACR ID No.	Control Device Type	Control Device ID No.
OC6L8RX1	*R5121-01*	*ALTED*	*09/21/2022*	*FLARE*	*OC2L8GF500* *OC6L8F1*
OC6L8RX1	*R5121-02*	*NONE*		*DIRFLM*	*GRP1L8PF* *GRP2L8PF* *OC6L9H120-H129* *(O3949)*
OC6L8RX2	*R5121-01*	*ALTED*	*09/21/2022*	*FLARE*	*OC6L8F1018*
OC6L8RX2	*R5121-02*	*NONE*		*DIRFLM*	*OC6L8TO*
OC6L8RX3	*R5121-01*	*ALTED*	*09/21/2022*	*FLARE*	*OC6L8F902*
OC6L8RX4	*R5121-01*	*ALTED*	*09/21/2022*	*FLARE*	*OC6L8F1018*

Emission Point/Stationary Vent/Distillation Operation Vent/Process Vent Attributes – Form OP-UA15 (Page 5)
Federal Operating Permit Program

Table 2c: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B: Vent Gas Control

Date	Permit No.:	Regulated Entity No.
April 1, 2025	O2213	RN100225945

Emission Point ID No.	SOP Index No.	Total Design Capacity	Flow Rate/Concentration	40 CFR Part 60, Subpart NNN Requirements	40 CFR Part 60, Subpart RRR Requirements
OC6L8RX1	R5121-01	1100+	500+	NO	NO
OC6L8RX1	R5121-02	1100+	500+	NO	NO
OC6L8RX2	R5121-01	1100+	500+	NO	NO
OC6L8RX2	R5121-02	1100+	500+	NO	NO
OC6L8RX3	R5121-01	1100+	500+	NO	NO
OC6L8RX4	R5121-01	1100+	500+	NO	NO

Texas Commission on Environmental Quality
Monitoring Requirements - Form OP-MON (Page 1)
Federal Operating Permit Program
Table 1a: CAM/PM Additions

I. Identifying Information		
Account No.: ***BL-0082-R***	RN No.: ***RN100225945***	CN: ***CN600356976***
Permit No.: ***O2213***	Project No.: ***35544***	
Area Name: ***Hydrocarbons***		
Company Name: ***The Dow Chemical Company***		
II. Unit/Emission Point/Group/Process Information		
Revision No.: ***N/A***		
Unit/EPN/Group/Process ID No.: ***OC6L8RX2***		
Applicable Form: ***OP-UA15***		
III. Applicable Regulatory Requirement		
Name: ***30 TAC Chapter 115, Vent Gas Control***		
SOP/GOP Index No.: ***R5121-02***		
Pollutant: ***VOC***		
Main Standard: ***115.122(a)(2); 63.670(g)***		
IV. Title V Monitoring Information		
Monitoring Type: ***PM***		
Unit Size:		
CAM/PM Option No.: ***PM-V-007***		
Deviation Limit: ***Any monitoring data below the minimum limit of 1650 °F shall be considered and reported as a deviation.***		
CAM/PM Option No.:		
Deviation Limit:		
V. Control Device Information		
Control Device ID No.: ***OC6L8TO***		
Control Device Type: ***DIRFLM***		

Texas Commission on Environmental Quality
Monitoring Requirements - Form OP-MON (Page 1)
Federal Operating Permit Program
Table 1a: CAM/PM Additions

I. Identifying Information		
Account No.: ***BL-0082-R***	RN No.: ***RN100225945***	CN: ***CN600356976***
Permit No.: ***O2213***	Project No.: ***35544***	
Area Name: ***Hydrocarbons***		
Company Name: ***The Dow Chemical Company***		
II. Unit/Emission Point/Group/Process Information		
Revision No.: ***N/A***		
Unit/EPN/Group/Process ID No.: ***OC6L8RX1***		
Applicable Form: ***OP-UA15***		
III. Applicable Regulatory Requirement		
Name: ***30 TAC Chapter 115, Vent Gas Control***		
SOP/GOP Index No.: ***R5121-01***		
Pollutant: ***VOC***		
Main Standard: ***115.122(a)(2); 63.670(g)***		
IV. Title V Monitoring Information		
Monitoring Type: ***PM***		
Unit Size:		
CAM/PM Option No.: ***PM-V-003***		
Deviation Limit: ***Any monitoring data which indicates the lack of a pilot flame shall be considered and reported as a deviation.***		
CAM/PM Option No.:		
Deviation Limit:		
V. Control Device Information		
Control Device ID No.: ***OC2L8GF500; OC6L8F1***		
Control Device Type: ***FLARE***		

Texas Commission on Environmental Quality
Monitoring Requirements - Form OP-MON (Page 1)
Federal Operating Permit Program
Table 1a: CAM/PM Additions

I. Identifying Information		
Account No.: ***BL-0082-R***	RN No.: ***RN100225945***	CN: ***CN600356976***
Permit No.: ***O2213***	Project No.: ***35544***	
Area Name: ***Hydrocarbons***		
Company Name: ***The Dow Chemical Company***		
II. Unit/Emission Point/Group/Process Information		
Revision No.: ***N/A***		
Unit/EPN/Group/Process ID No.: ***OC6L8RX2***		
Applicable Form: ***OP-UA15***		
III. Applicable Regulatory Requirement		
Name: ***30 TAC Chapter 115, Vent Gas Control***		
SOP/GOP Index No.: ***R5121-01***		
Pollutant: ***VOC***		
Main Standard: ***115.122(a)(2); 63.670(g)***		
IV. Title V Monitoring Information		
Monitoring Type: ***PM***		
Unit Size:		
CAM/PM Option No.: ***PM-V-003***		
Deviation Limit: ***Any monitoring data which indicates the lack of a pilot flame shall be considered and reported as a deviation.***		
CAM/PM Option No.:		
Deviation Limit:		
V. Control Device Information		
Control Device ID No.: ***OC6L8F1018***		
Control Device Type: ***FLARE***		

Texas Commission on Environmental Quality
Monitoring Requirements - Form OP-MON (Page 1)
Federal Operating Permit Program
Table 1a: CAM/PM Additions

I. Identifying Information			
Account No.: ***BL-0082-R***		RN No.: ***RN100225945***	CN: ***CN600356976***
Permit No.: ***O2213***	Project No.: ***35544***		
Area Name: ***Hydrocarbons***			
Company Name: ***The Dow Chemical Company***			
II. Unit/Emission Point/Group/Process Information			
Revision No.: ***N/A***			
Unit/EPN/Group/Process ID No.: ***OC6L8RX3***			
Applicable Form: ***OP-UA15***			
III. Applicable Regulatory Requirement			
Name: ***30 TAC Chapter 115, Vent Gas Control***			
SOP/GOP Index No.: ***R5121-01***			
Pollutant: ***VOC***			
Main Standard: ***115.122(a)(2); 63.670(g)***			
IV. Title V Monitoring Information			
Monitoring Type: ***PM***			
Unit Size:			
CAM/PM Option No.: ***PM-V-003***			
Deviation Limit: ***Any monitoring data which indicates the lack of a pilot flame shall be considered and reported as a deviation.***			
CAM/PM Option No.:			
Deviation Limit:			
V. Control Device Information			
Control Device ID No.: ***OC6L8F902***			
Control Device Type: ***FLARE***			

Texas Commission on Environmental Quality
Monitoring Requirements - Form OP-MON (Page 1)
Federal Operating Permit Program
Table 1a: CAM/PM Additions

I. Identifying Information		
Account No.: ***BL-0082-R***	RN No.: ***RN100225945***	CN: ***CN600356976***
Permit No.: ***O2213***	Project No.: ***35544***	
Area Name: ***Hydrocarbons***		
Company Name: ***The Dow Chemical Company***		
II. Unit/Emission Point/Group/Process Information		
Revision No.: ***N/A***		
Unit/EPN/Group/Process ID No.: ***OC6L8RX4***		
Applicable Form: ***OP-UA15***		
III. Applicable Regulatory Requirement		
Name: ***30 TAC Chapter 115, Vent Gas Control***		
SOP/GOP Index No.: ***R5121-01***		
Pollutant: ***VOC***		
Main Standard: ***115.122(a)(2); 63.670(g)***		
IV. Title V Monitoring Information		
Monitoring Type: ***PM***		
Unit Size:		
CAM/PM Option No.: ***PM-V-003***		
Deviation Limit: ***Any monitoring data which indicates the lack of a pilot flame shall be considered and reported as a deviation.***		
CAM/PM Option No.:		
Deviation Limit:		
V. Control Device Information		
Control Device ID No.: ***OC6L8F1018***		
Control Device Type: ***FLARE***		

March 19, 2025

E-MAIL RESPONSE
Texas Commission on Environmental Quality
ATTN: Mr. Mark McDonald
Air Permits Division, MC-163
P.O. Box 13087
Austin, TX 78711-3087

The Dow Chemical Company, CN600356976
Hydrocarbons, RN100225945
Title V Operating Permit NOD Response for Hydrocarbons Plant, O2213
TCEQ Project Number: 37218

Dear Mr. McDonald,

The Dow Chemical Company is providing a response to the Notice of Deficiency (NOD) provided on March 4, 2025.

Please do not hesitate to contact me at (979) 238-1742 or cschmidt6@dow.com if you require additional information regarding this submittal.

Sincerely,

Crystal Schmidt

Crystal Schmidt
Air Permit Manager

enclosure

cc:

US EPA Region 6	R6AirPermitsTX@epa.gov
TCEQ Air Section Manager, Region 12	R12apdmail@tceq.texas.gov
Brazoria County Environmental Health Director	jodiev@brazoria-county.com

Additional Information Request

Item 2	OC6L8RX1; OC6L8RX2; OC6L8RX3; OC6L8RX4: Revision #9, 18, 19, & 23 • Add citation 63.1103(e)(4)(xii)-(xiii) to the Standards • Please make the changes to the 30 TAC Chapter 115, Vent Gas Control citations as requested in (Also in the minor revision application received by TCEQ on 08/28/2023. (AMOC 62)) I will add citation 63.1103(e)(4)(xii)-(xiii) to the Standards for these units due to AMOC Please submit technical justifications for removing citations, as strike throughs on the OP-REQ3 are not justifications. If part of AMOC, include in justification. All updates were made to units; however, periodic monitoring (PM) is now required. Submit PM for units: OC6L8RX1 (R5121-01) OC6L8RX2 (R5121-01 and R5121-02) OC6L8RX3 (R5121-01) OC6L8RX4 (R5121-01)
Item 2 Response	**Please see the attached Form OP-MON for more information.** **Note: The Periodic Monitoring option for the flare scenario was provided on March 18, 2025.**

Texas Commission on Environmental Quality
Monitoring Requirements - Form OP-MON (Page 1)
Federal Operating Permit Program
Table 1a: CAM/PM Additions

I. Identifying Information		
Account No.: ***BL-0082-R***	RN No.: ***RN100225945***	CN: ***CN600356976***
Permit No.: ***O2213***	Project No.: ***35544***	
Area Name: ***Hydrocarbons***		
Company Name: ***The Dow Chemical Company***		
II. Unit/Emission Point/Group/Process Information		
Revision No.: ***N/A***		
Unit/EPN/Group/Process ID No.: ***OC6L8RX2***		
Applicable Form: ***OP-UA15***		
III. Applicable Regulatory Requirement		
Name: ***30 TAC Chapter 115, Vent Gas Control***		
SOP/GOP Index No.: ***R5121-02***		
Pollutant: ***VOC***		
Main Standard: ***115.122(a)(2); 63.670(g)***		
IV. Title V Monitoring Information		
Monitoring Type: ***PM***		
Unit Size:		
CAM/PM Option No.: ***PM-V-007***		
Deviation Limit: ***Any monitoring data below the minimum limit shall be considered and reported as a deviation.***		
CAM/PM Option No.:		
Deviation Limit:		
V. Control Device Information		
Control Device ID No.:		
Control Device Type:		

March 10, 2025

E-MAIL RESPONSE
Texas Commission on Environmental Quality
ATTN: Mr. Mark McDonald
Air Permits Division, MC-163
P.O. Box 13087
Austin, TX 78711-3087

The Dow Chemical Company, CN600356976
Hydrocarbons, RN100225945
Title V Operating Permit NOD Response for Hydrocarbons Plant, O2213
TCEQ Project Number: 37218

Dear Mr. McDonald,

The Dow Chemical Company is providing a response to the Notice of Deficiency (NOD) provided on March 4, 2025.

Please do not hesitate to contact me at (979) 238-1742 or cschmidt6@dow.com if you require additional information regarding this submittal.

Sincerely,

Crystal Schmidt

Crystal Schmidt
Air Permit Manager

enclosure

cc:

US EPA Region 6	R6AirPermitsTX@epa.gov
TCEQ Air Section Manager, Region 12	R12apdmail@tceq.texas.gov
Brazoria County Environmental Health Director	jodiev@brazoria-county.com

Additional Information Request

Item 2	OC6L8RX1; OC6L8RX2; OC6L8RX3; OC6L8RX4: Revision #9, 18, 19, & 23 • Add citation 63.1103(e)(4)(xii)-(xiii) to the Standards • Please make the changes to the 30 TAC Chapter 115, Vent Gas Control citations as requested in (Also in the minor revision application received by TCEQ on 08/28/2023. (AMOC 62)) I will add citation 63.1103(e)(4)(xii)-(xiii) to the Standards for these units due to AMOC Please submit technical justifications for removing citations, as strike throughs on the OP-REQ3 are not justifications. If part of AMOC, include in justification. All updates were made to units; however, periodic monitoring (PM) is now required. Submit PM for units: OC6L8RX1 (R5121-01) OC6L8RX2 (R5121-01 and R5121-02) OC6L8RX3 (R5121-01) OC6L8RX4 (R5121-01)
Item 2 Response	**Please see the attached Form OP-MON for more information.**

Texas Commission on Environmental Quality
Monitoring Requirements - Form OP-MON (Page 1)
Federal Operating Permit Program
Table 1a: CAM/PM Additions

I. Identifying Information		
Account No.: ***BL-0082-R***	RN No.: ***RN100225945***	CN: ***CN600356976***
Permit No.: ***O2213***	Project No.: ***35544***	
Area Name: ***Hydrocarbons***		
Company Name: ***The Dow Chemical Company***		
II. Unit/Emission Point/Group/Process Information		
Revision No.: ***N/A***		
Unit/EPN/Group/Process ID No.: ***OC6L8RX1, OC6L8RX2, OC6L8RX3, OC6L8RX4***		
Applicable Form: ***OP-UA15***		
III. Applicable Regulatory Requirement		
Name: ***30 TAC Chapter 115, Vent Gas Control***		
SOP/GOP Index No.: ***R5121-01***		
Pollutant: ***VOC***		
Main Standard: ***115.122(a)(2); 63.670(g)***		
IV. Title V Monitoring Information		
Monitoring Type: ***PM***		
Unit Size:		
CAM/PM Option No.: ***PM-V-003***		
Deviation Limit: ***Any monitoring data which indicates the lack of a pilot flame shall be considered and reported as a deviation.***		
CAM/PM Option No.:		
Deviation Limit:		
V. Control Device Information		
Control Device ID No.:		
Control Device Type:		

United States Environmental Protection Agency

Summary of Public Comments and Responses for the Risk and Technology Review for Miscellaneous Organic Chemical Manufacturing

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May 2020

Summary of Public Comments and Responses for the Risk and Technology Review for Miscellaneous Organic Chemical Manufacturing

U. S. Environmental Protection Agency
Office of Air Quality Planning and Standards
Sector Policies and Programs Division (E-143-01)
Research Triangle Park, North Carolina 27711

The primary contact regarding questions or comments on this document is:

Tegan Lavoie 919-541-5110, lavoie.tegan@epa.gov
U.S. Environmental Protection Agency
Office of Air Quality Planning and Standards
Sector Policies and Programs Division (E-143-01)
Research Triangle Park, North Carolina 27711

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List of Acronyms and Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
AEGL	acute exposure guideline level
AIC	Akaike information criterion
AMEL	alternative means of emission limitation
APCD	air pollution control device
ATSDR	Agency for Toxic Substances and Disease Registry
Btu/scf	British thermal unit per standard cubic foot
BWON	Benzene Waste Operations NESHAP
CAA	Clean Air Act
CalEPA	California EPA
CAR	Consolidated Air Rule
CDC	Centers for Disease Control and Prevention
CDX	Central Data Exchange
CEDRI	Compliance and Emissions Data Reporting Interface
CEMS	continuous emission monitoring system(s)
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
CHPAC	Children's Health Protection Advisory Committee
CMPU	chemical manufacturing process unit
CMS	continuous monitoring systems
CPH	Cox Proportional Hazard
CPMS	continuous parametric monitoring systems
DNA	deoxyribonucleic acid
DOT	Department of Transportation
ECHO	Enforcement and Compliance History Online
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ERPG	Emergency Response Planning Guideline
ERT	Electronic Reporting Tool
EtO	ethylene oxide
FID	flame ionization detector
FQPA	Food Quality Protection Act
FR	Federal Register
FTIR	Fourier transform infrared
GAO	Government Accountability Office
GEAE	generic ecological assessment endpoint(s)

HAP	hazardous air pollutant(s)
HCl	hydrochloric acid
HEM-3	Human Exposure Model
HI	hazard index
HON	Hazardous Organic NESHAP
HQ	hazard quotient
HRVOC	highly reactive volatile organic compounds
IARC	International Agency for Research on Cancer
ICR	Information Collection Request
IRIS	Integrated Risk Information System
LDAR	leak detection and repair
LEL	lower explosive limit
LFLcz	lower flammability limit in the combustion zone gas
MACT	maximum achievable control technology
MCPU	miscellaneous organic chemical manufacturing process unit
mg/m^3	milligrams per cubic meter
MIR	maximum individual risk
MOA	mode of action
MON	Miscellaneous Organic Chemical Manufacturing NESHAP
MPGF	multi-point ground flare(s)
NAAQS	National Ambient Air Quality Standards
NAS	National Academy of Sciences
NATA	National-Scale Air Toxics Assessment
NEI	National Emissions Inventory
NESHAP	national emission standards for hazardous air pollutants
NHVcz	net heating value in the combustion zone gas
NIOSH	National Institute for Occupational Safety and Health
NOCS	notification of compliance status
NRC	National Research Council
NRDC	Natural Resources Defense Council
NSPS	new source performance standards
OEHHA	Office of Environmental Health Hazard Assessment
OGI	optical gas imaging
OLD	Organic Liquids Distribution
OMB	Office of Management and Budget
OSHA	Occupational Safety and Health Administration
PB-HAP	hazardous air pollutants known to be persistent and bio-accumulative in the environment

PBT	persistent bioaccumulative toxic(s)
PDF	portable document format
PEL	permissible exposure limit
ppm	parts per million
ppmw	parts per million by weight
ppmv	parts per million by volume
PRD	pressure relief device(s)
psig	pounds per square inch gauge
QA/QC	quality assurance/quality control
RCRA	Resource Conservation and Recovery Act
REL	reference exposure level
RfC	reference concentration
RfD	reference dose
RMP	risk management program
RTR	residual risk and technology review
SAB	Science Advisory Board
SCAQMD	South Coast Air Quality Management District
SOCMI	Synthetic Organic Chemical Manufacturing Industry
SSM	startup, shutdown, and malfunction
SSMP	startup, shutdown, and malfunction plan
TCEQ	Texas Commission on Environmental Quality
TOC	total organic compound(s)
TOSHI	target organ-specific hazard index
tpy	tons per year
TRI	Toxics Release Inventory
TRIM.FaTE	Total Risk Integrated Methodology.Fate, Transport, and Ecological Exposure Model
UF	uncertainty factor(s)
$\mu g/m^3$	micrograms per cubic meter
URE	unit risk estimate(s)
VOC	volatile organic compound(s)

1.0 Introduction

The U.S. Environmental Protection Agency (EPA) promulgated national emission standards for hazardous air pollutants (NESHAP) pursuant to the Clean Air Act (CAA) section 112(d)(2) and (3) for miscellaneous organic chemical manufacturing facilities, herein called the MON, that are major sources (as that term is defined in CAA section 112(a)(1)) on November 10, 2003 and further amended the MON on July 1, 2005 and July 14, 2006. The standards are codified at 40 CFR part 63, subpart FFFF. The MON regulates hazardous air pollutant (HAP) emissions from miscellaneous organic chemical manufacturing process units (MCPUs) located at major sources. An MCPU includes a miscellaneous organic chemical manufacturing process, as defined in 40 CFR 63.2550(i), and must meet the following criteria: (1) it manufactures any material or family of materials described in 40 CFR 63.2435(b)(1); it processes, uses, or generates any of the organic HAP described in 40 CFR 63.2435(b)(2); and, except for certain process vents that are part of a chemical manufacturing process unit, as identified in 40 CFR 63.100(j)(4), the MCPU is not an affected source or part of an affected source under another subpart of 40 CFR part 63. An MCPU also includes any assigned storage tanks and transfer racks; equipment in open systems that is used to convey or store water having the same concentration and flow characteristics as wastewater; and components such as pumps, compressors, agitators, pressure relief devices (PRDs), sampling connection systems, open-ended valves or lines, valves, connectors, and instrumentation systems that are used to manufacture any material or family of materials described in 40 CFR 63.2435(b)(1). Sources of HAP emissions regulated by the MON include the following: process vents, storage tanks, transfer racks, equipment leaks, wastewater streams, and heat exchange systems.

On March 13, 2017, the U.S. District Court for District of Columbia ordered the EPA to perform all acts or duties required by CAA section 112(f)(2) and CAA section 112(d)(6) for 20 source categories, including miscellaneous organic chemical manufacturing, within three years of the date of the court order (*See California Communities Against Toxics, et al. v. Scott Pruitt*, 241 F. Supp. 3d 199 (DDC 2017)). CAA section 112(f)(2) requirements are more commonly referred to as the “residual risk review” for the NESHAP while CAA section 112(d)(6) requirements are more commonly referred to as the “technology review” for the NESHAP. When combined into a single rulemaking, the EPA commonly refers to the rulemaking as the risk and technology review (RTR) for the NESHAP.

On November 1, 2019, the EPA Administrator Wheeler signed the EPA’s proposed rulemaking concerning decisions about the RTR for the MON, and the EPA posted the signed, pre-publication version of the proposed RTR rulemaking to the following website: https://www.epa.gov/stationary-sources-air-pollution/miscellaneous-organic-chemical-manufacturing-national-emission. On December 17, 2019, the EPA published its proposed decisions in the **Federal Register** (FR) concerning the RTR for the MON. The EPA held two public hearings following publication of the proposed rule, one on January 14, 2020, in Houston, Texas and one on January 16, 2020, in Washington D.C so interested parties could present data, views, or arguments concerning the proposed action.

The EPA initially extended the comment period by 18 days (from a January 31, 2020 closing to a February 18, 2020 closing) to allow for a public comment period of 30 days following the public hearing that took place on January 16, 2020. On February 19, 2020, the court granted the EPA an extension on the final rule from March 13, 2020, to May 29, 2020, and as per the terms of this agreement, the EPA re-opened the comment period to March 19, 2020. A few commenters requested the EPA hold additional public hearings or hold additional public hearings in impacted communities. However, given the tight timeframe to meet the court-ordered deadline to promulgate its decisions on the RTR for the MON, the EPA is denying these requests. A few other commenters requested an extension of the comment period beyond February 18, 2020, and, as noted above, the EPA re-opened the comment period to March 19, 2020.

Some significant comments and the EPA's responses appear in the preamble to the final rule. This document contains summaries of all other public comments that the EPA received on the proposed standards and the EPA's responses. Copies of all comments submitted are available at the EPA docket Center Public Reading Room. Comment letters are also available electronically through http://www.regulations.gov by searching Docket ID No. EPA-HQ-OAR-2018-0746.

2.0 List of Commenters

The EPA received 5,541 comment letters after December 17, 2019, on the proposed revisions to the Miscellaneous Organic Chemical Manufacturing NESHAP (MON) resulting from the residual risk and technology review (RTR); 5,422 of these letters were based on a mass comment campaign, and 119 letters are individual comments. The EPA also heard from speakers and received written testimonies at two public hearings held on January 14, 2020 and January 16, 2020. All comment letters received on the proposed revisions to MON (including transcripts of public hearings) are contained in Docket ID No. EPA-HQ-OAR-2018-0746. The commenter, affiliation, and item number are listed in Table 2-1. The comment letters are identified by their entry in Docket ID No. EPA-HQ-OAR-2018-0746 for convenience.

Table 2-1. Public Comments Received on Proposed Revisions to the MON

Commenter Identification Code	Commenter and Affiliation
EPA-HQ-OAR-2018-0746-0032	Kenneth A. Mundt, American College of Epidemiology, and Andrew Maier, Cardno ChemRisk
EPA-HQ-OAR-2018-0746-0033	Latrice Babin, Harris County Pollution Control Services Department
EPA-HQ-OAR-2018-0746-0034	C. Flores, Lake County Outreach
EPA-HQ-OAR-2018-0746-0035	T. Davis
EPA-HQ-OAR-2018-0746-0036	Anonymous
EPA-HQ-OAR-2018-0746-0037	Gail Good, Wisconsin Department of Natural Resources
EPA-HQ-OAR-2018-0746-0038	Anonymous
EPA-HQ-OAR-2018-0746-0039	Victoria Pierce
EPA-HQ-OAR-2018-0746-0040	Anonymous
EPA-HQ-OAR-2018-0746-0041	Jason McCarthy
EPA-HQ-OAR-2018-0746-0042	Anonymous
EPA-HQ-OAR-2018-0746-0043	Anonymous
EPA-HQ-OAR-2018-0746-0044	Phil Howard, Ethox Chemicals, LLC.
EPA-HQ-OAR-2018-0746-0045	A. Hilson
EPA-HQ-OAR-2018-0746-0046	Francis Steitz and Robert H. Colby, National Association of Clean Air Agencies
EPA-HQ-OAR-2018-0746-0047	Anonymous
EPA-HQ-OAR-2018-0746-0048	Anonymous
EPA-HQ-OAR-2018-0746-0049	Anonymous
EPA-HQ-OAR-2018-0746-0050	Anonymous
EPA-HQ-OAR-2018-0746-0051 EPA-HQ-OAR-2018-0746-0092 EPA-HQ-OAR-2018-0746-0105	S. Spacek, American State Litter Scorecard
EPA-HQ-OAR-2018-0746-0052	Trinity Consultants
EPA-HQ-OAR-2018-0746-0053	Anonymous

Table 2-1. Public Comments Received on Proposed Revisions to the MON

Commenter Identification Code	Commenter and Affiliation
EPA-HQ-OAR-2018-0746-0055	B. Solka
EPA-HQ-OAR-2018-0746-0056	C. Lish
EPA-HQ-OAR-2018-0746-0060	Mary Ann Dolehanty, Michigan Department of Environment, Great Lakes, and Energy's
EPA-HQ-OAR-2018-0746-0061	Adrian Shelley, Public Citizen
EPA-HQ-OAR-2018-0746-0062	Rhonda Thompson, South Carolina Department of Health and Environmental Control
EPA-HQ-OAR-2018-0746-0063	Paul J. Miller, Northeast States for Coordinated Air Use Management
EPA-HQ-OAR-2018-0746-0064	John F. Wall IV, South Carolina Manufacturers Alliance
EPA-HQ-OAR-2018-0746-0065	David Darling, American Coatings Association
EPA-HQ-OAR-2018-0746-0066	Karen Ritter, American Petroleum Institute
EPA-HQ-OAR-2018-0746-0067	Russell A. Wozniak, Dow
EPA-HQ-OAR-2018-0746-0068	Mae Thomas, Bayer Crop Science
EPA-HQ-OAR-2018-0746-0069	Ernest Kremling, LANXESS Corporation
EPA-HQ-OAR-2018-0746-0070	Matthew J. Lynch, Albemarle Corporation
EPA-HQ-OAR-2018-0746-0071	Toby Baker, Texas Commission on Environmental Quality
EPA-HQ-OAR-2018-0746-0072	Laurie Cristiano, Corteva Agrisciences
EPA-HQ-OAR-2018-0746-0073	Allen Kacenjar, Squire Patton Boggs on behalf of Huntsman Corporation
EPA-HQ-OAR-2018-0746-0074	Steve E. Flint, New York State Department of Environmental Conservation
EPA-HQ-OAR-2018-0746-0075	Stephanie Herron, on behalf of Environmental Justice Health Alliance for Chemical Policy Reform
EPA-HQ-OAR-2018-0746-0076	Pam Nixon, People Concerned About Chemical Safety
EPA-HQ-OAR-2018-0746-0077	Ruey C. Dempsey, Advanced Medical Technology Association
EPA-HQ-OAR-2018-0746-0078	Anonymous
EPA-HQ-OAR-2018-0746-0079	Jake Vandevort, Ethylene Oxide Sterilization Association, Inc.
EPA-HQ-OAR-2018-0746-0080 EPA-HQ-OAR-2018-0746-0150	Maureen N. Harbourt, Kean Miller LLP, on behalf of Louisiana Chemical Association
EPA-HQ-OAR-2018-0746-0081	Jamie Newtown, Ramboll
EPA-HQ-OAR-2018-0746-0082	Nancy C. Loeb et al., Attorneys, Bluhm Legal Clinic, Northwestern Pritzker School of Law on behalf of Stop EtO Lake County

Table 2-1. Public Comments Received on Proposed Revisions to the MON

Commenter Identification Code	Commenter and Affiliation
EPA-HQ-OAR-2018-0746-0083 EPA-HQ-OAR-2018-0746-0154 EPA-HQ-OAR-2018-0746-0155 EPA-HQ-OAR-2018-0746-0156 EPA-HQ-OAR-2018-0746-0157	Earthjustice on behalf of Blue Ridge Environmental Defense League, California Communities Against Toxics, Coming Clean, Environmental Justice Health Alliance for Chemical Policy Reform, Louisiana Bucket Brigade, Louisiana Environmental Action Network, Natural Resources Defense Council, Ohio Valley Environmental Coalition, Sierra Club, and Earthjustice
EPA-HQ-OAR-2018-0746-0084	Owen P. Jappen, Society of Chemical Manufacturers and Affiliates
EPA-HQ-OAR-2018-0746-0085	U. Tanouye
EPA-HQ-OAR-2018-0746-0087 EPA-HQ-OAR-2018-0746-0088 EPA-HQ-OAR-2018-0746-0089 EPA-HQ-OAR-2018-0746-0090 EPA-HQ-OAR-2018-0746-0091	Earthjustice, on behalf of Blue Ridge Environmental Defense League, California Communities Against Toxics, Coming Clean, Environmental Justice Health Alliance for Chemical Policy Reform, Louisiana Bucket Brigade, Louisiana Environmental Action Network, Natural Resources Defense Council, Ohio Valley Environmental Coalition, Sierra Club, and Earthjustice
EPA-HQ-OAR-2018-0746-0093	Carol Ast
EPA-HQ-OAR-2018-0746-0094	Kent Borges
EPA-HQ-OAR-2018-0746-0095	Margaret Joseph
EPA-HQ-OAR-2018-0746-0096 EPA-HQ-OAR-2018-0746-0097 EPA-HQ-OAR-2018-0746-0098 EPA-HQ-OAR-2018-0746-0151	William P. Gulledge, American Chemistry Council
EPA-HQ-OAR-2018-0746-0099	Mark S. Allen, BASF Corporation
EPA-HQ-OAR-2018-0746-0100	R. La Frinere
EPA-HQ-OAR-2018-0746-0101	P. Schenck
EPA-HQ-OAR-2018-0746-0102	M. Beer
EPA-HQ-OAR-2018-0746-0103	J. Fletcher
EPA-HQ-OAR-2018-0746-0104	J. Young
EPA-HQ-OAR-2018-0746-0106	M. Chauvin
EPA-HQ-OAR-2018-0746-0107	L. McFall
EPA-HQ-OAR-2018-0746-0108	R. Stefenel
EPA-HQ-OAR-2018-0746-0109	T. Coppersmith
EPA-HQ-OAR-2018-0746-0110	B. Harshberger
EPA-HQ-OAR-2018-0746-0111	R. Zimmermann
EPA-HQ-OAR-2018-0746-0112	K. Burtness Prak
EPA-HQ-OAR-2018-0746-0113	G. LaBelle
EPA-HQ-OAR-2018-0746-0114	P. Catala

Table 2-1. Public Comments Received on Proposed Revisions to the MON

Commenter Identification Code	Commenter and Affiliation
EPA-HQ-OAR-2018-0746-0115	P. Hedge
EPA-HQ-OAR-2018-0746-0116	J. Ronsen
EPA-HQ-OAR-2018-0746-0117	D. Ross
EPA-HQ-OAR-2018-0746-0119	R. E. Peltier
EPA-HQ-OAR-2018-0746-0122	Senator Tammy Duckworth et al.
EPA-HQ-OAR-2018-0746-0123	Stephen R. Gossett, Eastman Chemical Company
EPA-HQ-OAR-2018-0746-0124	S. Crawford
EPA-HQ-OAR-2018-0746-0125	K. Kortsch
EPA-HQ-OAR-2018-0746-0126	K. Kortsch
EPA-HQ-OAR-2018-0746-0127	S. H. C. Hughes
EPA-HQ-OAR-2018-0746-0128	A. R. Money
EPA-HQ-OAR-2018-0746-0129	C. Walls
EPA-HQ-OAR-2018-0746-0130	J. Pierro
EPA-HQ-OAR-2018-0746-0131	A. Corder
EPA-HQ-OAR-2018-0746-0132	P. Dudley
EPA-HQ-OAR-2018-0746-0133	M. Corder
EPA-HQ-OAR-2018-0746-0134	M. Zenz
EPA-HQ-OAR-2018-0746-0135	C. Zenz
EPA-HQ-OAR-2018-0746-0136	S. McCoy
EPA-HQ-OAR-2018-0746-0137	K. Zenz
EPA-HQ-OAR-2018-0746-0138	E. Zenz
EPA-HQ-OAR-2018-0746-0139	K. Gencev
EPA-HQ-OAR-2018-0746-0140	B. Gencev
EPA-HQ-OAR-2018-0746-0141	J. C Aldrin
EPA-HQ-OAR-2018-0746-0142	B. Hernandez
EPA-HQ-OAR-2018-0746-0143	N. Crawford
EPA-HQ-OAR-2018-0746-0144	A. Crawford
EPA-HQ-OAR-2018-0746-0145	A. Doherty
EPA-HQ-OAR-2018-0746-0146	M. Brown
EPA-HQ-OAR-2018-0746-0147	T. Tubich
EPA-HQ-OAR-2018-0746-0148	J. Pomiotlo
EPA-HQ-OAR-2018-0746-0149	J. and A. Radosevich
EPA-HQ-OAR-2018-0746-0152	Michelle Mabson, Earthjustice
EPA-HQ-OAR-2018-0746-0153	Mass Comment Campaign sponsoring organization unknown
EPA-HQ-OAR-2018-0746-0158	K. L. Ashera
EPA-HQ-OAR-2018-0746-0159	Anonymous

Table 2-1. Public Comments Received on Proposed Revisions to the MON

Commenter Identification Code	Commenter and Affiliation
EPA-HQ-OAR-2018-0746-0160	Elizabeth (no surname provided)
EPA-HQ-OAR-2018-0746-0161	Environmental Integrity Project
EPA-HQ-OAR-2018-0746-0162	Wayne Smith, Sasol Chemicals (USA) LLC
EPA-HQ-OAR-2018-0746-0163	J. Bixby
EPA-HQ-OAR-2018-0746-0164	Brendan Mascarenhas, American Chemistry Council
EPA-HQ-OAR-2018-0746-0165	Kim Allen, Nature Institute of Integrative and Functional Medicine et al.
EPA-HQ-OAR-2018-0746-0166	Bradley S. Schneider, Member of Congress
EPA-HQ-OAR-2018-0746-0167	P. Bjerre-Jensen

In the Hydrochloric Acid (HCl) Production RTR proposed rule, the EPA requested comment on the use of the updated ethylene oxide (EtO) URE for regulatory purposes (84 FR 1584; February 4, 2019). The comment period for the HCl Production proposed rule closed on April 26, 2019, and the Agency received a number of comments on the updated EtO URE and its use for regulatory purposes. Because of the robustness of the comments received related to the updated EtO URE for the HCl Production proposed rule and their relevance to the MON rulemaking, the Agency will consider those comments received for the HCl Production proposed rule in the MON final rule. The comments received for the HCl Production proposed rule are included in Docket ID No. EPA-HQ-OAR-2018-0417, and the EPA incorporated those comments into the docket for the MON rulemaking. The commenter, affiliation, and item number are listed in Table 2-2. The comment letters are identified by their entry in Docket ID No. EPA-HQ-OAR-2018-0417 for convenience.

Table 2-2. Public Comments Received After the Proposed RTR for HCl Production Related to the Updated EtO URE

Commenter	Affiliation
Francis Steitz, Robert Colby	National Association of Clean Air Agencies
Waukegan Fire Fighters	Waukegan Fire Fighters
Gail Charnley, Donald Elliott	Health Risk Strategies, Covington & Burling LLP
William Gulledge	American Chemistry Council
Sebastian Irby	Environmental Protection Network
Nancy Loeb, Linda Qui	Northwestern Environmental Advocacy Center
Jennifer Sass, Michelle Mabson	Natural Resource Defense Council, Inc. and Earthjustice
Breast Cancer Prevention Partners	Breast Cancer Prevention Partners
Russell Wozniak and Laurie Cristiano	Dow and Dow Agrosciences
Robert Helminiak	Society of Chemical Manufacturers and Affiliates
Thomas Gentile	New York State Department of Environmental Conservation
Genna Reed	Union of Concerned Scientists
Ann Mesnikoff	The Environmental Law & Policy Center
Gregory Bowser	Louisiana Chemical Association

Table 2-2. Public Comments Received After the Proposed RTR for HCl Production Related to the Updated EtO URE

Commenter	Affiliation
Diana Burdette	Clean Power Lake County
Toby Baker	Texas Commission on Environmental Quality
Ruey Dempsey	Advanced Medical Technology Association
Michele Roberts	Environmental Justice Health Alliance National
Brendan Mascarenhas	American Chemistry Council
Jake Vandevort	Ethylene Oxide Sterilization Association, Inc.
Emma Cheuse	Earthjustice, Blue Ridge Environmental Defense League, California Communities Against Toxics, Coming Clean, Environmental Justice Health Alliance for Chemical Policy Reform, Louisiana Bucket Brigade, Louisiana Environmental Action Network, Natural Resources Defense Council, Ohio Valley Environmental Coalition, Sierra Club, and Earthjustice
Diane Hewitt	Lake County Board District
Senator Tammy Duckworth	U.S. Senate
Michelle Mabson	Earthjustice
Stephanie Herron	Delaware Concerned Residents for Environmental Justice
Neringa Zymancius	Stop Sterigenics
James Bus	Exponent
Congressman Daniel Lipinski	U.S. House of Representatives
Maya Nye	People Concerned about Chemical Safety in West Virginia
Linda Whitehead	Delaware Concerned Residents for Environmental Justice
Michele Roberts	Environmental Justice Health Alliance for Chemical Policy Reform
Larry Lambert	Delaware Concerned Residents for Environmental Justice
Abigail Omojola	Breast Cancer Prevention Partners
Anne Mesnicoff	Environmental Law and Policy Center
Kenneth Dryden	Minority Workforce Development Coalition
Dianne Surufka	Stop EtO in Lake County
Genna Reed	Union of Concerned Scientists
Jennifer Sass	Natural Resources Defense Council
Wilma Subra	Louisiana Environmental Action Network

3.0 Risk Assessment and Determination

3.1 General

Comment 1: A commenter requested the EPA edit or remove one receptor used in the MON risk analysis for the Eastman Chemical Company's Longview, Texas facility [National Emissions Inventory (NEI) ID 4941511]. The commenter explained that Eastman is in the process of acquiring the residence, which is unoccupied. The commenter noted that in Appendix 4 of the *Residual Risk Assessment for the Miscellaneous Organic Chemical Manufacturing Source Category in Support of the 2019 Risk and Technology Review Proposed Rule*, the EPA lists an additional receptor for residences nearer to the facility than the census block centroids at Eastman's Longview, Texas facility. The commenter explained that the location of the additional receptor is a vacant residence that is currently uninhabitable, and that Eastman has a signed contract to acquire the property. The commenter requested that, given that the addition of this receptor significantly increases the predicted risk, the EPA consider removal of the receptor for future modeling.

Response: We have not removed the additional receptor from the risk analysis as the commenter requests. The commenter did not provide any documentation to confirm that the residence is owned by Eastman. We acknowledge that removal of the receptor would potentially result in lower risks for this facility. Given the risks are already acceptable for the Eastman facility, and this facility was not a driver of risk for this category, removal of the receptor for this residence from the modeling data set will not change that decision, so revised modeling incorporating this change for the Eastman facility was not conducted. If the commenter provides documentation to confirm ownership of the residence, it could be considered for future modeling.

3.2 Emissions Data

Comment 2: Two commenters contended that the MON residual risk assessment has significant missing information. Commenters indicated that according to the risk assessment, 201 facilities were identified as belonging to the MON first category, yet seven facility emissions and health risks are unaccounted for in this rulemaking, including at least one facility in northern Texas.

Response: The EPA prepared the risk assessment based on the best available data and derived emissions data. At proposal, the EPA acknowledged that emissions data for seven facilities were unavailable, as these facilities either did not report HAP emissions to the 2014 NEI, or the HAP emissions they did report were not subject to MON and so were only modeled at the whole facility level. To fill these gaps, the EPA solicited comment on any missing emissions data so that it could be considered in the final rule, however, this information was not provided by any commenter. The EPA has a legal obligation to proceed with regulatory action based on the best available data and tools, and we note that we have refined the risk assessment for the final rule where additional data provided during the public comment period would potentially affect emissions that drive risks for the source category. Although we did not receive data on these seven facilities, we contend that the emissions data used in this analysis represents the best available data available to the agency. We note that if additional information is received on these facilities is received, it could be considered for future modeling.

Comment 3: Commenters provided or noted updated EtO emissions data and requested the EPA to update the risk model and the NEI. The commenters objected to the EPA's use of 2014 EtO emission values reported to the NEI. The commenters remarked that the current assessment is likely biased high. One commenter further requested that the EPA publish a more robust explanation concerning why it did not adjust the EtO data for all facilities noted in Table 6 of the Residual Risk Assessment; the commenter contended that in some cases, the EPA simply stated that requested revisions to lower EtO emissions were rejected due to "insufficient" rationale, with providing further explanation as to why.

Commenters also asserted that the EPA's emission estimates are otherwise suspect because the specific methods that the EPA used to quality assurance/quality control (QA/QC) the data are unclear, and that the EPA failed to provide a detailed discussion of the QA/QC checks they performed. A commenter encouraged the EPA to provide detail on the specific changes they made to the data, including a rationale where changes were made.

Commenters further noted that in the emissions modeling input files that the EPA included in the docket for the two control options (*i.e.*, "http://www.MON_Control_HEMInput_HAPEmis_05212019_opt1.xlsx" and "MON_Control_ HEMInput_HAPEmis_05212019_opt2.xlsx"), the EPA revises only the emission rates for EtO. The commenter stated that applying these control options is likely to reduce equipment leak emissions from other chemicals serviced by the same pumps/connectors, not just EtO. The commenters stressed that, since the risks modeled using Control Option 1 and Control Option 2 do not incorporate these additional emissions reductions, these risks are likely overestimated, and the EPA should account for these reductions in the post-control scenarios.

Commenters referenced the EPA's statements in the proposed rule that it intended to utilize collected information for the Lanxess facility to fill data gaps, establish the baseline emissions and control levels, identify the most effective control measures, and estimate the environmental impacts associated with the regulatory options considered and reflected in the proposed action.[1]

One commenter stated that the EPA utilized incorrect input data for the Albemarle Corporation Magnolia South Plant located in Magnolia, AR. The commenter submitted an Excel file submitted containing corrected input data for this facility, containing three corrections to fugitive emission rates and source parameters. One commenter provided updated the EtO emissions for an emission unit at the Sasol – Lake Charles Complex facility and submitted revised emissions inventories reflecting a decrease in emissions.

Another commenter provided data for the Eastman Longview, Texas facility and requested that the EPA update its risk assessment data for this facility. The commenter indicated that the new data should make it understood the Noncancer Hazard Index (HI) should not be above 1 for the Longview facility. The commenter explained that independent modeling using

[1] Commenter referred to document #EPA-HQ-OAR-2018-0746-0011.

the EPA's HEM model indicated that over 80 percent of the HI of 3 provided in the EPA's residual risk assessment was caused by the chemical hexamethylene-1,6-diisocyanate, which was a component of paint used at the facility during 2014. The commenter stated that the component is no longer in any paint used at the facility and has not been reported in emissions inventories since 2015.

Response: We disagree with commenters who object to the use of the 2014 NEI for EtO emissions. We relied on the 2014 NEI v2 dataset because it provided the best available data for EtO emissions and other HAP emissions for the miscellaneous organic chemicals manufacturing source category. The 2014 NEI dataset provides emissions data on a source category, facility-wide, emission-unit, and process level and allows the EPA to better understand those sources that contribute to risks. However, the EPA used several sources to further update and improve the MON emissions estimates for modeling where we had better data, including air permits and information from state and regional agencies; contacts with facilities to verify process, operating, and emissions information; and Toxics Release Inventory (TRI) data. Where we did not have better data, we did not update these estimates. We note that the EPA has an obligation to use the best available data and generally updates the dataset where we have sufficient rationale or improved data (*e.g.*, relevant stack test data, documented process concentrations, etc.) but has jurisdiction to reject updated emissions estimates when insufficient rationale is provided. In general, we rejected emissions changes due to insufficient rationale when numbers were updated without a clear or substantive explanation of why emissions changed.

Regarding the comment that the EPA revised only those emission rates for EtO in the input modeling files for each EtO-specific equipment leak control option and should also incorporate reduced emissions from other chemicals serviced by the same equipment, we disagree with the commenter that we are able to incorporate such revisions without introducing significant uncertainties. To incorporate these changes would require process knowledge for individual facilities that we do not have, including knowledge of each HAP from the NEI that is in the same equipment lines as those containing EtO; unfortunately, this information was unavailable at proposal and has not been provided. Additionally, we found that, even if such information was available, since only eight facilities are expected to be affected by the EtO-specific equipment leaks Control Option 1, and the portion of the streams at a whole facility that would meet the definition of being in EtO service is likely to be a fraction of all equipment, the reductions of other HAP would be expected to be minimal and would have minimal effect on risk. With respect to the commenters' contention that the EPA did not clearly identify its updates and QA/QC of the data, we documented every QA/QC change that was made in the memorandum, *Residual Risk Assessment for the Miscellaneous Organic Chemical Manufacturing Source Category in Support of the 2019 Risk and Technology Review Proposed Rule* (see *https://www.regulations.gov/document?D=EPA-HQ-OAR-2018-0746-0011*, "Appendix C – MON Modeling File Record of Revisions"), which is available in the docket for this rulemaking.

As discussed in the proposal preamble and in light of additional data and comments received, the EPA agrees with commenters that certain adjustments to the residual risk assessment should be made in the final rule to use the best available data for those facilities whose emissions resulted in a maximum individual risk (MIR) greater than 100-in-1 million. See Section IV.A.3 of the preamble to the final rule for the EPA's response to comments on the EPA's use of collected information for the Lanxess and Huntsman performance facilities.

We acknowledge the additional information provided for other facilities, including the Albemarle Corporation Magnolia South Plant, Sasol – Lake Charles Complex, and Eastman Longview facility, could potentially result in lower risks for these facilities. However, given that risks are already acceptable for these facilities, and these facilities were not drivers of risk for the Miscellaneous Organic Chemical Manufacturing source category, an update of the inputs or parameters for these facilities will not change the results of the risk assessment or influence the EPA's decisions regarding the control options that should be applied. Therefore, the EPA has not included these changes in the revised modeling dataset. The EPA has a legal obligation to proceed with regulatory action based on the best available data and tools, and as we note above, we have refined the risk assessment for the final rule where such additional data would potentially affect the emissions that drive risks for the source category.

Comment 4: One commenter questioned why EtO emissions from certain MON facilities located in Louisiana were not included in the residual risk assessment for the source category. The commenter noted that the *Residual Risk Assessment of the Miscellaneous Organic Chemical Manufacturing Source Category in Support of the 2019 Risk and Technology Review Proposed Rule* lists only two facilities (BASF Corporation, in Geismar, Ascension Parish and Dow Chemical in Plaquemine, Iberville Parish) as MON facilities releasing EtO from sources subject to the MON standards. The commenter pointed out an additional five industrial facilities listed as MON facilities in the residual risk assessment that emit EtO from sources subject to other standards at the whole facility level. The commenter stated that EtO emissions from all industrial sources must be considered with assessing risk.

The commenter also pointed to anticipated emissions of EtO based on a recent air permit for the proposed Formosa FG LA Chemical Complex in St. James Parish, stating that this facility alone would add emissions increases nearly the quantity of those targeted by the EPA to be removed under the MON. The commenter stated that based on the available air permit, the facility would emit 7.7 tons per year (tpy) of EtO into the air. The commenter expressed concern that there could be a period of time during which additional EtO could be released from the new facility.

Response: During this analysis, the EPA identified seven facilities in Louisiana subject to the MON with EtO emissions. Of these seven facilities, two had EtO emissions from processes subject to the MON (*i.e.*, within the source category) while the other five had EtO emissions subject to other standards (*i.e.*, at the whole facility). When estimating risk from the source category, the EPA uses emissions subject to the MON because these are the emissions that will be affected by the MON standards. The whole facility risk analysis is intended to help the EPA understand the context of the risks posed by the source category being regulated. As such, the whole facility results are not used to determine whether or not risks from the source category are acceptable. The results can, however, inform the agency about source categories that may be of concern from a public health standpoint, and can be used to establish priorities for future information collection and regulatory actions.

Regarding the facility-wide risks due to EtO, which are emitted by sources that are not part of the Miscellaneous Organic Chemical Manufacturing source category, we intend to evaluate those facility-wide estimated emissions and risks further and may address these in a separate future action, as appropriate. In particular, the EPA is addressing EtO in response to the results of the latest National-Scale Air Toxics Assessment (NATA) released in August 2018, which identified the chemical as a potential concern in several areas across the country (NATA is the Agency's nationwide air toxics screening tool, designed to help the EPA and state, local, and tribal air agencies identify areas, pollutants, or types of sources for further examination). The latest NATA estimates that EtO significantly contributes to potential elevated cancer risks in some census tracts across the U.S. (less than 1 percent of the total number of tracts). These elevated risks are largely driven by an EPA risk value that was updated in late 2016. The EPA will work with industry and state, local, and tribal air agencies as the EPA takes a two-pronged approach to address EtO emissions by (1) reviewing and, as appropriate, revising CAA regulations for facilities that emit EtO – starting with air toxics emissions standards for miscellaneous organic chemical manufacturing facilities and commercial sterilizers; and (2) conducting site-specific risk assessments and, as necessary, implementing emission control strategies for targeted high-risk facilities. The EPA will post updates on its work to address EtO on its website at: https://www.epa.gov/ethylene-oxide.

If the proposed Formosa FG LA Chemical Complex is determined to be subject to MON and its processes that emit EtO are also determined to be subject to MON, then the EtO emissions at this facility will be subject to the requirements finalized in this MON final rule. In general, any affected facility that commences construction after December 17, 2019 would be considered a new source and required to be in compliance with the revised MON standards upon startup or the date of publication of the final rule, whichever is later. We believe that compliance upon startup for new sources is important to reduce HAP (including EtO) emissions and is the most protective of public health. Facilities that commenced construction prior to December 17, 2019 with light liquid pumps or equipment in EtO service must be in compliance within two years from the date of publication of the final rule. If the facility is not determined to have light liquid pumps or equipment in EtO service, it would be required to meet the revised MON standards within three years from the date of publication of the final rule. In some cases facilities will need time to plan, purchase, obtain capital authorization and funding for, and install control equipment, or to reconfigure existing operating plans and reporting systems; for these existing facilities, we consider the timeframes established for the final rule to be the most expeditious compliance periods practicable while emphasizing protection of public health.

Comment 5: A commenter stated that the EPA's risk analysis "ignored" TRI data, and the commenter argued that TRI data indicate that the 2014 NEI used in the EPA's analysis should not be used to predict year to year emissions of HAP's or to approximate the total allowable emissions from MON facilities. The commenter argued that TRI data, unlike NEI data, are subject to more public scrutiny because TRI data are easy to access, and the reports must be filed year after year. To demonstrate this concern regarding 2014 NEI data, the commenter provided a comparison for each year 2014 through 2018 of TRI versus 2014 NEI data for benzene and 1,3-butadiene emissions reported by those MON facilities owned by companies that reported annual emissions of at least 1,000 pounds of each pollutant for each year, which represent 204 of the 297 tons of benzene emissions reported to the 2014 NEI from the MON sources identified by the EPA, and nearly 149 of the 256 tons of 1,3-butadiene. The commenter indicated that the average TRI emissions from 14 of the 21 MON sources in the list were higher than the 2014 NEI values, with TRI emissions of butadiene and benzene substantially higher in many years than amounts reported to the 2014 NEI. The commenter concluded that there is no reason to believe that these variations do not apply to other HAP's from facilities affected by the proposal.

Response: The EPA disagrees with the commenter that the data provided in TRI invalidates the use of NEI data for development of emissions estimates from the Miscellaneous Organic Chemical Manufacturing source category, including allowable emissions. Regarding the use of NEI and TRI data, we considered the sources, pollutants, and emissions-level (*e.g.*, facility-, process-, or emission unit-level) data provided in each dataset when developing the inputs to the risk assessment. Specifically, because it includes only a subset of the total NEI sources, and does not provide details regarding process or emission unit specific releases, TRI is of limited value for HEM3 risk modeling, which considers releases from facility-specific emissions points and processes. Conversely, the data available from NEI allow us to examine emissions on the source category, facility, process, and emissions unit level.

There are several reasons that the data reported to TRI may appear to show higher emissions levels or appear incongruent with the NEI data for similar years. First, as noted, the NEI provides emissions unit and process-level emissions data that reflects only those processes for the Miscellaneous Organic Chemical Manufacturing source category; the TRI data reported is whole facility releases, therefore, the TRI emissions may include releases of HAP from processes outside the Miscellaneous Organic Chemical Manufacturing source category, and therefore appear higher than what was shown in the modeling file. Additionally, the TRI program generally covers waste management activities including the release of chemicals to air, water, and land, and waste transfers, and may include additional non-air releases (such as waste management quantities) that factor into reported releases. The NEI data are submitted by facilities to state, local, and tribal inventory agencies, who perform additional levels of quality assurance to correct or refine emissions estimates before submission to the EPA. The EPA then performs additional quality assurance on these submissions to ensure the most accurate air emissions estimates are reported from these facilities. TRI emissions data also tends to be higher for the facilities reporting in TRI than the facilities exempt from TRI reporting due to the emission thresholds for TRI, which are based on whether a TRI-listed chemical is released in an amount above the reporting thresholds. For these reasons, the emissions reported for these largest facilities would not necessarily be representative of several smaller non-TRI sources, whose facility emissions may only be reported to NEI.

For these reasons, we do not find that the TRI trends identified by the commenter are indicative of deficiencies in the NEI data. The EPA used several sources to develop the MON emissions estimates for modeling, including 2014 NEI v2 and TRI data; air permits and information from state and regional agencies; and contacts with facilities to verify process, operating, and emissions information. We are also incorporating data received from a CAA section 114 information collection request (ICR) and additional data received from facilities during the public comment period in a revised risk assessment in this final rule. We take all of these data into consideration when developing emissions estimates for the inventory, and maintain that the emissions estimates for the revised risk assessment represent the best reasonably available data.

3.3 EPA Overestimated/Underestimated Human Health Risks

Comment 6: Commenters stated that the EPA must assess risk based on allowable emissions and not actual emissions. A commenter urged that the use of allowable emissions is more appropriate because (1) facility emissions could increase over time and analysis based on a single point in time may underestimate risks; and (2) major HAP thresholds and air pollution permits are based on maximum potential to emit.

The commenter stated that it is necessary to assess "allowable" emissions because they reflect the maximum level facilities could emit without violating national emission standards, and doing so is consistent with the Science Advisory Board (SAB) recommendations that "EPA modify its methodology to first assess residual risk associated with facility-specific 'allowable' emissions, reflecting current regulatory limits."[2] The commenter further contested the EPA's statement that it "determined that the actual emissions data are reasonable estimates of the [maximum achievable control technology] MACT-allowable emissions", and stated that the draft residual risk assessment does not support this conclusion. The commenter argued that it appears likely that the actual emissions are higher than MACT-allowable emissions, which would require the EPA to account for each of those in the residual risk assessment. The commenter said that the EPA has full authority and ability to collect additional data if it deems this necessary to meet its obligation to satisfy CAA section 112(f)(2), and cannot use its own decision not to collect this data or at least attempt to estimate additional risk from MACT-allowable emissions, as a basis for ignoring this risk.

The commenter argued that the EPA should: (1) provide a full explanation of how it determined that allowable and actual emissions for MON sources are one and the same, and (2) evaluate and explain the effect that the repeal of the "once in, always in" policy could have on the applicability of the proposal on emission levels and the resulting risk from the major sources it has identified for this rulemaking. The commenter stated that the EPA has not provided any supporting materials in the preamble or docket to justify its conclusion that actual emissions equal allowable emissions. The commenter pointed out that the EPA's Residual Risk Assessment document states that, "potential differences between actual emissions and the maximum emissions allowable…were also calculated for the Miscellaneous Organic Chemical Manufacturers facilities," but the EPA does not provide this analysis. The commenter pointed out that the previous "once in, always in" policy, major sources would have to continue to comply with these pollution control standards, even if their effect was to reduce HAP emissions well below the major source threshold; whereas, the current "once in, always in" policy allows facilities currently regulated as major sources to be reclassified as minor, so long as they agree to keep their emissions below major source thresholds. The commenter argued that the EPA's assessment should consider emissions that are expected to result from a facility operating at full capacity, and should take into account emission increases from recently issued permits that authorize the construction of additional capacity, which requires taking into account a facility's "capacity factor" or utilization rate and evaluating emissions growth from the plant expansions recently approved by state permit writers. The commenter provided a table of thirteen MON sources with permits issued between January of 2014 and December of 2019 that together

[2] Commenter added the following reference: EPA-SAB-10-007 at ii (May 07, 2010)) ("SAB May 2010"), EPA-HQ-OAR-2010-0682-0103 (emphasis added).

authorize total emission increases of more than 641 tons of particulates ten microns or smaller in diameter (PM10) and nearly 2182 tons of volatile organic compounds (VOCs), which almost certainly include inorganic and organic HAPs.

On the contrary, another commenter argued that the EPA's assumption that actual and allowable emissions are equivalent is reasonable. The commenter said equipment leaks are the primary risk driver and storage tanks are the second most common source type (after equipment leaks) that appear as a cancer risk driver for facilities with an estimated maximum cancer risk of 10 or greater based on the EPA's September 6, 2018, input files. The commenter argued that, for equipment leaks, none of the emission estimation methodologies are dependent on the throughput of material (*e.g.,* flow rate of gas or liquid); therefore, as long as the leak detection and repair (LDAR) measurements, which are used as the basis for the emission rates, are correct, then the actual and allowable emissions are not expected to differ. The commenter also argued that the EPA's assumption that actual emissions data are reasonable estimates of the MACT-allowable emissions is also valid for storage tanks because breathing loses are not dependent on material throughput. The commenter provided analysis of working and breathing losses from typical storage tank conditions using the EPA's TANKS software to assess actual versus MACT-allowable emissions from storage tanks; and the analysis showed that breathing losses are the primary driver of storage tank emissions and they are not dependent on material throughput.

Response: Consistent with previous risk assessments, the EPA considered both allowable and actual emissions in assessing chronic inhalation exposure and risk under CAA section 112(f)(2) for this source category (see, *e.g.,* the National Emission Standards for Coke Oven Batteries [70 FR 19998-19999, April 15, 2005] and in the proposed and final NESHAP from the Synthetic Organic Chemical Manufacturing Industry (SOCMI), or Hazardous Organic NESHAP (HON) (71 FR 34428, June 14, 2006 and 71 FR 76603, December 21, 2006, respectively). The main purpose of the risk review for this source category is to evaluate whether the emission limits – the "standards promulgated pursuant to subsection (d)"–should be made more stringent to reduce the risk posed after compliance with the underlying MACT standards.

Allowable emissions are therefore calculated to represent the maximum amount of emissions which the facility can emit in an annual timeframe and still be in compliance with the NESHAP. Assessing the risk at the MACT-allowable level is inherently reasonable since that risk reflects the maximum level facilities could emit and still comply with national emission standards. At noted at proposal, the "actual" emission levels are often lower than the emission levels allowed under the requirements of the current MACT standards. For the Miscellaneous Organic Chemical Manufacturing source category, allowable emissions were assumed to equal actual emissions for the proposed rule (84 FR 69190). This approach was used due to the absence of available data which would allow us to calculate facility-specific allowable emissions for the source category, and we determined that the actual emissions data were reasonable estimates of the MACT-allowable emissions. Therefore, the results of the risk assessment based on allowable emissions were identical to the results presented for the assessment based on actual emissions. For the final rule, we have acquired additional information regarding the actual and allowable emissions for one facility (Lanxess) that had an MIR greater than 100-in-1 million based on EtO emissions. We have calculated the allowable risks separately for this facility in the revised risk assessment for the final rule, based on the additional data provided. See Section IV.A.3 of the preamble the final regarding the EPA's revised risk assessment. Additional information regarding the EPA's assumptions in the risk assessment may be found in the memorandum, *Residual Risk Assessment for the Miscellaneous Organic Chemical Manufacturing Source Category in Support of the 2020 Risk and Technology Review Final Rule*, which is available in the docket for this rulemaking.

With respect to the commenter's concern that the allowable emissions must address emissions that may increase over time, or take into account emission increases from recently issued permits, we took many steps to take into account new facilities and develop an emissions modeling file that was representative of miscellaneous organic chemical manufacturing emissions, including revising data specifically to not underestimate emissions. As described in more detail in the preamble to the proposed rulemaking (84 FR 69198-69190, December 17, 2019), the EPA used many sources of information to develop the HAP emissions inventory used to assess risks for this rulemaking, including, but not limited to, the 2014 NEI, identifying air permits for facilities through state and regional offices, and various pieces of information gathered under our CAA section 114 authority. As also previously explained, the EPA typically has wide latitude in determining the extent of data-gathering necessary to solve a problem and courts generally defer to the agency's decision to proceed on the basis of imperfect scientific information, rather than to "invest the resources to conduct the perfect study." *Sierra Club v. EPA*, 167 F. 3d 658, 662 (DC Cir. 1999)) (If the EPA were required to gather exhaustive data about a problem for which gathering such data is not yet feasible, the agency would be unable to act even if such inaction had potentially significant consequences...[A]n agency must make a judgment in the face of a known risk of unknown degree." *Mexichem Specialty Resins, Inc.*, 787 F.3d. 561 (D.C. Cir. 2015)).

Regarding the comment that the EPA evaluate the effect of the "once in, always in" policy on risk, the EPA is examining the impacts of the change in policy under a separate proposed rulemaking, "Reclassification of Major Sources as Area Sources Under Section 112 of the Clean Air Act" (84 FR 36304, July 26, 2018), and is addressing similar comments on the risk impacts that may occur from potential emission increases for all source categories within that rulemaking. Therefore, the EPA will defer to that rulemaking instead of trying to respond under this rulemaking.

Comment 7: Commenters stated that the risk estimates in the proposal likely significantly overstate the actual risks because they are based on conservative assumptions in both the exposure and toxicity values used to calculate risk. The commenters stated that the 2016 Integrated Risk Information System (IRIS) value results in risk values that overstate the potential risks for EtO emissions. One commenter explained that the IRIS EtO value overstates the risks of low-level exposure even more significantly than the EPA sets forth in the MON preamble discussion. However, the commenter concluded that the EPA properly considered the significant problems with the IRIS value and additional factors in determining that a post-control risk above the presumptive limit of 100-in-1 million is acceptable. The commenter countered that the risk the Agency assumes it is addressing is theoretical and only a result of critically flawed analyses. The commenter expressed that this conservative approach extended to the EPA's acute risk assessment methodology, and stressed that the EPA should not base an unacceptable risk finding on acute risks posed by the source category. Another commenter objected to the use of a value neither created nor mandated by the CAA and which has been used to justify multiple class action lawsuits related to alleged EtO exposure. One commenter suggested the IRIS value for

EtO is provoking fear and economic uncertainty in communities with sterilizing facilities. One commenter explained the IRIS EtO Assessment outcomes are inconsistent with the recommendations that the National Academy of Sciences (NAS) has made to IRIS over the years and also stated that the assessment provoked fear and anger among those who believe their health is in danger. Commenters stated that the EPA should balance public health with risk-risk trade-offs. One commenter stated that the risk estimates result from a scientifically rigorous process and represent the best available science and protect public health.

Other commenters stated that the risk estimates in the proposal are likely underestimates. Commenters requested that the EPA use the best available science (including the 2016 EPA IRIS factor for EtO) to protect community and children's health. Another commenter noted that IRIS risk estimate values are not subject to judicial review, but have led to lawsuits because states are trying to use the IRIS value for regulation.

One commenter expressed support for the IRIS EtO Assessment and argued that the best available science today shows that EtO is 30 times more carcinogenic than we previously thought. Other commenters noted that the EPA uses a risk factor for cancer that is five times weaker than the EPA's own science recommends, and the acute health risk from short-term exposure to EtO near some sources is seven times higher than the EPA's acceptable harm threshold. Many commenters reiterated that the 2016 IRIS Unit Risk Value must be applied. One commenter stated that alternative risk values proposed by other organizations have not been subjected to peer review nor public notice and comment. One commenter added that the EPA has recognized that the Texas Commission on Environmental Quality (TCEQ) document does not meet the EPA's guidelines or principles of scientific integrity, as shown in the EPA Office of Management and Budget (OMB) interagency review communication.

One commenter contended that acute risks posed by some chemicals are underestimated due to the EPA ignoring the most current and valid health information, such as California EPA's (CalEPA) risk exposure levels. One commenter reiterated that the CAA specifically mandates that the EPA set regulatory standards that 'protect the health of sensitive or susceptible individuals or groups'; the commenter urged that exposures to carcinogens, such as EtO, may seem harmless during the exposure, but result in long latency morbidities that are not apparent to individuals for many years, and often occurring long after an individual, or the emitter, has moved elsewhere. One commenter explained that two facilities in Lake County, Illinois use hundreds of tons of EtO per year while claiming to use best available control technology, however, testing has shown the facilities emitting at unacceptably high levels, as proven during shutdowns. One commenter stated that the EPA has not evaluated EtO for acute or chronic toxicity. The commenter reported that the Occupational Safety and Health Administration (OSHA) has recognized the acute exposure to cause respiratory irritation, nausea, shortness of breath, and chronic exposure to reproductive effects. Other commenters urged that the National Academies of Science, EPA's SAB, federal courts, and EPA's own guidelines all direct the EPA to favor stronger health protection for children and other vulnerable populations when there is uncertainty. Commenters declared that the EPA must set standards based on science and cannot cherry pick politically convenient scientific results.

Response: We acknowledge the concerns raised by commenters who feel that the risk results are either overstated or understated. Several commenters have claimed that the EPA has overestimated risks due to conservative assumptions in the exposure and toxicity values, the IRIS value for EtO, and the acute risk assessment. Since the commenters did not mention the specific exposure assumptions they are commenting on, we cannot address them in detail in this response. Likewise, the commenters did not mention specific toxicity value assumptions, so this response is generalized. Based on information received during the public comment period, we are revising the residual risk assessment in the final rule to incorporate additional data that adjusts the emissions estimates for certain facilities to reflect the best available data. These revisions include testing data received in a Section 114 information request that was not incorporated prior to publication of the proposed rule, as well as improved estimates for EtO emissions based on measured values provided by two facilities, Lanxess and Huntsman, whose cancer risks were greater than 100-in-1 million in the risk assessment conducted at proposal. In lieu of these revisions, we believe that the risks estimates are more representative in the final rule.

However, please refer to the *Residual Risk Assessment for the Miscellaneous Organic Chemical Manufacturing Source Category in Support of the 2020 Risk and Technology Review Final Rule*, which is available in the docket for this rulemaking, to review detailed information on how the exposure assessment is conducted. In brief, we strive to strike a balance in our assessments, meaning that while some factors likely lead to overestimates of risk, others likely lead to underestimates of risk. The EPA's cancer unit risk estimates (UREs) for HAP are considered a plausible upper-bound estimate with an appropriate age-dependent adjustment factor; actual potencies could be lower, and some could be as low as zero. The EPA maintains that our chronic dose-response values are reasonable to use in our assessments. The chronic dose-response values prioritized for use in the RTR program, including those derived by the EPA and similar authoritative agencies [*e.g.*, Agency for Toxic Substances and Disease Registry (ATSDR) and CalEPA], follow conceptual consistency with the EPA risk assessment guidelines and receive open, transparent peer and public review, and represent chronic exposure levels that are intended to be health-protective. Those values are derived using an approach that is intended to not underestimate risk in the face of uncertainty and variability. When there are gaps in the available information, uncertainty factors (UFs) are applied to derive reference values that are protective against appreciable risk of deleterious effects. UFs are commonly default values[3] (*e.g.*, factors of 10 or 3) used in the absence of compound-specific data; where data are available, data-derived extrapolation factors may also be developed using compound-specific information. More details about dose-response values used in RTR assessments can be found in the risk assessment

[3] According to the 1994 NRC report *Science and Judgment in Risk Assessment*, "[Default] options are generic approaches, based on general scientific knowledge and policy judgment, that are applied to various elements of the risk-assessment process when the correct scientific model is unknown or uncertain." The 1983 NRC report *Risk Assessment in the Federal Government: Managing the Process* defined *default option* as "the option chosen on the basis of risk assessment policy that appears to be the best choice in the absence of data to the contrary." Therefore, default options are not rules that bind the Agency; rather, the Agency may depart from them in evaluating the risks posed by a specific substance when it believes this to be appropriate. In keeping with the EPA's goal of protecting public health and the environment, default assumptions are used to ensure that risk to chemicals is not underestimated (although defaults are not intended to overtly overestimate risk). See *An Examination of EPA Risk Assessment Principles and Practices*, EPA/100/B-04/001, available at: https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=100045MJ.TXT.

report available in the docket for this rulemaking or in the response to comment 10 of this document.

We also point out that we did not make an unacceptable risk finding based on acute risks; rather, we considered all of the health risk information and factors, including the uncertainties as discussed in the proposal preamble (see 84 FR 69195-69198), and taking into account uncertainties in the 2016 IRIS URE for EtO and concerns raised by commenters. In this instance, as explained in the proposal preamble, for the acute screening analyses, we examined a wider range of available acute health metrics. Considering the range of available acute health metrics, in addition to the conservative (health-protective) assumptions built into the screening assessment, led us to conclude that adverse effects from acute exposure to emissions from this category are not anticipated. Since the commenter did not say which elements of the acute assessment they were addressing, we refer the commenter to the response to comment 12 of this document for more discussion of the acute assessment approach; more detailed information is provided in the memo titled, *Evaluation of the Screening-Level Acute Risk Assessment Results for the Miscellaneous Organic Chemical Manufacturing (MON) Source Category*, available in the docket to this rulemaking. In total, we conclude that the risk assessment for this source category is sufficient to support a decision on the acceptability of risk and ample margin of safety.

Additional commenters have stated that the EPA has underestimated the risks in this assessment for several reasons including those related to acute dose-response values (including for EtO), the scope of the assessment, and the need for the assessment to more adequately protect children. In response to the comment that we should use the best available science to protect communities and children's health, we note that in our risk assessments we do strive to use the best available data and tools. We note that the dose-response values used in this assessment are designed to protect sensitive subgroups, including children. In response to the comment that we did not evaluate EtO for chronic toxicity, we note that this is incorrect. The EPA did include emissions estimates for EtO in the risk assessment for this rulemaking and used the 2016 IRIS URE and chronic noncancer reference concentration (RfC) to assess cancer and chronic noncancer risks, respectively, from exposure to EtO in the proposed rule. Having taken into consideration the concerns raised by commenters, the revised risk assessment also maintains the use of the EPA's 2016 IRIS URE, which is developed to be a health protective value, in re-evaluating risks for the final rule. We disagree with comments that indicate the risks are underestimated; rather, in consideration of the revised inputs to reflect measured emissions and the use of the 2016 IRIS URE, we believe these estimates reflect the best available data. Further, as noted at proposal, the modeled risks due to emissions of EtO are sensitive to the URE applied. For additional information regarding the EPA's use of the 2016 IRIS URE for EtO, please see section 4.0 of this document and Section IV.A.3 of the preamble to the final rule.

With respect to the commenters' statements regarding the acute assessment, the commenter is correct that there are some pollutants for which a California acute Reference Exposure Level (REL) exists that we are not using in the assessment. As explained in the *Residual Risk Assessment for the Miscellaneous Organic Chemical Manufacturing Source Category in Support of the 2020 Risk and Technology Review Final Rule*, based on the EPA's examination of these acute RELs, including the method used in the derivation of the values (*e.g.*, identification of effect on which to base the value and the application of UFs), these values do not meet our criteria for acceptability. More information about acute dose-response values can be found in the risk report or in the response to comment 12 of this document.

Specifically, for short term risks of EtO, one commenter states that the EPA has not evaluated EtO for acute toxicity and another states that "acute health risk from short-term exposure to EtO near some sources is seven times higher than the EPA's acceptable harm threshold." These are incorrect statements. Emissions estimates for EtO were included in the assessment, short-term concentrations were modeled for every census block and polar grid receptor, and acute risks were estimated at these same receptors by comparing the short-term (*i.e.*, 1-hour) concentrations to the acute exposure guideline level two (AEGL-2) value. No comparison [*i.e.*, hazard quotient (HQ)] was greater than or equal to 1, indicating no acute risks from short-term exposure to EtO from sources included in this assessment. In fact, the highest air concentration was 0.01 milligrams per cubic meter (mg/m^3), far less than the AEGL-2 value (81 mg/m^3). Finally, the commenter has confused some of the risk results. The maximum acute HQ for the source category is 6, from acrolein, not EtO. The maximum chronic noncancer HI for the facility-wide assessment is 7, from chlorine and methyl bromide, not EtO. Acute risks are not estimated in the facility-wide assessment. The details on the emissions, dose-response values, and methods can be found in the risk assessment report available in the docket for this rulemaking. The commenter is correct that OSHA has recognized acute exposure can cause certain health effects. In response, OSHA has established limits for occupational exposure based on these effects. The EPA's assessment is not evaluating worker exposure so does not use OSHA limits in its assessment.

Finally, one commenter provided information on two facilities in Lake County, Illinois and one facility in Willowbrook, Illinois. Since none of these facilities are in the Miscellaneous Organic Chemical Manufacturing source category, this comment is not applicable to this rulemaking. We note, however, that all EtO-emitting facilities in Illinois must comply with recent state legislation limiting the emissions of EtO to the ambient air regardless of facility type (*e.g.*, commercial sterilizer or chemical manufacturing facility). For more information about work the EPA and Illinois are doing, please see: https://www.epa.gov/hazardous-air-pollutants-ethylene-oxide/agency-actions-ethylene-oxide and https://www.epa.gov/hazardous-air-pollutants-ethylene-oxide/regional-information-ethylene-oxide.

Comment 8: Commenters contended that the EPA's risk analysis significantly underestimates emissions because the risk analysis is based on an emission inventory that is largely calculated from emission factors and engineering judgment emission factors (due to reliance on the 2014 NEI and 2014 TRI), which: (1) incorporate the erroneous assumption that equipment is operating as designed under normal conditions, and (2) do not account for environmental variables that significantly impact emissions (*e.g.,* wind speed, which can have a substantial impact on emissions from certain sources). The commenter acknowledged that the EPA required some emission testing for the proposed rule, but asserted that this applied to only one source and that the EPA has likely underestimated emissions from units for which it did not request ICR or stack test data.

The commenters stated that the emission inventory sections which rely on the NEI likely underestimate actual and allowable emissions. A commenter pointed to the submitted ICR response which identified that the facility's emissions reported to the NEI did not include emissions for startup, shutdown, and malfunction (SSM) events. The commenter said the SAB recognized the EPA's use of NEI data "may be biased toward underestimation", and cited SAB May 2010 at ii and *Risk and Technology Review (RTR) Risk Assessment Methodologies: For Review by the EPA's Science Advisory Board with Case Studies – MACT I Petroleum Refining Sources and Portland Cement Manufacturing* at 34 (May 7, 2010), EPA-HQ-OAR-2010-0682-0103. A commenter argued that the EPA should explain why the public should have confidence in risk models based on emission inventories from MON sources, contending that it is arbitrary and capricious to rely on a single year of emissions data from the NEI, which is "notoriously unreliable." The commenter argued that, at a minimum, the EPA should supplement its analysis by evaluating emissions data from multiple years, factoring in the risk from malfunctions and other events, and anticipating emission increases that could result from the increased use of existing capacity or recently issued permits that authorize significant expansions of that capacity. The commenter stated that facilities that report to the NEI frequently rely upon unreliable and inaccurate emission factors to report the quantities of specific pollutants they release to the atmosphere. Commenters also provided the example of the EPA's Office of the Inspector General, which has stated that "[t]he heavy use of emission factors in the [national emissions inventory] makes the reliability of the data highly uncertain. Emission factors can result in emissions data of questionable reliability..."[4] A commenter also quoted the EPA's Inspector General flagging the unreliability of the emission factors that can account for as much as 80% of the emissions reported to the inventory.[5] The commenter stated that the same report found that, "EPA's use of poor quality emissions factors information has hampered environmental decisions, resulting in more than one million tons of uncontrolled emissions spanning years, and an increased risk of adverse health effects." The commenter pointed out that, based on based on the EPA's experience developing the RTR and New Source Performance Standards (NSPS) for the Petroleum Refinery Rule adopted in 2015, the EPA knows that the measured benzene concentrations at fencelines have been found to be much higher than the EPA projected based on the EPA's 2011 emissions inventory.

A commenter stated that the tests used to develop emission factors are intentionally conducted on new equipment operating under normal conditions because emission factors are formulas that attempt to estimate long-term average emissions, quoting an EPA document: "[s]ources often are tested more frequently when they are new and when they are believed to be operating properly, and either situation may bias the results."[6] The commenter further pointed out that the EPA itself notes that "[p]arameters that can cause short-term fluctuations in emissions are generally avoided in testing and not taken into account in test evaluation."[7]

[4] Commenter provided the following reference: EPA, Improvements in Air Toxics Emissions Data Needed to Conduct Residual Risk Assessments at 18 (October 31, 2007), https://www.epa.gov/sites/production/files/2015-11/documents/20071031-08-p-0020.pdf (emphasis added).

[5] Commenter provided the following reference: "Evaluation Report: EPA Can Improve Emission Factors Management and Development," Office of Inspector General, US Environmental Protection Agency, Report No. 2006-P-00017, March 22, 2006.

[6] Commenter provided the following reference: EPA, Compilation of Air Pollutant Emission Factors, Vol. 1: Stationary Point and Area Sources at 4-5, https://www.epa.gov/air-emissions-factors-and-quantification/ap-42-compilation-air-emission-factors.

[7] Commenter provided the following reference: *Id.*

Commenters stated that the emissions from SSM events can be significant, as the EPA has acknowledged,[8] and because emission factors incorporate the assumption that equipment is functioning as designed under normal conditions, emissions produced during SSM events are not accurately represented in reported emissions, which does not account for: (1) the emissions that are generated during upset and SSM events, nor (2) the increased emissions that result from poor maintenance of equipment or poor operation. The commenter argued that, in this way, the EPA has failed to assess health risks for the significant emissions produced during SSM upset events or increased emissions that result from poor equipment maintenance, which results in grossly inaccurate, unreliable, and biased emissions data for these sources. The commenter also argued that the EPA likely dramatically underestimated emissions from leaks because the emission standards allow leak repairs to be delayed. The commenter said there is no assessment of how long leaks are delayed for or any acknowledgment that the LDAR provisions currently allow uncontrolled emissions for potentially long periods of time as equipment leaks. The commenter also said the evidence from fenceline monitoring at refineries demonstrates that the EPA is likely underestimating the emissions from MON chemical plants as well – especially for fugitives and equipment leaks. The commenter argued that the agency must adjust the emissions inventory in order to ensure that the inventory better represents reality and reflects actual emissions. The commenter further expressed support for the EPA's rationale for not exempting emissions that result from malfunctions or are released during maintenance, startup, or shutdown, but argued that the EPA should require facilities to take additional steps to minimize the frequency or duration of these events and encourage prompt correction, such as requiring fenceline monitoring for MON sources, similar to the program established for petroleum refineries in the 2015 RTR rule, which would alert facilities when HAP levels at plant boundaries exceeded a certain threshold and trigger follow up action to find and fix the source of the problem. The commenter stated that these emission events can release enormous amounts of pollution and, in some cases, persist for hundreds or even thousands of hours before they are discovered. The commenter provided examples of emission events from MON sources in Texas that released large quantities of benzene or 1,3-butadiene in 2017, 2018, and 2019, and offered additional data upon request.

The commenter further urged that the EPA failed to collect emission data from the other source it deemed highest risk – Huntsman Performance, north of Houston, TX. The commenter contended that the EPA must collect more actual emission data from emission testing through an additional ICR to more sources to ensure that it includes a representative sample of the highest-emitting and most-risk causing sources. The commenter added that the EPA failed to identify other facilities that are subject to the MON and have EtO emissions. The commenter cited a consent decree issued to Newport Biodiesel, *U.S. v. Newport Biodiesel*, Civ. No. 1:16-cv-242 (D. RI June 1, 2016).

Another commenter said that emission factors and use of engineering judgment do not inherently result in underestimated risk. The commenter said emission factors are typically developed based on testing across multiple sources and a range of operating and meteorological conditions. The commenter argued that since many air permits have routine source testing requirements, these tests can provide an indication of how emissions for a given source might evolve over the course of its lifetime. The commenter said that because emission factors are typically averages of all available data of acceptable quality, they are generally assumed to be

[8] Commenter provided the following reference: 84 Fed. Reg. at 69,225.

representative of long-term averages for all facilities in the source category. The commenter argued that although source-specific tests or continuous emission monitoring system(s) (CEMS) can determine the actual emissions from an existing source better than emission factors, source testing and CEMS are subject to their own limitations; specifically, the results are applicable only to the conditions existing at the time of the testing or monitoring. In addition, the commenter said that acute multipliers, coupled with the EPA's conservative approach to estimating acute health risks (*i.e.*, assuming someone is present at the point of maximum impact under reasonable worst-case meteorology), provide a reasonable yet health-protective estimate of acute risks.

The commenter also argued that engineering judgment does not have any inherent bias, so application of engineering judgment is not expected to result in an overestimation or underestimation of emissions or associated risk. The commenter said that engineering judgment can involve relying on one's experience with or knowledge of a particular process or system, such as the process flow, material feedstocks, and capture and control efficiencies; and is typically used when there is insufficient data or information, or when the additional effort/cost to obtain more accurate data is not warranted. The commenter stated that engineering judgment can often involve an evaluation of the representativeness of a given emission factor or source test to the source in question.

Response: The EPA disagrees with the commenters that the HAP emission inventories used in the risk analyses underestimate emissions. We took many steps to develop an emissions modeling file that was representative of miscellaneous organic chemical manufacturing emissions, including revising data specifically to not underestimate emissions. As described in more detail in the preamble to the proposed rulemaking (84 FR 69189, December 17, 2019), the EPA used many sources of information to develop the HAP emissions inventory used to assess risks for this rulemaking, including, but not limited to, the 2014 NEI, air permits and information from state and regional agencies; contacts with facilities to verify process, operating, and emissions information. Following proposal, we have also incorporated updated emissions estimates for certain facilities based on new data received from a CAA section 114 request, the results of which were provided during the public comment period. As courts have regularly upheld, the EPA has wide latitude in determining the extent of data-gathering necessary to solve a problem and courts generally defer to the agency's decision to proceed on the basis of imperfect scientific information, rather than to "invest the resources to conduct the perfect study." *Sierra Club v. EPA*, 167 F. 3d 658, 662 (DC Cir. 1999)) ("If EPA were required to gather exhaustive data about a problem for which gathering such data is not yet feasible, the agency would be unable to act even if such inaction had potentially significant consequences...[A]n agency must make a judgment in the face of a known risk of unknown degree." *Mexichem Specialty Resins, Inc.,* 787 F.3d. 561 (D.C. Cir. 2015)). For this rulemaking we have gathered additional information and made substantial revisions to our emissions modeling inventory used to assess risks as a result of this information. For the final rule, we have relied on stack test data to estimate emissions for certain emissions sources for the Lanxess facility and have also used updated equipment leak emissions data received during the comment period to update emissions for the Lanxess and Huntsman facilities. For other emission sources, while the 2014 NEI v2 was largely the basis of the emissions estimates, these data were reviewed and revised to develop the most representative emissions estimates possible for the source category. In particular, we made a concerted effort to ensure that all emission sources that are part of the Miscellaneous Organic

Chemical Manufacturing source category were represented in the modeled inventory and that any known data gaps were filled such that (1) a facility should have emissions for all emission source types in the source category (provided that the emission source type exists at the facility), and (2) a facility should have emissions for all emission source types in the source category above source-specific emission thresholds. However, we recognize that underlying data inputs may not be representative of all conditions—*e.g.,* wind speed and other meteorological conditions can vary and other assumptions that may not account for short term variability, could result in emissions estimates that, on average, may be appropriate, but could vary on an hourly basis. For these reasons we apply a multiplier of 10 for estimating acute exposure to account for short term variability.

We also disagree with the commenter's assertions regarding emissions during SSM events as they apply to the emission inventories for this source category. If any operating period (including SSM periods) leads to noncompliance with standards, we would not model such noncompliance for purposes of assessing risk in the section 112(f) risk review because the agency estimates risk based on compliance with the established NESHAP. The statute does not require the agency to determine risk based on some assumed level of noncompliance. In addition, the appropriate remedy for noncompliance with a NESHAP is an enforcement action seeking to require the source to come into compliance with the standard. See response to comment 9 of this document for additional explanation of how we consider SSM under CAA section 112(f).

We conclude that the approach taken for constructing the Miscellaneous Organic Chemical Manufacturing source category emission inventory is reasonable and based on the best available information, given that we must account for risk impacts based on both actual emissions and MACT-allowable emissions for all emission sources in the source category. We also note that commenters failed to provide additional emissions information in their comments that the EPA could reasonably use to further improve the risk assessment for this source category. Further information about the development of the emissions inventory used to assess risks for this rulemaking can be found in Appendix 1 of the memorandum, *Residual Risk Assessment for the Miscellaneous Organic Chemical Manufacturing Source Category in Support of the 2020 Risk and Technology Review Final Rule*, which is available in the docket for this rulemaking.

Comment 9: A commenter argued that emissions events in violation of the standards, whether or not they are caused by malfunction events, should be considered as part of risk analyses. The commenter stated that the EPA must assess the health risk from upset emissions, because otherwise it is ignoring part of the residual risk left by the existing emission standards. The commenter also stated that because the EPA is proposing malfunction exemptions for uncontrolled releases from PRDs and flares, it cannot ignore these emissions and resulting risks. The commenter further stated that the EPA assessed chronic and acute risk from "non-routine" or malfunction emissions in the 2015 Petroleum Refinery RTR and recognized significantly higher cancer and acute risk due to such emissions. The commenter argued that, under its own interpretation of CAA section 112(f)(2), the EPA must assess and reduce any remaining 'residual' risk. The commenter urged that there can be no rational basis for recognizing the need to evaluate them in one rule but not another.

The commenter stated that, to create representative factors to assess the health risk from malfunctions, the EPA may use statistical methods and probability factors, adding that the EPA has information available, or can collect information, on major sources' malfunction and violation histories from the reports required under the prior rule. The commenter pointed to data collected on malfunctions from the Lanxess facility, and recommended the EPA identify similar data, including flaring data, to determine the risks from such emissions.

On the contrary, another commenter argued short-term fluctuations in emissions, such as those from SSM events, are not expected to have a material impact on chronic health risks, and the EPA's approach for evaluating acute health risks already accounts for reasonable variation. The commenter stated that the EPA calculates cancer risk and chronic noncancer risk assuming individuals are exposed over a 70 year and 1 year period, respectively; and since these chronic risk metrics are calculated over such a long-term duration, short-term fluctuations in emissions are not expected to have a material impact on these risks. The commenter provided a hypothetical example stating that if a facility subject to the MON is assumed to have a malfunction on a stack that causes the control device (assumed 98% control) to fail for up to 1 hour (which is the median amount of time for the non-routine PRD and flare events evaluated by the EPA under the Petroleum Refinery Sector Rule RTR), then the non-routine emissions are estimated to increase the annual emissions by approximately 0.6%. The commenter said that assuming that stack and its associated pollutants are the only risk drivers (which is an unlikely and conservative assumption), the maximum cancer risk and target organ-specific hazard index (TOSHI) are also expected to increase by 0.6%, which is negligible. The commenter also said in contrast to cancer and chronic noncancer risk, the EPA evaluates acute risk over a short-term period (*i.e.*, 1-hour); and as a result, short-term fluctuations in emissions can materially impact the acute risk calculation. The commenter said to account for these fluctuations, the EPA has included acute multipliers, which range from 2 to 10, depending on the type of source; and the use of acute multipliers combined with the EPA's very conservative approach to estimating acute health risks, helps to ensure that residual risks from this source category are adequately captured.

Response: We disagree with the comment that emissions events in violation of the standards, whether or not they are caused by malfunction events, should be considered as part of risk analyses. The EPA interprets CAA section 112 as not requiring emissions that occur during periods of malfunction to be factored into development of CAA section 112 standards, and this reading has been upheld as reasonable by the U.S. Court of Appeals for the District of Columbia in *U.S. Sugar Corporation v. EPA*, 830 F.3d 579, 606–10 (D. C. Cir. 2016). Consistent with previous risk assessments, the EPA considered both allowable and actual emissions in assessing chronic inhalation exposure and risk under section 112(f)(2) for this source category (see, *e.g.*, the National Emission Standards for Coke Oven Batteries [70 FR 19998-19999, April 15, 2005] and in the proposed and final NESHAP from the SOCMI, or HON (71 FR 34428, June 14, 2006 and 71 FR 76603, December 21, 2006, respectively). The final rule is designed to require sources to comply during all periods of operation. As explained in the preamble to the proposed rule, it is not generally possible to model malfunctions in the risk assessment, because by nature they are infrequent and unpredictable, and we generally have insufficient information in order to model these types of events. The main purpose of the risk review for this source category is to evaluate whether the emission limits – the "standards promulgated pursuant to subsection (d)", not the non-compliance with those standards –should be made more stringent to reduce the risk posed after compliance with the underlying MACT standards. To the extent that a source is violating an underlying MACT standard, it is unlikely that tightening of the emission standard as a result of the residual risk review will avoid or mitigate such violations. In other words, a source that is violating a MACT emissions standard promulgated under section 112(d) would not be any more likely to be able to avoid such violations and comply with a different presumably more stringent standard promulgated under section 112(f). Such events are violations and subject to enforcement by the EPA, the states, or citizens, and an action for injunctive relief is the most effective means to address violations whether or not they are caused by malfunctions if an emissions event poses a significant health or environmental risk.

Regarding the comment that the EPA assessed "significantly higher" chronic and acute risk from "non-routine" or malfunction emissions in the 2015 Petroleum Refinery Sector Rule, we disagree. The EPA notes that the final Petroleum Refinery Sector Rule included a conservative, screening-level assessment (not a refined risk assessment) performed using available ICR data to see the impacts of certain non-routine emissions events from PRDs and flares. That assessment conservatively combined routine and non-routine emissions merely to define an upper bound of combined risk, and the EPA ultimately concluded that risks were not significantly different, given the uncertainties and conservative nature of the screening. For this rulemaking, the EPA did not include emission estimates from non-routine PRD or flare events in the emissions inventory that was used to assess residual risk in this RTR rulemaking. We have found that non-routine emissions from PRDs and flares in similar source categories, including ethylene production facilities and petroleum refineries, have not significantly affected risks (see, *e.g.*, 85 FR 75187-75188, December 1, 2015). Because we lacked data for a quantitative analysis of these types of non-routine emission events from MON sources, we reviewed our knowledge of these emissions events from similar source categories and concluded that modeling emissions from these events would not significantly affect the risk assessment findings for MON sources. We additionally did not include emissions estimates from other non-routine or malfunction events in the emissions inventory, for the reasons stated above.

However, as previously explained, we took many steps to develop an emissions modeling file that was representative of miscellaneous organic chemical manufacturing emissions, including revising data specifically to not underestimate emissions. As described in more detail in the preamble to the proposed rulemaking (84 FR 69182, December 17, 2019), the EPA used many sources of information to develop the HAP emissions inventory used to assess risks for this rulemaking, including, but not limited to, the 2014 NEI, Title V permits, and information gathered under our CAA section 114 authority. Further, we agree with the comment that the EPA's risk assessment approach, which uses conservative tools and assumptions, evaluates cancer risk, chronic noncancer risk, and acute risks to appropriately account for short-term fluctuations in emissions, and ensures that our decisions are health and environmentally protective. As also previously explained, the EPA typically has wide latitude in determining the extent of data-gathering necessary to solve a problem and courts generally defer to the agency's decision to proceed on the basis of imperfect scientific information, rather than to "invest the resources to conduct the perfect study." *Sierra Club v. EPA*, 167 F. 3d 658, 662 (DC Cir. 1999) (If the EPA were required to gather exhaustive data about a problem for which gathering such data is not yet feasible, the agency would be unable to act even if such inaction had potentially significant consequences...[A]n agency must make a judgment in the face of a known risk of unknown degree." *Mexichem Specialty Resins, Inc.*, 787 F.3d. 561 (D.C. Cir. 2015)).

Comment 10: Commenters asserted that the EPA must recognize that chronic (non-cancer) risk-causing pollutants have no safe level of exposure, noting that the NAS recommends that cancer and chronic non-cancer risk assessment use the same approach in order to address the fact that very low levels of non-carcinogen exposures can pose health risks. The commenters noted that the use of reference doses (RfDs) for dose-response risk assessments of chronic non-cancer health effects may significantly underestimate risk. A commenter explained this is because the NAS defines the RfD or RfC as a dose "likely to be without an appreciable risk of deleterious effects" over a lifetime of exposure.

The commenter identified what they see as the problems with traditional toxicology as the basis for risk assessments, including the presumption that health effects are related to dose, and that a dose can be found for virtually all chemicals where no effect is found. The commenter claimed that the greatest public health threat of chemicals is for fetal exposure, meaning that the dose may be less important than the timing, and furthermore that for some toxic chemicals, the clinical effect can actually increase as the chemical concentration decreases, meaning that there is no safe level of exposure. For example, the commenter noted that a 2009 statement by the Endocrine Society stated that "[e]ven infinitesimally low levels of exposure, indeed, any level of exposure at all, may cause endocrine or reproductive abnormalities, particularly if exposure occurs during a critical developmental window. Surprisingly, low doses may even exert more potent effects than higher doses."[9] The commenter further stated that patient exposure to toxic environmental chemicals and other stressors is ubiquitous, and preconception and prenatal exposure to toxic environmental agents can have a profound and lasting effect on reproductive health across the life course. The commenter asserted that prenatal exposure to certain chemicals has been documented to increase the risk of cancer in childhood. The commenter also noted a recent joint public statement by the American College of Obstetricians and Gynecologists and the American Society for Reproductive Medicine addressed the extraordinary vulnerability of in utero development,[10] and pointed to a review from a recent panel of national endocrine disruptor specialists that noted "[for] every chemical that we looked at that we could find a low-dose cutoff, if it had been studied at low doses it had an effect at low doses."[11]

The commenter further identified a report published in The New England Journal of Medicine, regarding the toxicity of volatilized compounds from oil, referencing the following statements illustrating the risk from small exposures to toxic agents: "Mutagenic effects theoretically can result from a single molecular deoxyribonucleic acid (DNA) alteration. Regulatory prudence has led to the use of 'one-hit models' for mutagenic end points, particularly cancer, in which every molecule of a carcinogen is presumed to pose a risk."; and "[p]regnant

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[9] Commenter provided the following reference: The Endocrine Society, Endocrine-Disrupting Chemicals at 4 (June 2009),https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2726844/.

[10] Commenter provided the following reference: American College of Obstetricians and Gynecologists Committee on Health Care for Underserved Women, American Society for Reproductive Medicine Practice Committee, Committee Opinion No. 575, Exposure to Toxic Environmental Agents (Oct. 2013, reaffirmed 2018), http://www.acog.org/Resources-And-Publications/CommitteeOpinions/Committee-on-Health-Care-for-Underserved-Women/Exposure-to-Toxic-Environmental-Agents.

[11] Commenter provided the following reference: Vandenberg, L., Low-Dose Effects of Endocrine Disruptors, with Laura Vandenberg, Environmental Health Perspectives (June 2012), https://ehp.niehs.nih.gov/trp060112/; Vandenberg L., et al., Hormones and Endocrine-Disrupting Chemicals: Low-Dose Effects and Nonmonotonic Dose Responses, 33 Endocrine Reviews 378 (June 1, 2012).

women should particularly avoid dermal contact with oil and should avoid areas with visible oil contamination or odors."[12]

Response: The EPA does not agree with the comment and maintains that our chronic dose-response values are reasonable. Chronic noncancer dose-response values used in the RTR program, including those derived by the EPA and similar authoritative agencies (*e.g.*, ATSDR and CalEPA), represent chronic exposure levels that are intended to be health-protective. Those values are derived using an approach that is intended to not underestimate risk in the face of uncertainty and variability. When there are gaps in the available information, UFs are applied to derive reference values that are protective against appreciable risk of deleterious effects. UFs are commonly default values[13] (*e.g.*, factors of 10 or 3) used in the absence of compound-specific data; where data are available, data-derived extrapolation factors may also be developed using compound-specific information. When data are limited, more assumptions are needed, and more default factors are used. Thus, there may be a greater tendency to overestimate risk—in the sense that further study might support development of reference values that are higher (*i.e.*, less potent) because fewer default assumptions are needed. For some pollutants, however, there is a slight possibility that risks could be underestimated. Where data indicate a potential vulnerability of a specific life stage, the EPA includes this information in its derivation of cancer and noncancer dose-response values. In some instances, data are not available for a robust characterization of risk during a specific life stage and, in that case, potential susceptibilities are accounted for by applying the appropriate UFs.

The EPA agrees with the NAS[14] that the recommendations on harmonization of cancer and non-cancer approaches are important issues in risk assessment and the EPA incorporates NAS recommendations as feasible. The NAS has agreed with the EPA, specifically on the derivation methodology of RfCs and RfDs, that the available scientific information does not always allow for assessment derivation issues to be fully considered, and it has reviewed and supported the approaches currently used in the derivation of the RfCs and RfDs. The NAS has also recognized that many of the recommended changes for the IRIS Program will need to be incorporated over a number of years and further recommend continuation of the development of assessments as the recommendations are implemented (*i.e.*, the process should not be halted until all recommendations can be enacted). As such, improvements will be made over time and

[12] Commenter provided the following reference: Goldstein B., et al., The Gulf Oil Spill, 364 New England Journal of Medicine 1334, 1335, 1339 (Apr. 7, 2011).

[13] According to the 1994 NRC report *Science and Judgment in Risk Assessment*, "[Default] options are generic approaches, based on general scientific knowledge and policy judgment, that are applied to various elements of the risk-assessment process when the correct scientific model is unknown or uncertain." The 1983 NRC report *Risk Assessment in the Federal Government: Managing the Process* defined *default option* as "the option chosen on the basis of risk assessment policy that appears to be the best choice in the absence of data to the contrary." Therefore, default options are not rules that bind the Agency; rather, the Agency may depart from them in evaluating the risks posed by a specific substance when it believes this to be appropriate. In keeping with the EPA's goal of protecting public health and the environment, default assumptions are used to ensure that risk to chemicals is not underestimated (although defaults are not intended to overtly overestimate risk). See *An Examination of EPA Risk Assessment Principles and Practices*, EPA/100/B-04/001, available at: https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=100045MJ.TXT.

[14] National Academy of Sciences, 1994. *National Research Council. Science and Judgement in Risk Assessment*. Washington, DC: National Academy Press.

existing assessments will need to be used in the interim. Further, the EPA has a legal obligation to proceed with regulatory action based on the best available data and tools. Because the EPA uses the best available data and tools, applies conservative assumptions, and takes into account uncertainties, it tends to err on the side of overestimating risk in determining whether risk is acceptable.

The commenter stated that there are problems associated with the traditional toxicology presumption that health effects are related to dose; however, the commenter does not provide any information to consider an alternative paradigm to risk assessment that would not include an analysis of dose response relationships in the risk assessment process.

The commenter provided a reference to support the statement that there is no safe level of exposure and that, for fetal exposure, the dose may be less important than the timing, and furthermore that for some toxic chemicals the clinical effect can actually increase as the chemical concentration decreases.[15] The review article on hormones and endocrine-disrupting chemicals focuses on a broad category of chemicals that appear to act at low concentrations. The EPA disagrees with the interpretation of the commenter on the referenced review. First, the authors of the review article do not conclude that there is no safe level of exposure for chemicals in general, not even for endocrine disruptors. The EPA also disagrees with the comment that clinical effect increases as dose of the chemical decreases; rather, the authors of the review conclude that the effect of low doses of hormones and endocrine-disrupting chemicals cannot be predicted by effects observed at high doses, and they encourage investigators to make changes in chemical testing approaches to identify potential endocrine disruptors. The EPA concludes that none of the information or conclusions in the review article conflicts with the determinations in this regulatory action.

Comment 11: Commenters argued that as part of the residual risk assessment for each source category, the EPA unlawfully and arbitrarily failed to assess the health risks for "the individual most exposed to emissions" from MON facilities, as CAA section 112(f)(2) requires. One commenter stated that the EPA has chosen an arbitrary point, a census-block centroid, without demonstrating that this is equivalent to the person "most exposed." The commenter expressed concern that the EPA's method is not scientific or lawful, would not be reproducible, and that application would vary should a different risk assessor conduct modeling on an individual facility. The commenter argued that the EPA must have verification metrics in place to ensure that it assesses health risks based on the actual or likely locations of specific receptors representative of those living near the facility and/or who are the people most exposed to a source or source category. The commenter pointed out that for acute risk the EPA actually assessed what it deemed "the point of highest off-site exposure," instead of using the centroid.[16] The commenter argued that the EPA cannot justify considering the point of highest exposure for the most-exposed individual for acute risk, but not for chronic risk, including cancer. Another commenter stated that the EPA's reliance on the census-block centroid dilutes the effect of sources' emissions by estimating the impact at the centroid instead of at the property line or wherever the "maximum exposed individual is". The commenter stated that using the centroid is not necessarily accurate in considering the predicted impacts from the location of a source as

[15] Endocrine Society, Scientific Statements, https://www.endocrine.org/endocrine-press/scientific-statements.

[16] Commenter provided the following reference: 84 Fed. Reg. at 69,192.

communities develop. The commenter recommended the EPA use the MIR, irrespective of its location in the census block, rather than the predicted chronic exposure at the centroid.

Response: In a national-scale assessment of lifetime inhalation exposures and health risks from facilities in a source category, it is appropriate to identify exposure locations where it may be reasonably expected that an individual will spend a majority of his or her lifetime. In determining chronic risks, it is appropriate to start with census block information to locate where people actually reside and to use those census block locations to estimate exposures and risks to individuals living near such facilities. Census blocks are the finest resolution available as part of the nationwide population data (as developed by the U.S. Census Bureau); on average, a census block is comprised of approximately 50 people and about 20 households. In the EPA RTR risk assessments, the geographic centroid of each census block containing at least one person is used as a default to represent the location where all the people in that census block live. The census block centroid with the highest estimated exposure then becomes the location of maximum exposure, and the entire population of that census block is assumed to experience the MIR. In its 2010 peer review of the methodologies used to estimate risks as part of the RTR rulemaking efforts, the EPA's SAB endorsed this approach.[17]

However, in some cases, the census block centroid may not accurately indicate the actual locations of residences close to the facilities in question. If, for example, actual residence locations are closer to or farther from facility emission points than the census block centroid, this may result in an overestimate or underestimate of the actual annual concentrations. The larger the census block is, the greater the potential for the census block centroid to not represent actual residential locations. In addition, when a census block centroid is located on the facility property, it is not representative of residential locations, and may result in an overestimate of the actual annual concentrations.

In 2017, we requested SAB's review of updated RTR screening methodologies and several specific enhancements to our chronic inhalation risk assessment as described in the technical report, "Screening Methodologies to Support Risk and Technology Reviews (RTR): A Case Study Analysis."[18] Since the 2010 SAB review, we developed a census block receptor tool that automatically identifies census block centroids near facilities in a source category, including those that might be located on facility property and census blocks that are very large. Specifically, the receptor tool will identify all census block centroids around a facility (*e.g.*, 1,000 meters) and further flag any census block centroid 1) that is within a set distance (*e.g.*, 300 meters) of the facility emission points as being potentially on facility property or 2) as a large block if it has an area greater than 3 square kilometers. We asked SAB, "Is the census block

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[17] U.S. Environmental Protection Agency, Office of the Administrator Science Advisory Board. Review of EPA's draft entitled, "Risk and Technology Review (RTR) Risk Assessment Methodologies: For Review by the EPA's Science Advisory Board with Case Studies – MACT I Petroleum Refining Sources and Portland Cement Manufacturing." EPA-SAB-10-007. May 7, 2010. http://yosemite.epa.gov/sab/sabproduct.nsf/4AB3966E263D943A8525771F00668381/$File/EPA-SAB-10-007-unsigned.pdf

[18] Available at: https://yosemite.epa.gov/sab/sabproduct.nsf/LookupWebProjectsCurrentBOARD/2708C2DBC839301685258060005C87E8/$File/Screening+Methodologies+to+Support+RTRs_A+Case+Study+Analysis.pdf

receptor check tool an appropriate method for identifying and adjusting model receptors to ensure the receptors are representative of residential locations?"

SAB provided specific comments on the census block receptor check tool in their September 13, 2018 final report to the EPA.[19] The SAB comments are summarized below along with our response.

1) SAB Comment:

"*Overall, the SAB believes that methods predominantly relying on census block centroid location – including cases where the enhancement tool is applied – can in some cases be reliable, but additional effort is needed to verify that receptors are representative of residential areas near the facilities. One approach would be to review satellite imagery within 1km of all facilities, not just those in identified large census blocks, and manually add receptors as needed to appropriately represent population centers. However, any manual placement would be subjective and not reproducible between risk assessors.*"

EPA Response: We appreciate SAB's acknowledgement that census block centroids can be an appropriate foundation for identifying residential locations near facilities. As SAB recommends, we do review aerial imagery around every facility to identify the residences closest to the facility. We use the tool to highlight large blocks (typically within 1 km), but we review aerial imagery for every facility. User receptors are added if there is not already a census block centroid or other receptor near the closest residences. There is some subjectivity in this review, but it is unlikely to cause significant differences in results.

2) SAB Comment:

"The SAB recommends the Agency evaluate an alternative approach that uses the same 2011 National Land Cover data (NLCD) used for the Urban/Rural dispersion selection enhancement tool to automate the process of identifying population centers. The NLCD data is available at a high spatial resolution (30 m) and receptors could be placed in areas of developed land use classes 22-24. Aerial photos (e.g., Google Earth) can then be used to check that the land use data population receptor placement is appropriate."

EPA Response: The developed land use class in NLCD does not specify residential versus commercial or industrial, therefore placing receptors in such areas would not be a good representation of residences. Using aerial imagery to review receptors placed in every area of class 22-24 land use to confirm their validity would be onerous and still be subjective.

3) SAB Comment:

[19] Available at:
https://yosemite.epa.gov/sab/sabproduct.nsf/LookupWebProjectsCurrentBOARD/7A84AADF3F2FE04A85258307005F7D70/$File/EPA-SAB-18-004+.pdf

"If the EPA prefers to continue using census block centroids as nearby exposure receptors, then the SAB suggests additional enhancements to make the tool less ad hoc. Facilities are better represented as polygons than points. Satellite imagery can be used to delineate the facility area and then GIS could easily exclude receptor points that were located within that area."

<u>EPA Response</u>: We agree that having polygons that represent facility boundaries would allow the use of GIS to exclude block centroids within the polygons. However, we rarely, if ever, have such data for facilities, and while aerial imagery can be used to determine where buildings are, it cannot be used to determine all property owned by a facility. Also, facility boundary data is not useful for determining the location of residences in surrounding blocks.

For this source category, we reviewed aerial images around every facility to determine whether the census block centroids were located on facility property and whether census block centroid locations were representative of residential locations. Census blocks that were determined to be on facility property were relocated offsite to a location central to the residences in the block. If a census block centroid was not representative of the residential locations within that block, we relocated it to better represent them and/or we added receptors for residences nearer to the facility than the centroid. For this source category, we moved 147 census block centroids to better represent residential locations, removed 15 census blocks that had no apparent population, and added 226 additional user receptors to better represent residential locations near facilities. See Appendix 4 of the risk assessment document for information on these changes.

The EPA disagrees with the comment that cancer and other chronic health effects should be analyzed in manner similar to acute health effects. As discussed in the risk document, to assess the potential impacts from short-term exposures, the EPA estimates reasonable worst-case 1-hour concentrations at the census block centroids and at points closer to the facility (using either the polar receptors or user-specified receptors) that represent locations where people may be present for short periods. The EPA notes that this differs from the estimation of ambient concentrations for evaluating long-term exposures, which the EPA performs only for occupied census blocks (where there are residences such that long-term exposure is possible).

Comment 12: Commenters stated that the EPA's risk assessment underestimates acute risks by using inappropriate values [*i.e.,* the AEGLs and Emergency Response Planning Guidelines (ERPGs)], which are designed only for emergency exposure response. One commenter pointed to a December 2002 EPA document[20] which identifies the AEGL as "once-in-a-lifetime" short-term exposures. The commenter urged that unlike the RfCs for chronic exposures, the AEGLs and ERPGs do not include adequate safety and UFs and cannot be relied upon to protect the public from adverse effects of exposure.

Another commenter argued that the use of AEGLs and ERPGs values to assess the potential acute risk from EtO exposure is misleading and not protective of public health. The commenter stated that toxicological information demonstrates short-term, repeated high

[20] Commenter referenced the following document: "A Review of the Reference Dose and Reference Concentration Processes."

exposures to EtO could lead to serious adverse reproductive effects in women of childbearing age, and the commenter suggested that the EPA instead use the most restrictive available short-term exposure values for which no adverse non-cancer health effects are expected, *i.e.*, the intermediate minimum risk level of 162 micrograms per cubic meter ($\mu g/m^3$) developed by the Agency for Toxics Substances and Disease Registry. The commenter contended that this value would be more protective than the one-hour AEGL-2 which was used as the one-hour acute benchmark in the residual risk assessment. The commenter further stated that the EPA's 1-hour AEGL-2 value (81 mg/m3) is nine times higher than the permissible 15-minute National Institute of Occupational Safety and Health and California Division of Occupational Safety and Health occupational ceiling values (9 mg/m3), so is not protective of public health.

One commenter stated that the EPA's risk assessment underestimates acute risks for benzene and 1,3-butadiene by using inappropriate values (*i.e.*, the ERPG-1 values of 160 mg/m3 and 22 mg/m3, respectively) and by ignoring any acute risk from nickel. Two commenters stated that benzene in particular is grossly underestimated. The commenter stated these are emergency-based values not appropriate for a regulatory "ample margin of safety" rulemaking under the CAA. Commenters recommended that the EPA use the California RELs for acute risk assessment. A commenter urged that the current values underestimate risks from benzene, 1,3-butadiene, and nickel that the EPA would find if it used the current Office of Environmental Health Hazard Assessment (OEHHA) REL, as well as ethyl benzene, polycyclic organic matter, and other pollutants.

With respect to benzene, the commenter explained that in recent health risk assessments, the EPA has used California OEHHA's REL for benzene, of 1.3 mg/m3[21], to assess acute risk, and that in 2014, OEHHA updated that value from 1.3 mg/m3 to 0.027 mg/m3. The commenter also pointed to OEHHA acute risk REL values for nickel, carbonyl sulfide, and 1,3-butadiene[22] which the EPA has recognized in its Table of "Acute Dose-Response Values for Screening Risk Assessments."[23] The commenter stated that the EPA has provided no possible justification for how or why it could choose to ignore the OEHHA values in view of longstanding policy. The commenter further noted that that the values the EPA is using to consider how much protection it will consider for community residents for benzene is 30 times less protective than the value OSHA uses to address health and safety threats for workers. The commenter stated in addition to underestimating acute non-cancer health hazards, the EPA is "willingly and knowingly exposing minority and low-income communities to increased and unnecessary harm" from short-term benzene exposure, including adverse neurotoxic effects. The commenter further urged that the EPA cannot justify using the ERPG-1 for 1,3-butadiene. On the contrary, another commenter said the California OEHHA's REL is not a relevant reference value to use for 1,3-butadiene to assess acute risks in the MON, because the basis of the health endpoint and the applied

[21] Commenter provided the following reference: See, *e.g.*, Refineries Risk Assessment at 31 tbl.2.6-3 (Sept. 2015), https://www regulations.gov/document?D=EPA-HQ-OAR-2010-0682-0800.

[22] Commenter provided the following references: https://oehha.ca.gov/chemicals/nickel-and-nickel-compounds; https://oehha.ca.gov/media/downloads/crnr/032312nirelfinal.pdf ; https://oehha.ca.gov/air/chemicals/carbonyl-sulfide; and OEHHA, Notice of Adoption of Revised Ref. Exposure Levels for 1,3-butadiene (July 25, 2013), https://oehha.ca.gov/air/crnr/notice-adoption-revised-reference-exposure-levels-13-butadiene.

[23] Commenter provided the following reference: EPA, Acute Dose-Response Values for Screening Risk Assessments (June 18, 2018), https://www.epa.gov/sites/production/files/2014-05/documents/table2.pdf.

methodology resulted in an overly conservative estimate of risk, which is not supported by other animal or human studies.

Regarding carbonyl sulfide, one commenter said they evaluated whether using the CalEPA acute REL would yield acute risk exceedances and found that even using the acute CalEPA REL for carbonyl sulfide, none of the six facilities with reported emissions have acute risk exceedances (*i.e.,* HQs > 1). The commenter said the EPA selected the appropriate acute reference values to assess acute risks from carbonyl sulfide emissions, but even if the more conservative REL is used, no facilities would have excess acute risks.

A commenter stated levels defined for "once-in-a-lifetime, short-term exposures" and "emergency planning" for "single exposures" to chemical releases or accidents are not appropriate tools to use to measure the acceptability of acute risks over a lifetime from one or more potential exposures. The commenter further stated that the SAB has approved use of the RELs but not the EPRGs, quoting, "The Panel has some concern with the use of the Acute Exposure Guidelines Limits (AEGLs) and Emergency Response Planning Guidelines (ERPGs)…. AEGL-2 and ERPG2 values should never be used in residual risk assessments because they represent levels that if exceeded could cause serious or irreversible health effects." SAB May 2010 at 6, *supra* n.93. The commenter also noted that the D.C. Circuit recently held, in reviewing an EPA risk assessment pursuant to section 112(d)(4), that the EPA had not sufficiently justified refusing to use the most up to date OEHHA reference values. *See, e.g., Sierra Club v. EPA*, 895 F.3d 1, 11-12 (D.C. Cir. 2018). The commenter contended that the EPA must use the more up to date OEHHA values in its risk assessments and update the assessments accordingly.

The commenter asserted that in regard to nickel, the EPA stated only that "based on an in-depth examination of the available acute value for nickel [California EPA's acute (1-hour REL], we have concluded that this value is not appropriate to use…." and a conclusory statement that this "takes into account: the effect on which the acute REL is based; aspects of the methodology used in its derivation; and how this assessment stands in comparison to the ATSDR toxicological assessment, which considered the broader nickel health effects database." [24] The commenter stressed that refusing to use the REL for nickel is also unlawful and arbitrary because this means the EPA will fail to quantify in any way the acute risk it knows nickel exposure causes. On the contrary, another commenter said the REL is not appropriate. The commenter said that although application of this REL would result in 6 of 39 facilities with nickel emissions that have HQs >1 in the MON risk assessment, the bioavailability of the nickel ion and particle size are important contributors to human health risks, and thresholds for the toxicity of nickel have been identified below which the toxicity associated with inhalation exposures may not be observed.[25] The commenter said that because toxicity depends on solubility and particle size, it is unclear if the facility emissions would result in any adverse effects as there is little data on the disposition of the nickel particle species from facility emissions. The commenter also said that the REL is not appropriate because of the selection of a health endpoint that is likely not relevant

[24] Commenter provided the following reference: MON Draft RRA at 40 tbl. 3.1-1 note g.

[25] Commenter provided the following reference: Buxton, S.; Garman, E.; Heim, K.E.; Lyons-Darden, T.; Schlekat, C.E.; Taylor, M.D.; Oller, A.R. Concise Review of Nickel Human Health Toxicology and Ecotoxicology. Inorganics 2019, 7, 89.

to intermittent acute exposures, and was calculated using highly conservative methodology; and additional uncertainty in the selected REL is due to the significant differential toxicity of different nickel species.

Furthermore, a commenter opined that the EPA estimated the peak acute emissions from the regulated units using emissions multipliers that are lower than its default of 10 – specifically, factors of 2 and ranging from the emission process. The commenter stated the ratio of mean to peak does not show how likely it is that emissions are not much higher during certain periods and further stated that emissions vary depending on whether the emissions from the sources are controlled by a pollution control device and whether the processes involved are continuous or batch processes. The commenter stated that the EPA provides no reasoned evaluation of the data or how its lower multiplier, as opposed to its default of 10 for all, or a much higher multiplier, is the most accurate estimate. The commenter noted that Appendix 1 of the MON Risk Assessment includes only a table (Table 2) that includes conclusory, unsupported statements regarding why the EPA is using factors much lower than 10, or only 10, for certain acute emissions estimates. The commenter stated that the EPA is aware from case studies (*e.g.*, Hurricane Harvey) that emissions can be far higher than just two times more, during and after a serious hurricane. The commenter questioned the EPA's rationale for other factors, noting that:

1. The EPA does not explain why it is applying the default for transfer racks without saying why it should not use a higher factor,
2. The EPA states that for process vents "typical source variability would be minimal given their continuous nature" – when, as its own rule proposal shows, malfunctions can increase emissions by 100 times.

Response: The dose-response values the EPA considers for acute screening analyses depend on which acute dose-response values are available for the HAP emitted. The EPA generally considers the available acute RELs, AEGLs, and ERPGs to screen for potential acute health hazards. For four HAP, 1,3-butadiene, benzene, carbonyl sulfide, and nickel, the EPA does not use acute RELs. Based on examination of these acute RELs, including the methodology used in the derivation of the values (*e.g.*, including the identification of effect on which to base the value and the application of UFs), the EPA has decided not to use the acute RELs for these HAP for the EPA's RTR rules.

It is often the case that some of the 1-hour acute dose-response values are not available for a given HAP. In these instances, the EPA describes the potential acute health hazard in relation to the acute dose-response values that are available. Importantly, when interpreting the results, the EPA is careful to identify the dose-response value being used and consider the potential health implications associated with any specific dose-response value being exceeded.

For the acute screening assessments, the EPA uses the health protective assumptions that every process releases its peak hourly emissions at the same hour, that the reasonable worst-case dispersion conditions occur at that same hour, and that an individual is present at the location of maximum HAP concentration for that hour. In addition, an AEGL-1 is established to protect the general population, including susceptible individuals, from discomfort, irritation, or certain asymptomatic nonsensory effects – effects that are not disabling and are transient and reversible. An ERPG-1 is the maximum airborne concentration below which nearly all individuals could be exposed for up to 1 hour without experiencing more than mild, transient health effects or without perceiving an objectionable odor. ERPGs are developed by the American Industrial Hygiene Association.[26] The EPA only uses the AEGLs and ERPGs for acute 1-hour inhalation screening assessments. The EPA does not use AEGLs and ERPGs to assess repeat exposures over a lifetime or long-term exposures.

We disagree with the commenter that we have not provided a reasoned evaluation of the process-specific multipliers used to estimate acute risks. The multipliers ranged from a factor of 2 to 10, with emissions from transfer racks, process vent flares, and unknown processes having the highest hourly peak emissions at a factor of 10 times the annual average. Table 2 of Appendix 1 to the risk assessment document provides a detailed description of how the maximum hourly emissions were developed for each process for the MON source category. For transfer racks, we noted that this factor is very site specific and depends on a number of factors including type of loading operation (*e.g.*, submerged fill, splash loading, etc.), maximum hourly pumping rates, hours of operation for loading operations, and actual conditions (*e.g.*, temperature and pressure) of loading operation. Therefore, the default factor of 10 was used. The Agency generally assumes the 1-hourr emissions rate for any emission point could be 10 times higher than its average hourly emissions in situations where the EPA lacks sufficient information on hourly emissions for given emissions sources. As noted in Appendix 1 to the risk assessment document, the basis for this assumption was derived from an analysis of short-term release information collected from a Texas study of facilities in a four-county area (Harris, Galveston, Chambers, and Brazoria Counties, Texas) which was then compared against routine emissions rates for an entire facility, which concluded that the ratio of hourly emissions from any single release event to the average annual VOC release rate for an entire facility was seldom greater than a factor of 10.

Regarding the commenter's concerns about the effect of malfunctions on variability for process vents, we do not agree that emissions events in violation of the standards, whether or not they are caused by malfunction events, should be considered as part of risk analyses. See the response to comment 9 of this document for the EPA's consideration of non-routine or malfunction emissions in the risk assessment.

Comment 13: A commenter pointed out that the EPA states that it performed *no* risk assessment for some HAPs emitted. The commenter contended that the MON fails to account for harms caused by at least 20 additional HAPs that the EPA has no dose response values for and therefore treats their risks as zero. On the contrary, another commenter said it is common risk assessment practice to assess risk only for chemicals that have RfCs because these chemicals have available toxicity information that inform the RfC, and are also prioritized based on their toxicity; and it is not standard practice to use alternative default values that would introduce a large amount of uncertainty into the risk assessment. The commenter said of the 187 CAA-listed HAPs, 162 are emitted from MON-applicable facilities; and of the 162 HAPs, 134 have chronic reference values that the EPA used in the risk assessment (about 83% of the total HAPs). The commenter also said that a total of 66 HAPs are classified as known probable or possible carcinogens, and 110 have noncancer chronic reference values; and there are fewer HAPs (84 of the 162 HAPs) for which acute reference values are available. Two commenters stated that the

[26] https://www.aiha.org/get-involved/aiha-guideline-foundation/erpgs.

chemical facilities covered over 150 chemicals including EtO, formaldehyde, acrolein, benzene, and 1,3-butadiene, which creates cancer risk as high as 3,000-in-1 million, and is still likely an under-estimate. Commenters also stated that the EPA must reduce the acute risks that are posed by acrolein, formaldehyde, and other pollutants for which the EPA has assumed to pose no risks at all.

Commenters contended that the EPA may not lawfully or rationally treat risk as zero when the science shows risk is present, and that just because the EPA has not yet developed a reference value for a pollutant, type of exposure, or type of risk, does not mean risk does not exist and can be ignored.[27] The commenters quoted NAS as stating that the EPA should develop "explicitly stated defaults to take the place of implicit or missing defaults," and "[k]ey priorities should be development of default approaches to support risk estimation for chemicals lacking chemical-specific information to characterize individual susceptibility to cancer … and to develop a dose-response relationship."[28] The commenter expressed that if the EPA cannot or does not wish to follow the NAS recommendation to use defaults then, at minimum, it must engage in the interim in a qualitative assessment of the additional, missing risks, and account for them in its analysis. A commenter noted that it is unclear whether there are HAP missing from the EPA's risk assessment and that the EPA should confirm that it has assessed the health risk for all emitted HAP. The commenter asserted that the EPA appears to have not assessed any risk for, at least: chromium III compounds, phenanthrene, pyrene, and anthracene, and provides no lawful or rational justification to assume these or any other pollutants cause no risks when Congress listed them for regulation under CAA section 112 as "hazardous air pollutants." The commenter opined that the EPA has recognized that many pollutants creating acute risks are pollutants for which it has no reference value. The commenter stated that, for that reason, the EPA looks at inappropriate values (*i.e.*, the AEGLs and ERPGs), which are designed only for emergency exposure response and cannot be considered health-protective for community members facing potentially repeat exposures over a lifetime to acute risks from emission spikes.[29] The commenter contended that the EPA is underestimating acute risks by using those values.

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[27] Commenter provided the following reference: *See, e.g.*, NAS, Science and Decisions: Advancing Risk Assessment at 203-04, 207 (2009), http://www.nap.edu/catalog.php?record_id=12209 ("NAS 2009").

[28] Commenter provided the following reference: *Id*. at 207.

[29] Commenter provided the following note and reference: The AEGL values (and ERPG values, which EPA also should not use) were created for emergency exposure scenarios. Levels defined for "once-in-a-lifetime, short-term exposures" and "emergency" chemical releases or accidents, NESHAP for Miscellaneous Coating Manufacturing, 84 Fed. Reg. 46,610, 46,618 (Sep. 4, 2019), are not appropriate tools to use to measure the acceptability of acute risks over a lifetime from one or more potential exposures due to an industrial source's emissions. As SAB has explained:

> The incorporation of the available California RELs for the assessment of acute effects is a conservative and acceptable approach to characterize acute risks.... The Panel has some concern with the use of the AEGLs and ERPGs…. AEGL-2 and ERPG-2 values should never be used in residual risk assessments because they represent levels that if exceeded could cause serious or irreversible health effects.

SAB May 2010 at 6, *supra* n.93. The AEGL and ERPG numbers would be expected to underestimate risk. Using these numbers is likely to discount or cloak the level of risk to the maximum exposed individual. These values are therefore not appropriate for rely on as health-protective in a section 112(f)(2) residual risk analysis. They simply do not provide sufficient protection for health.

The commenter also contended that the EPA failed to evaluate cancer risks from lead despite cancer potency factors that are available from Cal. EPA.[30] The commenter stated that the EPA has not provided notice of other chemicals that fall into this category, so there may be additional carcinogens for which the EPA is not assessing a cancer risk. The commenter noted that the EPA stated that "an understatement of risk for these pollutants at estimated exposure levels is *possible*," due to the lack of reference values for a chemical and/or for a particular type of health risk.[31] The commenter expressed concern that the EPA has performed no quantitative assessment of health risk for those pollutants at all.

The commenter contended that, under CAA section 112(f)(2), it is unlawful, arbitrary, and capricious for the EPA not to assess risk at all from a HAP, because in failing to do so the EPA is ignoring scientific evidence before the agency and ignoring the risks it well knows exists since these risks are what led Congress to list that pollutant under CAA section 112(b)(1). The commenter stated that, just as *National Lime Association*, 233 F.3d at 642, requires the EPA to set emission limits for all HAPs, the EPA must assess the health risk for all listed HAPs. The commenter contended that the EPA may not, as it stated here, just write off the risks of HAPs emitted by the source category that the CAA requires the EPA to regulate. The commenter argued that, to meet the requirements of CAA section 112(f)(2) and follow the best available current science, if there is no reference value for a pollutant, the EPA may not ignore health risks associated with these pollutants.

The commenter stated that it is also arbitrary and capricious for the EPA to treat all health risks from these pollutants as zero or non-existent due to the lack of a reference value quantifying a specific risk. The commenter quoted NAS as stating that it is a problem that "agents that have not been examined sufficiently in epidemiologic or toxicologic studies are insufficiently included in or even excluded from risk assessments" by the EPA.[32] The commenter continued that the NAS has made clear that it is not appropriate as a scientific matter to treat such compounds "as though they pose no risk that should be subject to regulation."[33] Instead, the NAS has recommended that the EPA develop "explicit defaults to use in place of missing defaults," including for its "untested-chemical assumption," *i.e.*, that a chemical with no reference value poses no risk.[34] The commenter urged that the EPA has not provided any lawful or rational basis for not following the NAS expert scientific guidance, and at minimum, use a default or add an UF, as the NAS advises, to account for the additional risk that a HAP likely causes, until such time as the EPA does have a reference value to use.

The commenter stated that using a protective UF would allow the EPA to satisfy its legal duty under section 112(f)(2) to prevent unacceptable health risk, and ensure an "ample margin of safety to protect public health." The commenter pointed to a NAS approach "based on the notion

[30] Commenter provided the following reference: Cal. EPA, Acute, 8-hour and Chronic Reference Exposure Level (REL) Summary (June 28, 2016), http://www.oehha.ca.gov/air/allrels.html.

[31] Commenter provided the following reference: MON Risk Assessment at 59 (emphasis added).

[32] Commenter provided the following reference: NAS 2009 at 193, supra n.99; see also id. at 203.

[33] Commenter provided the following referencing: Id. at 193.

[34] Commenter provided the following reference: Id. at 203.

that for virtually all chemicals it is possible to say something about the uncertainty distribution regarding dose-response relationships."[35]

Commenters opined that it is a serious problem that some pollutants in the EPA's analysis continue to have no reference values, noting that over twenty years after the CAA was amended, sufficient studies for some pollutants have not been conducted to calculate RfDs, RfCs, or potency values. A commenter added that the IRIS review process has been bogged down for many pollutants. The commenter urged that the EPA should not allow the delay in this process to undermine its residual risk analysis for source categories under review. The commenter stated that for pollutants currently under IRIS assessment, the EPA must use the best available scientific information from the IRIS review during current rulemakings. At a minimum, the commenter stated the EPA must account for the lack of reference values or the lack of an up to date final IRIS assessment.

Response: The EPA does not agree with these comments. The EPA's SAB considered these issues in their May 10, 2010 response to the EPA Administrator (EPA-SAB-10-007).[36] In that response, the SAB Panel recommended that, for HAP that do not have dose-response values from the EPA's list, the EPA should consider and utilize, as appropriate, additional sources for such values that have undergone adequate and rigorous scientific peer review. The SAB panel further recommended that the inclusion of additional sources of dose-response values into the EPA's list should be adequately documented in a transparent manner in any residual risk assessment case study. We agree with this approach and have considered other sources of dose-response data when conducting our risk determinations under RTR. However, in some instances no sources of information beyond those included in the EPA's list are available. For a tabular summary of HAPs that have dose response values for which an exposure assessment was conducted, refer to Table 3.1-1 of the memorandum, *Residual Risk Assessment for the Miscellaneous Organic Chemical Manufacturing Source Category in Support of the 2020 Risk and Technology Review Final Rule*, which is available in the docket for this rulemaking.

The EPA agrees that we should ultimately develop toxicity values for all HAP utilizing all credible and relevant toxicity information. The need to update assessments with newly available data as well as the need to complete toxicological assessments for all HAP lacking dose-response assessments further increases the importance of Agency activities to streamline and fully utilize the EPA's already overloaded IRIS program. To that end, the EPA has always prioritized for future IRIS assessments those HAP without dose-response values but with the greatest potential for public exposure. As a result of this prioritization, while not all HAP have scientifically accepted dose-response values that can be used in residual risk assessments, it is clear that the vast majority of HAP that carry the potential to significantly impact the results of residual risk assessments do, in fact, have credible dose-response values. Thus, while we are not yet at the point where all HAP have dose-response values, we are generally capable of deriving reasonable risk estimates for those HAP that dominate the risks from any one source category. In the course of each residual risk assessment, should we encounter HAP without dose-response

[35] Commenter provided the following reference: NAS 2009 at 203, supra n.99 (emphasis added).

[36] The SAB peer review of RTR Risk Assessment Methodologies is available at: https://yosemite.epa.gov/sab/sabproduct.nsf/4AB3966E263D943A8525771F00668381/$File/EPA-SAB-10-007-unsigned.pdf.

values which carry the potential to create significant risks, we clearly point those out as uncertainties and target them for future IRIS assessments. In general, we strive to strike a balance in our assessments, meaning that while some factors likely lead to underestimates of risk, others likely lead to overestimates of risk. We conclude that the risk assessment for these source categories are sufficient to support a decision on the acceptability of the risk and ample margin of safety.

The EPA does not rely exclusively upon AEGL values for assessment of acute exposures. Rather, the EPA's approach is to consider various acute health effect reference values, including the California REL, in assessing the potential for risks from acute exposures. To better characterize the potential health risks associated with estimated acute exposures to HAP, and in response to a key recommendation from the SAB's peer review of the EPA's RTR risk assessment methodologies, we generally examine a wider range of available acute health metrics (*e.g.*, RELs, AEGLs) than we do for our chronic risk assessments. This is in response to the SAB's acknowledgement that there are generally more data gaps and inconsistencies in acute reference values than there are in chronic reference values. In some cases, when Reference Value Arrays for HAP have been developed, we consider additional acute values (*i.e.*, occupational and international values) to provide a more complete risk characterization. As discussed in the preamble to the proposed rule, the exposure guidelines the EPA considers depend on which exposure guidelines are available for the various HAP emitted. The EPA uses AEGL and ERPG values (when available) in conjunction with REL values (again, when available) to characterize potential acute health risks. However, it is often the case that HAP do not have all of these acute reference benchmark values. In these instances, the EPA can only describe the potential acute health risk in relation to the acute health values that are available. Importantly, when interpreting the results, we are careful to identify the benchmark being used and the health implications associated with any specific benchmark being exceeded.

Appendix 1 to the health risk assessments for the source category contains a full discussion of how the modeling file (which is the basis for the risk assessment) was populated with the emissions estimates. Finally, the EPA includes and considers all reported HAP in the risk assessment, but the precision of the evaluation ultimately depends on the quality and amount of health risk information about the HAP at issue. Because the EPA considers all HAP based on the available information, we do not agree with the commenter that the risk analysis is flawed.

Comment 14: Commenters charged that the EPA has not adequately assessed the risks to the "individual most exposed," as required by CAA section 112(f)(2) because the EPA failed to account for prenatal and early life exposures in their risk analysis. The commenter contended that the EPA is legally required to assess the health risks to the "individual most exposed" to these sources' emissions (CAA section 112(f)(2)). The commenter stated that the EPA must account for the increased susceptibility of children and developing fetuses to HAP emissions from this source category in the risk assessment. The commenter is concerned that the EPA's failure to include an adequate evaluation of increased early life susceptibility to HAP emissions systematically underestimates risk from the miscellaneous organic chemicals manufacturing source category. The commenter stated that the EPA's failure to account for vulnerability and variability based on the current science, particularly the science addressing early-life and socioeconomic factors in the risk related to exposure, has led the EPA to underestimate the health risks that these sources cause to the most-exposed individuals. The commenter referred to the NAS report and other new scientific and policy developments, stating that it directs the EPA to better account for vulnerability and variability. The commenter noted that the science is clear that "children are not 'little adults'" when it comes to toxic chemicals, stating that they are susceptible to greater harm from exposure to toxic chemicals because they are still growing and developing, and they are exposed to such chemicals at a greater rate than adults because of age-specific behaviors and physiological characteristics.

The commenter argued that the EPA must:

1. Consistent with the OEHHA Cancer Guidelines,[37] apply age-dependent adjustment factors for all carcinogens, not just known mutagens, to account for increased early life susceptibility and pre-natal adjustment factors[38] for all carcinogens of at least a factor of 10X, to account for pre-natal susceptibility and exposures. The commenter noted that NAS has identified the lack of accounting for "in utero periods" of exposure as a major omission in the EPA's 2005 cancer guidelines and recognized this as a "missing" default in the EPA's approach that it should address.[39,40] The commenter quoted NAS: "EPA needs methods for explicitly considering in cancer risk assessment... chemicals that do not meet the threshold of evidence that the agency is considering for judging whether a chemical has a mutagenic mode of action (MOA).... Special attention should be given to hormonally active compounds and genotoxic chemicals that do not meet the threshold of evidence requirements."[41] The commenter noted that in 2019, the EPA released a new study that analyzed and found transplacental exposure to toxic chemicals increases lifetime health risks, validating OEHHA's determination that at least a 10X factor should be used to assess risk from in utero exposure.[42]

2. For chronic non-cancer risk, consult and apply child-specific reference values (such as those created by CalEPA scientists), where available.

3. For chronic non-cancer risk, apply a default or UF of at least 10 to account for increased risk from early-life exposures for non-cancer risk, where specific information on children's vulnerability is unavailable (consistent with NAS recommendations,[43] the science developed and considered by OEHHA, and the 10X

[37] Commenter provided the following reference: See CalEPA, *Air Toxics Hot Spots Program Risk Assessment Guidelines: Technical Support Document for Exposure Assessment and Stochastic Analysis at 1-6 to 1-7* (Aug. 27, 2012), https://oehha.ca.gov/air/crnr/notice-adoption-technical-support-document-exposure-assessment-and-stochastic-analysis-aug. ("OEHHA 2012 Guidelines").

[38] Commenter provided the following reference: *See* CalEPA, T*echnical Support Document for Cancer Potency Factors appendix J*, *supra* n.81 https://oehha.ca.gov/media/downloads/crnr/appendixjearly.pdf.

[39] Commenter provided the following reference: NAS 2009 at 112-13.

[40] Commenter provided the following reference: NAS 2009 at 196 tbl.6-3.

[41] Commenter provided the following reference and note: NAS 2009 at 112 tbl.6-3. (describing the fact that "*in utero* periods and nonmutagenic chemicals were not covered" by EPA's 2005 guidelines, as significant omissions).

[42] Commenter provided the following reference: Dzubow, R. et al., Comparison of carcinogenic potency across life stages: implications for the assessment of transplacental cancer risk, J. Toxicol. Environ. Health A.; 82(13):769-787. doi: 10.1080/15287394.2019.1650860. Epub 2019 Aug 11.

[43] Commenter provided the following reference: NAS 2009 at 190-93, 203.

> factor enacted by Congress in the Food Quality Protection Act (FQPA)). The commenter noted that the SAB report explains that "inhalation dosimetry for children is sufficiently different from adults to warrant a full 10-fold intra-individual pharmacokinetic UF (*i.e.*, an extra 3-fold PK uncertainty for children relative to the IRIS method) as a default approach. In setting non-cancer RELs, Cal EPA/OEHHA also considers that children may be outliers in terms of chemical susceptibility and on a case-specific basis adds a children's pharmacodynamic factor of 3-fold, making the inhalation risk for children as much as 10 times greater than adults."[44]

Another commenter stated that, for the EtO URE, IRIS incorrectly assumed a lifespan of 85 years in the calculation of the age-dependent adjustment factors.

Response: The EPA disagrees with the commenter's claim that the risk assessment for this source category does not consider the groups that may be most at risk (*e.g.*, children and developing fetuses). When the EPA derives exposure RfCs and UREs for HAP it considers the most sensitive populations identified in the available literature, and these are the values used in the Agency's risk assessments.[45] The EPA has an approach for selecting appropriate health benchmark values and, in general, this approach places greater weight on the EPA-derived health benchmarks than those from other agencies for the reasons explained in the risk document. Additionally, the approach of favoring the EPA benchmarks (when they exist) has been endorsed by the SAB and ensures the use of values most consistent with well-established and scientifically based EPA science policy. The EPA is continuing to evaluate the most appropriate use for the CalEPA OEHHA child-specific RfDs. The EPA notes that there are currently no such values for HAP inhalation; therefore, their current utility would be limited to HAP known to be persistent and bio-accumulative in the environment (PB-HAP), which may be associated with non-negligible ingestion exposures.

With respect to cancer, the EPA uses an age-dependent adjustment factor approach but limits the application of age-dependent adjustment factors to carcinogenic pollutants that are known to act via mutagenic MOA; in contrast, the CalEPA OEHHA approach is to apply them across the board for all carcinogens, regardless of MOA. In lieu of chemical-specific data on which age or life-stage specific risk estimates or potencies can be determined, default age-dependent adjustment factors can be applied when assessing cancer risk for early-life exposures to chemicals that cause cancer through a mutagenic MOA. With regard to other carcinogenic pollutants (*e.g.*, non-mutagenic) for which early-life susceptibility data are lacking, it is the Agency's long-standing science policy position that use of the linear low-dose extrapolation approach (without further adjustment) provides adequate public health conservatism in the absence of chemical-specific data indicating differential early-life susceptibility or when the

[44] Commenter provided the following reference: Cal. EPA, TSD for Cancer Potency Factors at 3-4, 50-51.

[45] U.S. EPA. (2002). A Review of the Reference Dose and Reference Concentration Processes. U.S. Environmental Protection Agency, Risk Assessment Forum, Washington, DC. EPA/630/P-02/002F. Available online at https://www.epa.gov/osa/review-reference-dose-and-reference-concentration-processes.

MOA is not mutagenicity.[46] The basis for this methodology is provided in the EPA's 2005 *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens*.[47]

The EPA also disagrees with the commenter that a children's default safety factor of 10 or more should be added to the EPA's reference values in response to the 10X factor enacted by Congress in the FQPA (1996).[48,49] In response to the EPA non-cancer reference value derivation, the Agency evaluated the methods for considering children's risk in the development of reference values. As part of the response, the EPA (*i.e.*, the Science Policy Council and Risk Assessment Forum) established the RfD/RfC Technical Panel to develop a strategy for implementing the FQPA and examine the issues relative to protecting children's health and application of the 10X safety factor. One of the outcomes of the Technical Panel's efforts was an in-depth review of a number of issues related to the RfD/RfC process.[50] The most critical aspect in the derivation of a reference value pertaining to the FQPA has to do with variation between individual humans and is accounted for by a default UF (UF-H) when no chemical-specific data are available. The EPA reviewed the default UF for inter-human variability and found the EPA's default value of 10 adequate for all susceptible populations, including children and infants. The EPA also recommended the use of chemical-specific data in preference to default UFs when available,[51] and has developed Agency guidance to facilitate consistency in the development and use of data-derived extrapolation factors for RfCs and RfDs.[52] Additionally, the EPA also applies a database UF (UF-D), which is intended to account for the potential for deriving an under protective RfD/RfC as a result of an incomplete characterization of the chemical's toxicity. In addition to the identification of toxicity information that is lacking, review of existing data may also suggest that a lower reference value might result if additional data were available.

In conclusion, the estimated risks must also be considered in the context of the full set of assumptions used for this risk assessment. The EPA's UREs for HAP are considered a plausible upper-bound estimate with an appropriate age-dependent adjustment factor; actual potency is likely to be lower and some of which could be as low as zero. The EPA's chronic noncancer reference values have been derived considering the potential susceptibility of different subgroups, with specific consideration of children. In addition, an extra 10X UF is not needed in

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[46] U.S. EPA. (2002). *A Review of the Reference Dose and Reference Concentration Processes*. U.S. Environmental Protection Agency, Risk Assessment Forum, Washington, DC, EPA/630/P-02/002F. Available online at https://www.epa.gov/osa/review-reference-dose-and-reference-concentration-processes.

[47] U.S. EPA. (2005). Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens. EPA/630/R-03/003F. Washington, DC. Available online at: https://www3.epa.gov/airtoxics/childrens_supplement_final.pdf.

[48] U.S. Environmental Protection Agency, Pesticide: Regulating Pesticides. The Food Quality Protection Act.

[49] Available at https://www.epa.gov/laws-regulations/summary-food-quality-protection-act.

[50] U.S. EPA (2002). A Review of the Reference Dose and Reference Concentration Processes. U.S. Environmental Protection Agency, Risk Assessment Forum, Washington, DC, EPA/630/P-02/002F. Available online at https://www.epa.gov/osa/review-reference-dose-and-reference-concentration-processes.

[51] U.S. EPA (1994). *Methods for derivation of inhalation reference concentrations and application of inhalation dosimetry. (EPA/600/8-90/066F). Research Triangle Park, NC*. http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=71993.

[52] U.S. EPA. (2014). *Guidance for Applying Quantitative Data to Develop Data-Derived Extrapolation Factors for Interspecies and Intraspecies Extrapolation*. EPA/100/R-14/002F. https://www.epa.gov/risk/guidance-applying-quantitative-data-develop-data-derived-extrapolation-factors-interspecies-and

the RfC/RfD methodology because the currently available factors are considered sufficient to account for uncertainties in the database from which the reference values are derived.

As a point of clarification, the EPA assumed a lifespan of 70 years to calculate the age-dependent adjustment factor for the EtO URE, as noted in the discussion in section 4.4 of the 2016 IRIS EtO Assessment.

Comment 15: A commenter argued that the EPA's multipathway risk assessment falls short because the EPA did not complete this analysis for all persistent or bioaccumulative pollutants, it did not assess all exposure routes – particularly for children, and it did not use "allowable" emissions for this assessment.

The commenter argued that the multipathway risk screening assessment was restricted to only those contaminants identified in the 2004 Risk Assessment Guidance as being both persistent and bioaccumulative in the environment (*i.e.*, PB-HAPs). The commenter stated that this list of 14 PB-HAPs is incomplete as it ignores other HAPs which present a multipathway risk, and the 2004 Risk Assessment Guidance does not direct that the multipathway assessment be limited to only those contaminants listed as PB-HAPs. The commenter also noted that there is no change in the list from the previous HAPs evaluated for multipathway risk, despite the fact that the Total Risk Integrated Methodology (TRIM) model has been parameterized to include some HAP metals (such as arsenic), but not all persistent bioaccumulative toxics (PBTs).[53] The commenter described why they believe the 2004 Risk Assessment Guidance is deficient and concluded that the EPA must perform a full multipathway risk assessment for all HAP (manganese, nickel, chromium, antimony, beryllium, and lead). The commenter urged that failure to assess multipathway risk from exposure to all PB-HAPs, both individually and cumulatively, results in an underestimate of the health risks of HAP emissions. The commenter also stressed that the EPA must assess the multipathway risk from naphthalene, a known carcinogen, that has respiratory impacts, ocular effects, and impacts to the hematological systems. The commenter noted that OEHHA has recommended multipathway assessment based on scientific research and developed a method to conduct this assessment[54], and the EPA should follow its lead. The commenter concluded that the EPA simply may not assume that the ingestion and other non-inhalation multipathway risks are zero for these pollutants when science shows otherwise.

Two commenters argued that science shows *additional pathways* that the EPA has not addressed for certain pollutants, for which it does recognize the need for a multipathway assessment. The commenter noted that OEHHA has recognized that soil ingestion, dermal exposure to contaminated soil, and breast milk consumption are all "mandatory exposure pathways" that must be evaluated for residential receptors.[55] Specifically, one commenter contended that the EPA has been relying on outdated estimates of incidental soil ingestion exposures, concluding that the EPA must update these values to ensure that it considers the urban

[53] Commenter provided the following reference: EPA, Total Risk Integrated Methodology (TRIM) – TRIM.FaTE (last updated Jan. 17, 2017), https://www.epa.gov/fera/total-risk-integrated-methodology-trim-trimfate.

[54] Commenter provided the following reference: OEHHA 2012 Guidelines appx.E, supra n.140.

[55] Commenter provided the following reference: CalEPA, Air Toxics Hot Spots Program Guidance Manual at 8-10, *supra* n.40; OEHHA 2012 Guidelines appx. E at E-12 tbl.E3, *supra* n.141.

child scenario in its multipathway risk assessment. The commenter also stated that the risk assessment should evaluate both direct exposure, hand-to-mouth, and indirect, object-to-mouth exposure. The commenter pointed to the 2011 update to the EPA's Exposure Factors Handbook, which must be used to assess risks from exposures to contaminated soils.[56]

The commenter further argued that the EPA must assess multipathway risk based on "allowable" emissions, not just the so-called "actual" emissions, which the commenter opined are likely underestimated. The commenter noted that the EPA assessed the "allowable" emissions number for inhalation but has given no reasonable basis not to do the same for multipathway risk. The commenter contended that intermittent or short spikes of PB-HAPs can represent a significant health risk because the contaminants stay in the environment and small amounts can accumulate into larger amounts over time. For this reason, the commenter concluded that the EPA's analysis likely underestimates the health risks from multipathway routes of exposure, and that the EPA must evaluate the combined impact of multiple pollutants.

Response: The EPA does not agree that the approach to conducting multipathway risk assessments falls short or that the EPA must expand the pollutants subject to such assessments at this time. Several HAP listed by the commenter (manganese, nickel, chromium, antimony, and beryllium) have not been identified by the EPA as persistent bioaccumulative HAP. We disagree that the risk assessment was inadequate because it did not include multipathway risk assessments for these HAP. In the Air Toxics Assessment Library, we developed the current PB-HAP list considering all of the available information on persistence and bioaccumulation (see http://www.epa.gov/ttn/fera/risk_atra_main.html). We reviewed HAP identified as PB-HAP by other EPA program offices (*e.g.*, the Great Waters Program), as well as information from the PBT profiler.[57] This list was peer reviewed by the SAB and found to be acceptable and, therefore, we consider it to be reasonable for use in the RTR program. Based on these sources and the limited available information on the persistence and bioaccumulation of other HAP, we do not think that the potential for multipathway risk from the other HAP cited by the commenter warrants a multipathway assessment.

Although lead compounds are included as a persistent bioaccumulative HAP, we take a different approach for assessing these compounds. In evaluating the potential multipathway risks from emissions of lead compounds, rather than developing a screening emission rate for them, we compare maximum estimated chronic atmospheric concentrations with the current national ambient air quality standards (NAAQS) for lead (0.15 $\mu g/m^3$). The EPA considered the primary NAAQS for lead --which incorporates an adequate margin of safety -- in determining whether lead risks (taken together with cancer and other noncancer health risks) from air-borne lead from Miscellaneous Organic Chemical Manufacturing facilities are acceptable or unacceptable, under section 112(f)(2). Values below the NAAQS are considered to have a low potential for multipathway risks; the highest annual lead concentration of 0.0006 $\mu g/m^3$ was well below the NAAQS for lead, indicating low potential for multipathway risk of concern due to lead

[56] Commenter provided the following reference: EPA, Exposure Factors Handbook, 2011 Edition, http://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=236252.

[57] https://www.epa.gov/sites/production/files/2015-05/documents/07.pdf.

emissions. For additional information on our assessment of lead compounds, see response to comment 16 of this document.

Regarding soil ingestion, the RTR multipathway screening is intended to represent a high-end exposure for children via incidental soil ingestion. The EPA's Exposure Factors Handbook[58] to which the commenter refers recommended an "upper-percentile" soil ingestion rate (numeric percentile not specified) of 200 mg/d for children aged 3 to 6 years. No additional data or recommendations for child soil ingestion are presented in the EPA's Child-Specific Exposure Factors Handbook,[59] and in fact an "upper percentile" value for this parameter is not provided. Based on these sources, a value of 200 mg/d is used in the current RTR multipathway screening scenario for the child incidental soil ingestion rate.

This is supported by the EPA's more recent release of the updated Section 5 for its Exposure Factors Handbook.[60] In this update, the EPA further delineates the contributions of soil ingestion and dust ingestion across a wider range of age groups but still recommends a rate of 200 mg/d for soil plus dust ingestion. The EPA concludes that applying this soil plus dust ingestion rate for the general population in RTR assessments better reflects the risk associated with chronic exposure than applying daily peak ingestion rates associated with pica children from 1,000 to 5,000 mg/day. The EPA's soil pica and geophagy ingestion rates are likely to represent acute high soil ingestion episodes or behaviors at an unknown point on the high end of the distribution of soil ingestion. Moreover, most of the key studies used to develop the soil ingestion rates were tracer element studies that might not represent long-term behavior. The EPA's Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities[61] excluded soil pica in part because the behavior is "temporary."

Regarding the use of allowable emissions in multipathway assessment, for the Miscellaneous Organic Chemical Manufacturing source category, we assume that actual and allowable emissions of PB-HAP are the same, with the exception of one facility (Lanxess) for which we obtained additional data during the public comment period. Therefore, the use of allowable emissions would not have significantly changed the results of the assessment, or the conclusion on risk acceptability. However, allowable emissions have not been used in RTR multipathway assessments for several reasons. Typically, estimates of allowable emissions are more uncertain than estimates of actual emissions. That uncertainty, combined with the conservative nature of multipathway screens, could lead to results that are too uncertain and conservative to be of practical use. Of course, in cases where there are good estimates of allowable emissions and a site-specific multipathway assessment is conducted, the results are less uncertain and less conservative. However, the EPA concludes that the use of actual emissions is appropriate because of the conservatism that still exists even in the site-specific assessment. The fisher and gardener in the site-specific assessment are still hypothetical – it is unknown whether anyone is actually fishing or gardening near a facility, whereas for inhalation

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[58] https://cfpub.epa.gov/ncea/efp/recordisplay.cfm?deid=236252.

[59] https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=199243.

[60] https://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=337521.

[61] U.S. EPA. 2005. *Human Health Risk Assessment Protocol for Hazardous Waste Combustion Facilities (including the Hazardous Waste Companion Database of chemical-specific parameter values)*. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, DC. EPA-530-R-05-006.

it is known that there are people breathing near them. Also, the EPA uses high-end estimates of ingestion in the site-specific assessment, which makes it conservative.

Comment 16: A commenter objected to the EPA's proposal to assign a health risk value of zero to lead emissions from MON facilities, because, as the commenter states, the agency does not believe any individual source is causing an exceedance of the Lead NAAQS. The commenter stated that the source category emits at least 120 pounds per year of lead, and that the EPA may not lawfully or rationally ignore the serious health risks lead causes. The commenter provided several references regarding the health impacts of lead exposure, particularly on children. The commenter stated that the EPA considered only the 2008 Lead NAAQS and performed no CAA section 112(f)(2) health risk assessment for lead. The commenter urged that the EPA, Centers for Disease Control and Prevention (CDC), CalEPA, and the American Academy of Pediatrics acknowledge that no safe level of lead can be identified, and as such, the EPA has unlawfully and arbitrarily failed to evaluate and recognize that lead risks are unacceptable pursuant to CAA section 112(f)(2). The commenter urged that, by solely relying on the NAAQS for lead rather than conducting an independent risk assessment, the EPA has failed to complete or create a lawful and rational risk assessment for lead, including the interaction of different risks from lead – *i.e.*, inhalation (risks from breathing) and multipathway (risks from other types of exposure). The commenter asserted that the EPA writes off serious risk from lead by saying its results estimate that the NAAQS would not be exceeded based on a "maximum annual lead concentrations" analysis; the commenter impressed the EPA has not shown there is no risk from such exposure, nor does it evaluate health risks from lead further or quantify the health risks that new lead emissions are causing from these sources in communities already contaminated by prior lead emissions. The commenter stated that the EPA cannot presume and has not demonstrated that achieving an ambient air concentration of the NAAQS for lead (which is based on the "adequate margin of safety to protect public health") is sufficient to ensure acceptable health risk and provide an "ample margin of safety to protect public health" from lead alone for section 112(f) purposes, because these are different statutory tests.

The commenter provided reference to the Children's Health Protection Advisory Committee (CHPAC), which has advised the EPA that it should strengthen the Lead NAAQS by an order of magnitude (to 0.02 $\mu g/m^3$ or below, require better monitoring, and base the measurements on a one-month period) because it "is insufficient to protect children's health." [62] Rather, the commenter notes, the NAAQS only seeks to avoid an air-related population mean IQ loss in excess of 2 points, although there can be no doubt that risks and likely harm occur below the level of the 2008 NAAQS. The commenter urged that the EPA may not merely rely on the lead NAAQS to decide what is "acceptable" risk under CAA section 112(f)(2) but must address and incorporate the best currently available information on children's exposure, including the CHPAC recommendation of lowering the lead standards to 0.02 $\mu g/m^3$ from the current EPA NAAQS level of 0.15 $\mu g/m^3$. The commenter further argued that the CDC has recommended that action is required at the reference level of 5 µg/dL, and that California's health benchmark for

[62] Commenter provided the following reference: Letter from Sheela Sathyanarayana, CHPAC to Gina McCarthy, EPA (Jan. 8, 2015) (CHPAC 2015 Letter), available at https://www.epa.gov/sites/production/files/2015-01/documents/naaqs_for_lead_letter.pdf.

lead shows the EPA should look at a blood-lead level change of 1.0 g/dL as the level at which measurable neurological harm (illustrated by a correlating loss of 1 IQ point) can occur.[63]

The commenter urged that the EPA must fully evaluate lead risks posed to the fetus, infants and children. The commenter recommended utilizing the Integrated Exposure Uptake Biokinetic model for infants and children and the Adult Lead Methodology for the fetus. The commenter stated that the EPA must come up with a numerical risk value for lead, and that the EPA should also update the residual risk assessment to include available data on testing of lead in soil and waterways and evaluate the potential health impacts following the emission of lead from each facility. The commenter urged that additional monitoring should also be required to ensure that lead emitted from the facility is at low enough concentrations such that it does not raise an individual's blood lead level by 1 μg/dL.

The commenter further stated that the EPA cannot rely upon the NAAQS because the NAAQS only addresses a single pollutant, while section 112(f) requires the EPA to prevent unacceptable risk from the combination of all toxic pollutants emitted by a major source category of HAP. The commenter urged that the EPA must assess each pollutant appropriately, but then must also assess the total cumulative health risk from these risks and these different pollutants. The commenter stated that relying solely on the NAAQS meant that the EPA performed only a segmented risk analysis and failed to consider the interaction of the different pollutants together on the most-exposed person. By failing to assess risk and relying on the NAAQS alone, the commenter asserted that the EPA also has failed to reach a lawful or rational determination of the "ample margin of safety" and the EPA has not met the legal standard of CAA section 112(f)(2). The commenter asserted that the residual risk standards are designed to do more than just replicate other statutory protections. The commenter opined that if Congress had intended the EPA simply to replicate the NAAQS or some other different CAA requirement in its CAA section 112(f)(2) residual risk rulemaking, the CAA section 112(f)(2) requirement would become redundant for any HAP that also has any relationship to any other regulated pollutant. The commenter urged that the data the EPA has collected show that risk is likely too high from lead emissions from these sources, and the EPA must assess the risk that is caused by an additional 120 pounds per year. The commenter stated that the EPA has not provided the data showing the actual ambient air concentrations or how close those are to exceedances, which is a notice-and-comment violation. Absent this additional information, the commenters assert they are seriously prejudiced in attempting to evaluate and comment on the proposal.

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[63] Commenter provided the following reference: See OEHHA, J. Carlisle et al., Development of Health Criteria for School Site Risk Assessment Pursuant to Health and Safety Code Section 901(g): Child-Specific Benchmark Change in Blood Lead Concentration for School Site Risk Assessment, Final Report at 1 (Apr. 2007) (explaining that this blood-lead level increase may occur from a daily intake of 6 μg of ingested soluble lead or 5 μg of inhaled lead), https://oehha.ca.gov/media/downloads/crnr/pbhgv041307.pdf; see also Cal. EPA, Prioritization of Toxic Air Contaminants Under the Children's Environmental Health Protection Act at 25-26 (Oct. 2001) ("Lead is in Tier 1 because it is a developmental neurotoxin. The increased susceptibility of infants and children is well established and the neurological effects are extremely prolonged. In addition, lead is a carcinogen. Although airborne lead exposures have dropped due to removal of lead from gasoline, airborne lead exposures still occur as a result of stationary source emissions and reentrainment of soil contaminated with lead. In addition, deposition of airborne lead onto soil, vegetation, and other surfaces results in exposure via ingestion.").]

Response: We do not agree with the commenter and maintain that our use of the lead NAAQS in evaluating risk in the residual risk assessment is reasonable, as explained below. While recognizing that lead has been demonstrated to exert "a broad array of deleterious effects on multiple organ systems," and for that reason, the lead NAAQS targets the effects associated with relatively lower exposures and associated blood lead levels, specifically nervous system effects in children including cognitive and neurobehavioral effects (73 FR 66964, 66975, November 12, 2008). The 2008 Lead NAAQS revision, which was affirmed in 2016, was informed by an evidence-based framework for neurocognitive effects in young children.[64] In applying the evidence-based framework, the EPA focused on a subpopulation of U.S. children, those living near air sources and more likely to be exposed at the level of the standard; to the same effect see 73 FR 67000/3--"The framework in effect focuses on the sensitive subpopulation that is the group of children living near sources and more likely to be exposed at the level of the standard. The evidence-based framework estimates a mean air-related IQ loss for this subpopulation of children; it does not estimate a mean for all U.S. children"; 73 FR 67005/1 – "the air-related IQ loss framework provides estimates for the mean air-related IQ loss of a subset of the population of U.S. children, and there are uncertainties associated with those estimates. It provides estimates for that subset of children likely to be exposed to the level of the standard, which is generally expected to be the subpopulation of children living near sources who are likely to be most highly exposed." In addition, in reviewing and sustaining the lead primary NAAQS, we note that the U.S. Court of Appeals for the District of Columbia specifically noted that the rule was targeted to protect children living near lead sources:

> "EPA explained that the scientific evidence showing the impact of lead exposure in young children in the United States led it 'to give greater prominence to children as the sensitive subpopulation in this review' and to focus its revision of the lead NAAQS on the 'sensitive subpopulation that is the group of children living near [lead emission] sources and more likely to be exposed at the level of the standard.' Given the scientific evidence on which it relied, the EPA's decision to base the revised lead NAAQS on protecting the subset of children likely to be exposed to airborne lead at the level of the standard was not arbitrary or capricious." *Coalition of Battery Recyclers v. EPA*, 604 F. 3d 613, 618 (D.C. Cir. 2010) (internal citations omitted)(alteration in original).

As noted in the *Residual Risk Assessment for the Miscellaneous Organic Chemical Manufacturing Source Category in Support of the 2019 Risk and Technology Review Proposed Rule* (Docket ID number EPA-HQ-OAR-2018-0746-0011), there is no RfD or other comparable chronic health benchmark value for lead compounds. In 1988, the EPA's IRIS program reviewed the health effects data regarding lead and its inorganic compounds and determined that it would be inappropriate to develop an RfD for these compounds, stating on page 2 of its chemical assessment summary[65]:

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[64] On September 16, 2016, based on its review of the air quality criteria for lead (Pb), the Environmental Protection Agency issued a decision to retain the existing 2008 standards without revision (81 FR 71906).

[65] Integrated Risk Information System (IRIS) Chemical Safety Assessment Summary, Lead and compounds (inorganic; Chemical Abstracts Service Registry Number 7439-92-1, U.S. Environmental Protection Agency, National Center for Environmental Assessment. Available at: https://cfpub.epa.gov/ncea/iris2/chemicalLanding.cfm?substance_nmbr=277

> A great deal of information on the health effects of lead has been obtained through decades of medical observation and scientific research. This information has been assessed in the development of air and water quality criteria by the Agency's Office of Health and Environmental Assessment (OHEA) in support of regulatory decision-making by the Office of Air Quality Planning and Standards and by the Office of Drinking Water. By comparison to most other environmental toxicants, the degree of uncertainty about the health effects of lead is quite low. It appears that some of these effects, particularly changes in the levels of certain blood enzymes and in aspects of children's neurobehavioral development may occur at blood lead levels so low that a threshold has yet to be determined. The Agency's RfD Work Group discussed inorganic lead (and lead compounds) at two meetings (07/08/1985 and 07/22/1985) and considered it inappropriate to develop an RfD for inorganic lead.

The EPA's IRIS assessment for lead and lead compounds (inorganic) (CAS Registry Number 7439-92-1) can be found here: https://cfpub.epa.gov/ncea/iris2/chemicalLanding.cfm?&substance_nmbr=277.

We also disagree with the comment that the EPA cannot presume that achieving an ambient air concentration of the NAAQS for lead is sufficient to ensure acceptable health risk and provide an "ample margin of safety to protect public health" from lead for section 112(f) purposes. The EPA considered the primary NAAQS for lead --which incorporates an adequate margin of safety -- in determining whether lead risks (taken together with cancer and other noncancer health risks) from air-borne lead from Miscellaneous Organic Chemical Manufacturing facilities are acceptable or unacceptable, under section 112(f)(2). Thus, to the extent the commenter's argument rests on the difference between 'adequate' and 'ample' margin of safety, the argument is misplaced.[66] As explained at proposal, margin-of-safety determinations for this rule are conducted separately, in accord with the two-step framework set forth in the NESHAP: Benzene Emissions from Maleic Anhydride Plants, Ethylbenzene/Styrene Plants, Benzene Storage Vessels, Benzene Equipment Leaks, and Coke By-Product Recovery Plants (54 FR 38044, September 14, 1989) (hereafter referred to as the "Benzene NESHAP"), as well as the decision in *NRDC (Natural Resources Defense Council) v. EPA* (824 F. 2d at 1146, 1165-66 (D.C. Cir. 1987)). *See also NRDC v. EPA* (902 F. 2d 962, 973-74 (D.C. Cir. 1990)) (distinguishing the NAAQS process, whereby the margin of safety analysis is incorporated as part of the standard without a two-step analysis, from residual risk determinations).[67]

With regard to the information on lead health effects identified by the commenters, the 2016 review of the 2008 NAAQS decision considered the health effects information available at that time, which was similar to information available at the time of the 2008 NAAQS decision. Commenters do not provide any different or newer information than that available in the 2016 review, which was consistent with that available in the 2005 review. For example, in 2005, the CDC recognized the evidence of adverse health effects in children with blood lead levels below 10 µg/dL, and that no safe level of blood lead in young children has been identified (CDC,

[66] Indeed, the EPA's utilization of a standard which also incorporates an adequate margin of safety to evaluate acceptability of risk is an added conservative (*i.e.*, protective) element in its approach here.

[67] The Court was referring to the predecessor provision to the current section 112(f), but its analysis is equally applicable to the revised provision.

2005). In recognition of the latter conclusion, the CDC subsequently established a reference level for blood Pb in children aged 1 to 5 of 5 µg/dL, which is the 97.5th percentile (based on National Health and Nutrition Examination Survey data from 2007-2008 and 2009-2010). The commenter also cites a benchmark analysis by the CalEPA OEHHA that was available both during the time of the 2008 decision and at the time of the 2016 review (Carlisle and Dowling, 2007).[68] The quantitative relationship from this analysis of a correlation of 1 IQ point change with a 1.0 µg/dL change in blood lead is actually a substantially smaller change in IQ per µg/dL blood lead than the slope of 1.75 IQ points per µg/dL blood lead used in the evidence-based framework that the Administrator relied upon in his 2008 decision on a revised level for the lead NAAQS in 2008 (73 FR 66964). Regarding the CHPAC recommendation on level and averaging time referenced by the commenter, this was made and considered in the context of the NAAQS review completed in 2016 (81 FR 71906), and the same comment was made and considered in the 2008 review, that concluded with the current lead NAAQS.

With respect to the comment that the EPA did not present emissions or risks from lead in this assessment, the comment is incorrect. Table 3.1-1 in the memorandum, *Residual Risk Assessment for the Miscellaneous Organic Chemical Manufacturing Source Category in Support of the 2020 Risk and Technology Review Final Rule*, which is available in the docket for this rulemaking, provides the total emissions of lead modeled in this assessment: 0.06 tpy (or 120 pounds) across 58 facilities. Also, in the docket is the emissions input file labelled MON_Actual_HEMInput_HAPEmis_05212019 where we see the individual emissions for each facility. Finally, in section 3 of the risk report, we noted that the highest modeled lead concentration was 0.0006 µg/m^3, well below the NAAQS standard of 0.15 µg/m^3.

Comment 17: Commenters asserted that the EPA must combine and look at the whole picture of all other kinds of risk from multiple pollutants. The commenters argued that the EPA must create a metric to assess the total and cumulative risk burden, rather than only looking at each type of risk in a discrete, separate way. One commenter urged that evaluation of individual chemical releases misses the cumulative impacts of multiple extremely toxic HAP and subjects community members to unacceptable excessive exposure situations. Commenters stressed that the EPA must assess the cumulative burden of exposures to multiple pollutants and sources via multiple pathways, including by adding inhalation and non-inhalation-based cancer risks, the interaction of multiple pollutants, accounting for exposure to multiple sources, and accounting for cumulative impacts of multiple exposures and vulnerabilities by shifting the level of risk which triggers policy action. Likewise, a commenter stated that additional exposure to carcinogens cause additional cancer risk, such that cancer risks are additive. Commenters urged that until the EPA has a specific mechanism for estimating total exposures, a default or UF of at least 10X should be used.

One commenter noted that the EPA recognizes that it must assess the combined impact of cancer risks from different carcinogens to create a combined cancer risk from inhalation and that it must assess the combined chronic non-cancer risk for different chemicals that affect the same

[68] Cal. EPA OEHHA, Carlisle, J., *et al*., *Development of Health Criteria for School Site Risk Assessment Pursuant to Health and Safety Code Section 901(g): Child-Specific Benchmark Change in Blood Lead Concentration for School Site Risk Assessment*, Final Report at 1 (April 2007), available at https://oehha.ca.gov/media/downloads/crnr/pbhgv44010507.pdf.

target organ. The commenter argued that the EPA should apply the same scientific principles to recognize that it also must combine and look at the whole picture of all other kinds of risk from multiple pollutants. The commenter stated that the EPA fails to reach a combined cancer risk value that includes inhalation and multipathway risks of cancer, and that this is unlawful and arbitrary. The commenter argued the EPA must account for the aggregate impact of inhalation and multipathway cancer and chronic non-cancer risk by adding each type of similar risk together for all pollutants.

One commenter stated that, to look overall at a person's exposure, the EPA must add inhalation and multipathway risk. The commenter urged that failing to add up each type of risk in order to come up with a total cancer risk number and a total non-cancer number, and then a cumulative burden metric, makes the EPA's overall risk assessment incomplete. The commenter stated that the EPA must assess the total and synergistic chronic non-cancer risk for different pollutants that may work in different ways than the EPA has acknowledged here. The commenter quoted the SAB, noting, "by conducting the analysis on a chemical-by-chemical basis, limited by law to the industrial category under RTR evaluation, multiple sources of a chemical emitted nearby from other industrial source categories may contribute to cumulative effects and chemical interactions because of multiple exposures. The cumulative risk may be missed by the human health risk screening conducted following the RTR method being reviewed."[69] The commenter asserted that this is especially relevant for the multipathway analysis, in that the methodology only accounts for PBT HAPs that are emitted by the source category as opposed to facility-wide PBT emissions; failing to account for additional risk posed by PBT HAPs means the EPA's facility-wide risk still underestimates combined risks posed by PBT HAP.

The commenters stated that the EPA should also assess an accurate chronic non-cancer risk total, in lieu of focusing on each individual TOSHI. The commenter stated the TOSHI largely underestimates risk by calculating the HI based on risk driven by a specific organ system, as opposed to aggregating risk across all organ systems. The commenter recommended the EPA aggregate or combine TOSHI values to account for total risk to chemical mixtures, and also report and disclose the TOSHI it found for each target organ or target organ system, so the public can evaluate each of these chronic risk values.

The commenter added that the EPA should apply these same principles to create a mechanism for assessing the total acute risk to chemical mixtures, such as the TOSHI for chronic risk, that aggregates the acute impacts on the same organ systems for all pollutants. The EPA's decision to assess acute risks solely chemical by chemical, when it knows the collection of HAPs is being released together, is unlawful and arbitrary. The result is an underestimation of the full acute health risks to which the most-exposed individual and nearby community members are exposed.

Commenters also argued that the EPA should be integrating its assessments and performing a "comprehensive risk assessment" as the NAS has emphasized. The commenters

[69] SAB, "Review of EPA's draft technical report entitled Screening Methodologies to Support Risk and Technology Reviews (RTR): A Case Study Analysis" (Sept. 13, 2018), https://yosemite.epa.gov/sab/sabproduct.nsf/0/7A84AADF3F2FE04A85258307005F7D70/$File/EPA-SAB- 18-004+.pdf.

stated that after first assessing the total cancer, chronic non-cancer, and acute risks, for both inhalation and multipathway exposure, the EPA also must create a metric to assess the total bundle of risks, and the EPA must aggregate health risk for each pollutant, and each type of health risk, to create a cumulative risk determination for the individual "most exposed" to emissions as the CAA requires. The commenter stated that unless and until the EPA creates a combined health risk metric, it is unclear how it can make an ample margin of safety determination that is based on the full picture of health risk for a source category and that can be compared to other source categories. The commenter argued that the EPA must assess the full cumulative burden for public health, and by failing to perform a full, cumulative risk assessment, the EPA fails to gather the information needed to assess whether the risk to public health is acceptable under CAA section 112(f)(2).

Response: The EPA combines risk assessment results to the extent that it is appropriate to do so. The EPA considers the effect of mixtures of carcinogens and uses a TOSHI approach for its chronic noncancer assessments. The EPA follows its guidelines for mixtures[70,71] because most of the receptors in RTR assessments receive exposure to multiple pollutants rather than a single pollutant. As described in the risk document provided in the docket at proposal, the EPA estimated the aggregate health risks associated with all the exposures from a particular source category combined. To combine risks across multiple carcinogens, RTR assessments use the mixtures guidelines default assumption of additivity of effects, and combined risks by summing them using the independence formula in the mixture guidelines. In assessing noncancer hazard from chronic exposures for pollutants that have similar modes of action or (where this information is absent) that affect the same target organ, we aggregated the HQ. This process creates, for each target organ, a TOSHI, defined as the sum of HQs for individual HAP that affect the same organ or organ system.

As described in the risk document, acute assessment results for individual pollutants are not combined to generate an acute risk number that would represent the total acute risk for all pollutants that act in a similar way on the same organ system or systems (similar to the chronic TOSHI). The worst-case acute screen is already a conservative scenario. That is, the acute screening scenario assumes reasonable worst-case meteorology, peak emissions for all emission points occurring concurrently and an individual being located at the site of maximum concentration for 1 hour. Because of the conservative nature of the acute inhalation screening and the variable nature of emissions and potential exposures, acute impacts were screened on an individual pollutant basis, not using the TOSHI approach.

Regarding adding inhalation and multipathway risks, the EPA did not combine the inhalation and multipathway risk assessment results for this source category because it is inappropriate to do so. There are two main reasons not to combine these results. First, the multipathway assessment consists of results from the use of screening tools. These screening tools do not provide a risk estimate, but instead provide a "screening value" using conservative assumptions designed to ensure that facilities with screening values below a threshold do not

[70] U.S. EPA, 1986. *Guidelines for Health Risk Assessment of Chemical Mixtures*. EPA-630-R-98-002. https://www.epa.gov/sites/production/files/2014-11/documents/chem_mix_1986.pdf.

[71] U.S. EPA, 2000. *Supplementary Guidance for Conducting Health Risk Assessment of Chemical Mixtures*. EPA630/R-00-002. https://cfpub.epa.gov/ncea/raf/pdfs/chem_mix/chem_mix_08_2001.pdf.

have the potential for multipathway impacts of concern. For example, a cancer screening value of 50 means there is high confidence that the actual risk is lower than 50-in-1 million. This confidence comes from the conservative, or health-protective, assumptions that are in the screens: inputs from the upper end of the range of possible values for the influential parameters are used in the screens; and it is assumed that the exposed individual exhibits ingestion behavior that would lead to a high total multipathway exposure. Even in cases where the EPA conducts more refined assessments, which replace some of the default information included in the screening tools with actual conditions around the facilities (*e.g.*, distance to a lake), the assessments still contain some conservative assumptions compared to the inhalation assessment. For example, the fisher and farmer/gardener in the multipathway assessment are hypothetical, whereas for the inhalation assessment it is known that there are people living in the census blocks used to estimate human inhalation exposure and risk. The second reason inhalation and multipathway risk assessment results were not combined is that the person with the highest exposure is different for the different exposure pathways. It is highly unlikely that the person with the highest inhalation exposure is the same hypothetical fisher or farmer/gardener with the highest multipathway exposure.

Comment 18: One commenter supported the residual risk analysis, and indicated it was supported by the analytical framework the EPA had set forth in the 1989 Benzene NESHAP rulemaking. The commenter noted that in *NRDC v. EPA*, 824 F.2d 1146 (D.C. Cir. 1987), the D.C. Circuit expressly approved of the EPA's consideration of scientific uncertainty when setting risk-based standards, and rejected the claim that the lack of scientific evidence required the EPA to default to a "zero emissions" standard.

Other commenters contended that the EPA is putting communities at risk by exposing them to too much pollution. One commenter asserted that the EPA did not base the benchmark level for cancer risk on scientific information about health risk, but on an unusual 1988 study of people's perceptions of their own various risks, known as the Survey of Societal Risk. The commenter stated that health risks should be based on scientific information about cancer risk. One commenter urged the EPA to address the greater risk to children and urged the IRIS program to incorporate a more robust analysis of childhood and prenatal exposures. Another commenter stated the EPA's presumption regarding cancer risk ignores the experience of communities exposed to multiple sources and types of pollution. The commenter recommended that the EPA revisit or update its presumed acceptable level of cancer risk considering information learned about children's and overburdened community's vulnerability, biomonitoring and other data on adult body burdens of chemicals, the vulnerability of overburdened communities, including socioeconomic disparities, and new information on ways to analyze and control the impacts of pollutants on human health. The commenter provided a series of references (*e.g.,* Congressional actions, Presidential orders, and scientific peer review recommendations) from 1990 onwards reflecting updated guidance to address children's health, early life exposure, and cumulative impacts. Yet, the commenter contended that the EPA has not updated its outdated risk assessment approach or decision-making policies. Two commenters added that although the EPA's current policy includes a presumptively unacceptable benchmark for cancer risk, it does not include a presumptively unacceptable benchmark for chronic non-cancer or acute risk, and commenters urged that the EPA must include presumptively unacceptable benchmarks for chronic non-cancer and acute health risks. The commenters recommended that the EPA should determine that all such risk with an HQ of 1 or above is presumptively unacceptable, and that the EPA must reduce risks to the lowest possible level to protect public health.

Response: We note that, in the CAA Amendments of 1990, Congress codified in section 112(f)(2)(B) of the CAA the approach we use for our residual risk analyses (*i.e.*, the Benzene NESHAP decision framework). Under that approach, the 100-in-1 million cancer risk is not a bright line indicating that risk is "acceptable." We consider this health risk measure in conjunction with a variety of health factors and their associated uncertainties to determine whether the risk is acceptable. Where we conclude that the risk is not acceptable, we cannot and do not consider costs in requiring controls to bring risks down to an acceptable level. Once we determine that controls are sufficient to ensure that risk is acceptable, we again review the health risk measures and information (*e.g.*, cancer and chronic non-cancer risks) and their associated uncertainties in conjunction with the costs of controls, technical feasibility, and other relevant factors, to determine whether additional controls should be required to provide an ample margin of safety.

We further note that we generally draw no bright lines of acceptability regarding cancer or non-cancer risks from source category HAP emissions, and that we must always consider the specific uncertainties of the emissions and health effects information regarding the source category in question when deciding exactly what level of cancer and non-cancer risk should be considered acceptable. In addition, the source category-specific decision of what constitutes an acceptable level of risk should be a holistic one; that is, it should simultaneously consider all potential health impacts – chronic and acute, cancer and non-cancer, and multipathway – along with all their uncertainties, when determining the acceptable level of source category risk. Rather, the estimated risks must be considered in the context of the full set of assumptions used for this risk assessment. Our UREs for HAP are considered a plausible upper-bound estimate with an appropriate age dependent adjustment; actual potency is likely to be lower and, in some cases, could be as low as zero. Our chronic noncancer reference values have been derived considering the potential susceptibility of different subgroups, with specific consideration of children. In addition, an extra UF is not needed in the RfC/RfD methodology because the currently available factors are considered sufficient to account for uncertainties in the database from which the reference values are derived.

With regard to comments that we update our risk assessment to further address children's health, early life exposure, or cumulative impacts such as multiple sources or socioeconomic disparities, the currently available factors used within the risk assessment are considered sufficient. For additional information regarding the EPA's considerations of risk for children and prenatal exposures, see the EPA's response to comment 14 of this document. Regarding the comment that the EPA account for the fact that people can be more vulnerable to toxic pollution due to various physiological, societal, demographic, and exposure history differences, we conclude that these are some of the differences that constitute inter-human variability, and that we account for that in the derivation of reference values.

Comment 19: One commenter supported the EPA's assessment of residual risk. The commenter noted that the EPA correctly focuses on sources that are directly regulated under the MON and the category-by-category approach, which is in keeping with CAA section 112 and standing precedent, rather than a broader approach that could potentially subject facilities to multiple competing and potentially inconsistent risk analyses and create unacceptable uncertainties. Another commenter supported the EPA's consideration of the facility-wide risks, rather than focusing solely on the source category.

One commenter argued that the EPA's risk assessment must account for the cumulative impact from exposure to multiple source categories' air emissions. The commenter noted that this problem is exacerbated even more by the fact that multiple toxic air sources are concentrated in minority and lower income communities. The commenter argued that the EPA cannot assume that the uncertainties from combining estimates from multiple source categories would make the assessment "unreliable," and urged the EPA to perform a cumulative analysis that considers the source categories' individual impact and risk with that of other sources to which people are exposed. The commenter stated that this means the entire assessment fails to provide an ample margin of safety. In addition, the commenter implied that the EPA has provided no information on how it reached the "facility-wide" risk numbers, including detail on the emissions or risk estimates from particular sources it considered as collocated, or how it created the % contribution rates; the commenter stated that providing only the raw total numbers in the record, without any way for the public to evaluate or comment meaningfully, is a violation of notice-and-comment requirements.

The commenter stated that assessment of the cumulative impacts from multiple source categories is in keeping with a SAB May 2010 recommendation to incorporate cumulative risk into the residual risk analysis.[72] The commenter stated that the EPA should combine current baseline emissions, exposures, and health impacts in addition to those of the specific source category, as well as evaluate background exposures and vulnerability factors such as inequality. Specifically, the commenter asserted that the EPA should aggregate or add the emissions for the most-exposed communities coming from: (1) the source category (including all individual sources within it); (2) facility-wide risk from collocated sources outside of this category; and (3) all other sources of toxic air pollution in the area. The commenter also suggested that the EPA require periodic testing and monitoring to aggregate the community's exposure and assess the full health threats faced by the affected community, including from the source under review. The commenter stated that toxicology assessments typically ignore the impact of toxic exposures to genetics and epigenetics and the evidence that many adverse health impacts from environmental exposures, like chemicals in air pollution, can in fact be passed on to subsequent generations and cause long-term harm.[73] A commenter stated that the EPA risk assessments should consider genetics and

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[72] Commenter provided the following reference: U.S. EPA, SAB., Review of EPA's draft entitled, "Risk and Technology Review (RTR) Risk Assessment Methodologies: For Review by EPA's Science Advisory Board with Case Studies – MACT I Petroleum Refining Sources and Portland Cement Manufacturing, EPA-SAB-10-007 (May 2010) at ii, 10.

[73] Commenter provided the following references: See, *e.g.*, Bruner-Tran, KL, et al., Developmental exposure to TCDD reduces fertility and negatively affects pregnancy outcomes across multiple generations, 31 Reproductive Toxicology 344; Baccarelli A. Breathe deeply into your genes: genetic variants and air pollution effects, 179 American Journal of Respiratory and Critical Care Medicine 431 (Mar. 15, 2009); Rubes J., et al., Genetic polymorphisms influence the susceptibility of men to sperm DNA damage associated with exposure to air pollution, 683 Mutation Research 9 (Jan. 2010); Rubes J., et al., Episodic air pollution is associated with increased DNA fragmentation in human sperm without other changes in semen quality, 20 Human Reproduction 2776 (June 24, 2005); Sánchez-Guerra M., et al., Environmental polycyclic aromatic hydrocarbon (PAH) exposure and DNA damage in Mexican children, 742 Mutation Research 66 (Feb. 18, 2012).

epigenetics and the evidence that many adverse health impacts can, in fact, be passed on to subsequent generations, which illustrates and additional dimension of the long-term harm that can occur in communities with continued exposure to toxic air pollution over time.

The commenter recommended that the EPA can and should use the risk assessment results available for those source categories for which it has already performed a risk assessment review; the commenter stated that the EPA must also consider the research that has already been published to assess health risk from toxic air pollution in urban communities nationwide.[74]

The commenter also recommended that the EPA draw on the OEHHA cumulative assessment approach for its risk assessment or incorporate an explicit default or UF to adjust the degree to which each source category is contributing to the total risk experienced by the most-exposed individuals. For a source category in an area with up to 10 other HAP-emitting facilities, the commenter stated that this default or UF should equal at least 10. For areas with more facilities, the commenter recommended the UF should be adjusted accordingly (*i.e.*, 11-20 facilities would result in an UF of 20, and more than 20 would result in an UF of 100, so the source category's contribution is no higher than 1/100 of the threshold).

The commenter remarked that rather than separating an environmental justice analysis and considerations of inequality from the risk assessment, considering these factors as part of the cumulative risk assessment would be a more effective, meaningful, and scientific approach. The commenter noted that the EPA can describe and manage uncertainties, as it does and other federal agencies do for many other analyses. The commenter urged that looking at a source category's contribution of risk in isolation is equivalent to ignoring the facts and pretending other health risks are not occurring. The commenter stated that the EPA may not decide that it is acceptable for a person to be exposed at a higher level simply because they live in a community where they are exposed to multiple sources of air pollution. At a minimum, the commenter urged, the EPA must not treat multiple source exposure as a missing default, or ignored amount of health risk.

Response: The EPA typically examines facility-wide risks to provide additional context to the source category risks. The development of facility-wide risk estimates provides additional information about the potential cumulative risks in the vicinity of the RTR sources, as one means of informing potential risk-based decisions about the RTR source category in question. Because these risk estimates were derived from facility-wide emissions estimates that have not generally been subjected to the same level of engineering review as the source category emission estimates, they may be less certain than the risk estimates for the source category in question, but they remain important for providing context as long as their uncertainty is taken into consideration in the process.

The EPA notes that section 112(f)(2) of the CAA expressly preserves the EPA's use of the two-step process for developing standards to address residual risk and interpret "acceptable

[74] Commenter provided the following reference: See, *e.g.*, Morello-Frosch, R., et al., Separate and Unequal: Residential Segregation and Estimated Cancer Risks Associated with Ambient Air Toxics in U.S. Metropolitan Areas, 14(3) Environmental. Health Perspectives. 386 (2006) (assessing toxic air pollution cancer risk for 309 metropolitan areas encompassing 45,710 tracts); National Air Toxics Program: The Integrated Urban Strategy, 64 Fed. Reg. 38,706, 38,738/1-2 (July 19, 1999).

risk" and "ample margin of safety" as developed in the Benzene NESHAP. In the Benzene NESHAP, the EPA rejected approaches that would have mandated consideration of background levels of pollution in assessing the acceptability of risk, concluding that "…comparison of acceptable risks should not be associated with levels in polluted urban air. With respect to considering other sources of risk from benzene exposure and determining the acceptable risk level for all exposures to benzene, the EPA considered this inappropriate because only the risk associated with the emissions under consideration are relevant to the regulation being established and, consequently, the decisions being made." (54 FR 38044, September 14, 1989). The EPA's authority to use the two-step process laid out in the Benzene NESHAP, and to consider a variety of measures of risk to public health, is discussed more thoroughly in the preamble to the proposed rule. Nothing in the CAA or the Benzene NESHAP in any way forecloses the EPA from considering facility-wide risks in making a determination under CAA section 112(f)(2), as such information can constitute relevant health information.

Although not used for consideration in the determination of acceptable risk, the EPA notes that background risks or contributions to risk from sources outside the source category under review could be one of the relevant factors considered in the ample margin of safety determination, along with cost and economic factors, technological feasibility and other factors. Background risks and contributions to risk from sources outside the facilities under review were not considered in the ample margin of safety determination for this source category, mainly because of the significant uncertainties associated with emissions estimates for such sources. As noted in the proposal preamble (84 FR 69188), "estimates of total HAP risk from emission sources other than those that we have studied in depth during this RTR review would have significantly greater associated uncertainties than the source category or facility-wide estimates. Such aggregate or cumulative assessments would compound those uncertainties, making the assessments too unreliable." The approach here is consistent with the approach taken regarding this issue in the NESHAP from the HON RTR (71 FR 76603, December 21, 2006), which the United States Court of Appeals for the District of Columbia Circuit (D.C. Circuit) upheld in the face of claims that the EPA had not adequately considered background (NRDC v. EPA, 529 F.3d 1077 (D.C. Cir. 2008)).

3.4 Demographic Analysis / Environmental Justice

Comment 20:A commenter stated that the EPA must account for increased vulnerability based on various physiological, societal, demographic, and exposure history differences as part of the risk assessment. The commenter asserted this issue is particularly important for the EPA because of the need to consider and address environmental justice as mandated by Executive Order 12898, and because the EPA found disparity in the risks that these sources create, with disproportionate exposure and risks falling on African American, Black, Hispanic or Latino populations, and people living below the poverty level. The commenter argued that the EPA cannot ignore that communities having minority and lower income populations and communities with higher than average levels of cancer, and respiratory and other health problems, as well as a lack of access to health care, are likely to be more vulnerable to the impact of toxic air pollution.[75] The commenter suggested the EPA consider and use the data available from the Center for Disease Control's Environmental Public Health Tracking Program, the ATSDR, and state and local health agencies, and academic researchers in its risk assessment.[76]

The commenter stated that the EPA must also assess the starting point or baseline overall health status of the affected individuals and communities using the best available data at a local and national level, including the baseline cancer levels, respiratory problems, and health problems associated with the toxic chemicals emitted by a source category. The commenter noted that this would be consistent with the 1999 Residual Risk Report[77] and the EPA's own statements in the 2014 Second Integrated Urban Air Toxics Report[78] that more work is needed to reduce excess cancer risks in urban areas that continue to face elevated risks. The commenter further asserted that because the EPA has not considered the existing health burden at all in affected communities, or the greater vulnerability to toxic air pollution of the particular demographic groups the EPA acknowledges are exposed, the EPA has not fully evaluated the risks as required by CAA section 112(f)(2).

The commenter recommended that the EPA follow the NAS recommendations and review and address these risk factors in this risk assessment. The commenter recommended that, in addition, or in the alternative, the EPA should simply use a default factor to account for socioeconomic and other community-based stressors, just as it does to account for intrinsic biological factors.[79] As one example the commenter pointed out that the EPA traditionally uses a factor of "100" to account for the use of animal studies, when translating such studies to assess human impacts. The commenter also noted that the FQPA directed the EPA to use a factor of at least 10 to account for in utero exposure, and that California's OEHHA uses a similar factor to account for in utero exposure. The commenter further stated that the EPA uses age-dependent adjustment factors in other contexts, and that the EPA should do the same to account for increased vulnerability based on socioeconomic factors or the presence of multiple sources to which a community is exposed.

Response: The EPA defines "environmental justice" to mean fair treatment and meaningful involvement of all people, and this definition represents a commitment to ensuring

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[75] Commenter cited the following references as examples: Chari R., et al., *Integrating Susceptibility into Environmental Policy: An Analysis of the National Ambient Air Quality Standard for Lead*, 9 International Journal of Environmental Research and Public Health 1077, 1078 & nn.5-10 (citing research); CalEPA, Cumulative Impacts: Building a Scientific Foundation at 6, 10, 12-17 (Dec. 2010).

[76] Commenter provided the following reference: Id. at 232 (describing data available on health status, and patterns of diseases and exposures).

[77] Commenter provided the following reference: EPA, Residual Risk Report to Congress, EPA-453/R-99-001 at 42, 67 (Mar. 1999) (discussing factor of "overall health" and recognizing the need to consider sensitive subpopulations that "consist of a specific set of individuals who are particularly susceptible to adverse health effects because of physiological (*e.g.*, age, gender, pre-existing conditions), socioeconomic (*e.g.*, nutrition), or demographic variables, or significantly greater levels of exposure," based on various demographic factors).

[78] Commenter provided the following reference: EPA, National Air Toxics Program: The Second Integrated Urban Air Toxics Report to Congress at xiv (Aug. 21, 2014), https://www.epa.gov/sites/production/files/2014-08/documents/082114-urban-air-toxics-report-congress.pdf.

[79] Commenter provided the following reference: Morello-Frosch R., et al., *Understanding The Cumulative Impacts of Inequalities in Environmental Health: Implications for Policy*, 30(5) Health Affairs 879, 881 nn.24-26 (2011) (citing sources).

that the EPA works to improve conditions affecting the public health of all Americans so that everyone has access to clean water, clean air and healthy communities. In the Urban Air Toxics Strategy Report to Congress[80], we acknowledge that national rules and standards can address part of the risk to communities, but because the assessments did not include background risks or contributions to risk from sources outside the facilities, more needs to be done at the community level with other tools available within the CAA and within state, local, and other federal programs. The EPA is committed to our efforts to make a difference in communities of concern and developing an integrated strategy focusing work in communities with the most need for the EPA's assistance. We have been working, and will continue to work, in thousands of communities across the country. Over the next years we will look for opportunities to enhance our partnership with communities to strengthen and improve their health – both environmental and economic. This effort to enhance coordination across our EPA programs and with other federal agencies will improve how we support community needs. We will focus on those communities where we think we have opportunities to leverage resources and actions to make a real difference. As we learn lessons on coordinating and focusing our efforts, we will use these lessons to help more communities in the future.

We are not able to determine the baseline health status of individuals or communities in this national rulemaking. Individual privacy issues as they relate to health records and the costs that would be associated with such an analysis make the analysis infeasible. Through the EPA's interim guidance on Environmental Justice and the Action Development Process, the agency is encouraging rule writers and policy makers to look at the whole range of factors that impact communities and population groups when crafting rules. The EPA is continuing to discuss and pilot approaches that are consistent with the agency's responsibilities regarding EJ as outlined in Executive Order 12898. In determining the need for tighter residual risk standards, the EPA strives to limit to no higher than 100-in-1 million the estimated cancer risk for persons living near a facility if exposed to the maximum pollutant concentration for 70 years and to protect the greatest number of persons to an individual lifetime risk of no higher than 1-in-1 million. Considerations are made for all people regardless of racial or socioeconomic status, and the EPA concludes that it is not necessary to establish a default factor to account for socioeconomic and other community-based stressors.

Regarding the comment that the EPA must consider and address environmental justice and account for the fact that people can be more vulnerable to toxic pollution due to various physiological, societal, demographic, and exposure history differences, we conclude that these are some of the differences that constitute inter-human variability, and that we account for that in the derivation of reference values, as discussed elsewhere in this document.

Comment 21: Some commenters contended the NESHAP must be updated to drastically reduce harmful emissions from these facilities and increase accountability if the EPA is to meet its environmental justice mandate. These commenters stated that facilities are disproportionately located in communities of color and low-income communities, and that they bear a disproportionate amount of the risk created by Miscellaneous Organic Chemical Manufacturing emissions. One commenter noted that the EPA should spend its time, resources, and authority to reduce the dangerous levels of exposure in the already over-burdened communities that are

[80] https://www.epa.gov/urban-air-toxics/second-integrated-urban-air-toxics-report-congress

impacted by EtO emissions. Commenters noted that the MON, because it regulates a large number of polluters, is of critical importance to environmental justice communities that the EPA identifies as being disproportionately impacted by the pollution.

Commenters noted that exposure to EtO is just one chemical among many from various sources of industrial exposures that these communities face. One commenter also asserted that the proposed rule ignores the fact that communities in Houston have multiple sources of hazardous emissions, noting that chemical facilities in Houston are already responsible for producing almost half of the amount of butadiene and ethylene produced in the U.S., both linked to MON emissions.

A commenter urged that due to the risks already present to these communities, the proposed emissions reductions are not sufficient to reduce exposure and associated health impacts as a result of air emissions from the MON facilities. The commenter urged that the EPA must increase the reductions in HAP to protect all environmental justice community members, low-income community members, and children. The commenter stressed that in these areas, members live in very close proximity to MON facilities and suffer the greatest negative health and negative quality of life impacts. Commenters added that the cost of healthcare from these emissions alone would place a severe financial burden. Two commenters also stressed that their community in Waukegan, IL is currently dealing with EtO being emitted by two facilities: Medline in Waukegan, IL, and Vantage in Gurnee IL. The commenters noted that these community centers house seniors, developmentally disabled and medically fragile adults, and daycares, populations that are more susceptible to the dangers of a class 1A carcinogen and mutagen. Another commenter maintained that the EPA should require all emitters to be located far away from schools, homes and daycares. Commenters stated that the current rule threatens communities and the workers that work inside these plants and is environmental racism.

Commenters urged that the EPA must listen to the National Environmental Justice Advisory Council, which advised the EPA to follow the 2016 IRIS value and reduce toxic air pollution from MON and co-located sources (*e.g.*, Synthetic Organic Chemical Manufacturing, Polyether Polyols Production). One commenter requested the EPA uphold its 2016 IRIS assessment since it is based on scientific standards and that rolling back the value would violate environmental justice. Another commenter stated that the EPA must address and reduce the unacceptable cancer risks suffered by communities, including from co-located chemical plants and other emissions source under common control, and reduce acute and chronic non-cancer risk. One commenter provided data from the 2014 National Air Toxics Assessment to highlight areas of Louisiana with facilities emitting EtO and the highest rates of cancer risk. The commenter pointed out that the St. Charles and St. John the Baptist parishes of Louisiana have the highest risk of cancer due to EtO in Louisiana and the United States, and pointed to a large number of facilities emitting EtO in two other parishes. The commenter also provided data for parishes with cancer risk related to emissions of chloroprene, noting that the cancer risk due to chloroprene in St. John the Baptist Parish is still the highest in the United States, and that individuals in St. John the Baptist Parish and St. Charles Parish are exposed to excess cancer risk due to combined emissions of chloroprene and EtO. The commenter also referred to an investigative journalism piece[81] on residents in St. John the Baptist, Louisiana who are exposed to the highest cancer risk in the country at a rate of 1,505-in-1 million by EtO emissions from the nearby Evonik Materials Corporation facility and chloroprene emissions from the Denka neoprene manufacturing facility.

The commenter also stated that emissions of chloroprene by the Denka Performance Elastomers, Westlake Vinyls, in Louisiana are still high enough to present unacceptable risks, asking how the EPA's proposal addressed these risks from the Denka Polymers plant and other sources. The commenter asked, if the EPA is not prepared to address these risks in the MON RTR rule, what other action the EPA plans to take, other than continuing to monitor chloroprene levels in LaPlace. The commenter stated that, according to data available through the EPA's IRIS (available at https://cfpub.epa.gov/ncea/iris2/chemicalLanding.cfm?substance_nmbr=1021), lifetime exposure to a microgram of chloroprene could result in three excess cancer deaths per ten thousand. The commenter stated that chloroprene emissions at the Chad Baker monitoring site in LaPlace averaged more than 2.8 micrograms, based on more than sixty 24-hour measurements from January 18, 2018 through January 18, 2019. The commenter argued that, based on the IRIS values, lifetime concentrations at that concentration are high enough to result in more than eight excess cancer deaths per ten thousand exposed, which is well beyond what the EPA has considered to be an acceptable level of risk.

Commenters stated that the EPA must meaningfully involve impacted communities in developing regulations. Commenters specifically noted regulating EtO, from sources co-located with HCl production facilities and other sources. Commenters urged that the EPA must hold accessible hearing locations and direct consultations in their communities. A commenter urged that the EPA must release science-based rules and educate the public on the threat of EtO so that local families can have access to information on regulatory protection mechanisms.

Response: Under EO 12898, the EPA is directed to the greatest extent practicable and as permitted by law, to make Environmental Justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low income populations. Consistent with EO 12898 and the accompanying Presidential Memorandum, the EPA's Environmental Justice policies promote justice by focusing attention and EPA efforts on addressing the types of Environmental Justice harms and risks that are prevalent among minority, low-income, and indigenous populations. EO 12898 and the EPA's Environmental Justice policies do not mandate particular outcomes from an action, but they require that decisions involving the action be informed by a consideration of Environmental Justice issues.

With respect to the final rule, the EPA has revised the risk assessment from proposal to incorporate updated emissions information, using the 2016 IRIS URE for EtO (which is developed to be a health-protective value), and found the overall level of risk from the source category to be acceptable following implementation of controls for process vents, storage tanks,

[81] Commenter referenced the following: Sharon Lerner, "A Tale of Two Cities: EPA's bungled response to an Air Pollution Crisis Exposes a Toxic Racial Divide," published in the Intercept on February 24, 2019.

and equipment in EtO service, and that the standards provide an ample margin of safely for all populations, including minority and low-income populations.

While the EPA is finalizing control requirements to achieve acceptable risk and an ample margin of safety to protect public health for all populations, the EPA also evaluated the risks for various populations as described in the demographic analysis in the proposed rule preamble and in the document titled *Risk and Technology Review - Analysis of Demographic Factors For Populations Living Near Miscellaneous Organic Chemical Manufacturing Source Category Operations* (available in Docket ID No. EPA-HQ-OAR-2018-0746). Refer to sections 2.0 and 3.0 of the document for details on the census data used in this analysis, the algorithms used to compute the risk distributions for the total population and for each demographic category analyzed. Sections 3.2 through 3.5 of the document provide detailed discussions on the source of data on race/ethnicity statistics for each census block group nationwide, level of education, poverty level, and linguistic isolation.

While we expect this rulemaking will provide benefits associated with HAP emission reductions and lower risk of adverse health effects in communities near facilities subject to the MON, the EPA continues to evaluate and refine our methods for analyzing Environmental Justice, such as the proximity analysis performed for miscellaneous organic chemical manufacturing operations. The draft EPA document titled *Technical Guidance for Assessing Environmental Justice in Regulatory Analysis* was reviewed by SAB in 2015. The Office of Air and Radiation is a contributor to this draft document and cites numerous examples of Environmental Justice analysis performed in agency rulemakings. Environmental justice considerations are a part of the rulemaking process; however, various factors influence the scope and complexity of an assessment. These factors may include, but are not limited to statutory mandates, data availability, resources and/or timeframe limitations.

In the Urban Air Toxics Strategy Report to Congress, we acknowledge that national rules and standards can address part of the risk to communities, but because the assessments did not include background risks or contributions to risk from sources outside the facilities more needs to be done at the community level with other tools available within the CAA and within state, local, and other federal programs. The EPA is committed to our efforts to make a difference in communities of concern and is developing an integrated strategy focusing work in communities with the most need for the EPA's assistance. This effort to enhance coordination across our EPA programs and with other federal agencies will improve how we support community needs. We will focus on those communities where we think we have opportunities to leverage resources and actions to make a real difference. As we learn lessons on coordinating and focusing our efforts, we will use these lessons to help more communities in the future.

We agree with the commenter that areas of Louisiana have elevated potential cancer risks due to emissions of chloroprene and EtO. However, not all of those emissions are covered by the Miscellaneous Organic Chemical Manufacturing source category, which is the subject of this action. Those emissions that are subject to Miscellaneous Organic Chemical Manufacturing source category will be reduced as outlined in the proposal. As stated in the proposal, facility-wide risks are provided for context but are not included in the acceptability determination for this source category. We also agree with the commenter that monitored values of chloroprene in the ambient air around the Denka Performance Elastomers facility result in elevated risk estimates that are greater than 100-in-1 million. For updates on the EPA's actions involving this facility, including updated monitoring results, please see the Agency's dedicated web page at https://www.epa.gov/la/laplace-st-john-baptist-parish-louisiana.

Regarding the comment that the EPA must address risks from co-located chemical plants, as discussed in the response to comment 19 of this document, based on the Benzene NESHAP, the EPA considers it inappropriate to consider risk from all exposures because only the risk associated with the emissions from the source category are relevant to the regulation being established.

3.5 Environmental Effects

Comment 22: Some commenters objected to the EPA's exclusion of bays, rivers, large lakes and oceans from the multipathway and adverse environmental risk assessments. The commenters noted that the EPA did not consider the risks to people who fish in "[v]ery large lakes and bays" and consideration of these waters is important for aquatic and marine spaces as well as communities that rely on these waterbodies. Because a large proportion of the major HAP source facilities included in the risk analysis are located near large bodies of waters (*e.g.*, Great Lakes, Lake Pontchartrain, Lake Champlain, Green Bay, and Galveston Bay), the commenters contend that the EPA's risk determinations for people and the environment underestimate the impacts of HAPs and there is insufficient evidence for the EPA's conclusions that the current NESHAP "provides an ample margin of safety to protect public health" and does not pose "an adverse environmental effect."

One commenter stated that the EPA failed to provide explanation or justification for this exclusion, and explained only that the risk model it chose to use (Total Risk Integrated Methodology.Fate, Transport, and Ecological Exposure Model, or "TRIM.FaTE") is not configured to model chemical processes and environmental fate and transport mechanisms in saltwater or brackish waters, nor is it configured to model the very large watersheds and water dynamics of rivers or very large lakes (*e.g.*, larger than 100,000 acres). The commenter stated the EPA provides no evidence that it considered alternative models, nor any evidence its assessment could possibly be adequate in spite of the exclusion. The commenter stated that this exclusion was arbitrary and capricious because bays, rivers and large lakes, and risks to humans and the environment from associated air pollution, are relevant factors to the EPA's assessments pursuant to CAA section 112(f)(2). The commenter asserted it is similarly implausible that no model exists to assess multipathway risk with bays, rivers and large lakes. The commenter said the EPA has failed to explain how or why the TRIM.FaTE model is poorly suited to risk modeling of bays, rivers and large lakes; and the EPA has full ability and authority to change that and ensure it accounts for this deposition and additional risk.

A commenter asserted that Congress amended CAA section 112 to include a mandate that the EPA regulate "source categories" of pollution in part to address "false starts and failed opportunities" in implementing the CAA,[82] including the lack of regulation of air toxics that cause adverse health effects and environmental harm "through deposition and run-off to surface waters, bioaccumulation in the food chain, or disruption of climatic or atmospheric processes."

[82] Commenter provided the following reference: 1990 CAA Legislative History, S. Rep. 101-228 at 132; reprint at 8472.

The commenter asserted that it was Congressional intent to protect the Great Lakes, noting that Congress was so concerned about the state of the Great Lakes and other large bodies of water, it also passed CAA section 112(m), to address "Atmospheric deposition to Great Lakes and coastal waters." The commenter noted that that exclusion of these bodies of water plainly contradicts the Congressional intent.

A commenter stated that the EPA fails to meet the CAA's mandate to consider "any" adverse effects by excluding adverse effects to "broad areas" like large waterbodies from the EPA's assessment and quantification of risks. The commenter stated that the EPA cannot meet its legal obligation to assess "any disruption of local or regional-scale ecosystems" while excluding such large bodies of water from its risk analysis. Commenters stated that by excluding such broad areas and all of the risks caused by deposition in these water bodies, the EPA underestimated the human health risks that MON sources' emissions pose to human health—especially to children, pregnant women, tribal communities, and people who rely on fish from those waters for their food. In this way, the commenter contended that the EPA has not proven that an "ample margin of safety to protect public health" exists as required by CAA section 112(f)(2). The commenter stated that many people fish in these water bodies, including people in subsistence fishing communities, and the water bodies and the fish that live in them are badly contaminated by, among other things, the HAPs that the EPA purported to consider in its multipathway risk assessment. The commenter referenced a Great Waters report in which the EPA reported on the particular risks to sensitive populations from consuming mercury-contaminated fish from the Great Waters.[83] The commenter attested that by ignoring the risks to people who rely on fish in large waterbodies for food during the health risk assessment, the EPA unlawfully understates the risks to human health from these sources and misses and ignores part of the problem of MON sources' emissions.

Commenters also argued that the EPA failed to assess impacts to endangered and threatened species, because the EPA did not conduct an Endangered Species Act (ESA) consultation as required during a CAA section 112(f)(2) rulemaking. One commenter stated that this failure, in combination with its exclusion of bays, rivers and large lakes, amounts to a dangerous dual-threat of potential adverse environmental effects. The commenters stressed that several federally listed threatened or endangered species live in the Great Lakes region and the Gulf of Mexico. To demonstrate that source category emissions do not cause adverse environmental effects, the commenters stated that the EPA must re-do the risk assessment with bays, rivers and large lakes included throughout, and an Endangered Species Act consultation.

A commenter contended that there should be adjusted standards for the rate of pollution emissions within a close proximity to a major body of water or residential area. The commenter stated that most of the chemicals that are being addressed in the proposal contain either heavy metals or halogens, which have a long residency time in water and soil. The commenter added that due to this slow rate of decay they run a high risk of bioaccumulation, which can cause chronic exposure. The commenter stated that these pollutants linger in the surrounding environment and they also occur at a higher rate in close proximity to where they were emitted. The commenter stated that locations within a short distance to a pollution source have a higher

[83] Commenter provided the following reference: U.S. EPA, 3 Deposition of Air Pollutants to the Great Waters at ii (2000). https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=00002VG1.txt

risk of chronic and acute exposure. The commenter concluded that a proximity clause should be added to the proposal to limit exposure to things of high societal, economic, and environmental value.

Response: Very large lakes (*i.e.*, those larger than 100,000 acres) are not considered because their large volumes significantly dilute air deposition from point sources. Such large lakes, including the Great Lakes, the Great Salt Lake, Lake Okeechobee, Lake Pontchartrain, and Lake Champlain, also dilute contaminants in the vast biomass of fish in the large aquatic food webs. Contaminants derived from emissions to air by a point source would be distributed among populations of millions of fish resulting in negligible increases in fish tissue concentrations attributable to the point source. Also, very large lakes are rare (only 35 such lakes in the conterminous United States). Moreover, for facilities near large lakes, there usually are other, smaller lakes that the EPA does consider for which contaminant dilution would be lower, and therefore risks likely higher. Thus, the EPA does model exposure via fish consumption for populations that are near large lakes in a manner that generally will be more health protective than modeling the very large lake. Lakes adjacent or connected to a river or saltwater body (estuaries and rivers) are likely to have high outflow with limited chemical retention, and are not considered in RTR assessments. Finally, very large lakes can have notable contamination from current and historical pollution produced by various industries as well as from agricultural and other land-use practices. The RTR program, however, regulates HAP at the source-category level and does so by evaluating category facilities' contributions to incremental, localized risk; cumulative risk from all sources and previous contamination is not relevant to the RTR program.

We disagree with the commenter's assertion that our environmental assessment did not adequately assess the risks to endangered and threatened species. The EPA conducted an environmental risk screening assessment to examine the potential for an adverse environmental effect as required under CAA section 112(f)(2)(A). The screen examines the overall health of aquatic and terrestrial ecosystems and any important biota or community types that could be exposed in those ecosystems, including threatened and endangered species.

Within the four exposure media, the screen evaluates nine different Generic Ecological Assessment Endpoints (GEAEs). The GEAEs are used to evaluate the overall health of populations and/or communities of species that could be exposed in those ecosystems, including threatened and endangered species. The specific species selected for the screen are those that are most likely to be highly exposed due to bioaccumulation of HAP through aquatic and terrestrial food chains. The table below summarizes the four exposure media, nine assessment endpoints, and examples of populations/communities included in the screen.

Media	Assessment Endpoint	Populations/Communities
Terrestrial Soil	1. Soil invertebrates	Earthworms, insect grubs, nematodes
	2. Terrestrial plant communities	Trees, herbs, grasses
	3. Birds that feed on soil invertebrates	Woodcock, robins, thrashers
	4. Mammal populations that feed on soil invertebrates	Shrews, moles, voles

Media	Assessment Endpoint	Populations/Communities
Surface Water	5. Benthic communities/sediment dwelling organisms	Aquatic insects, amphipods, isopods, crayfish, mussels
	6. Water-column communities	Fish and invertebrates in water-column
Fish Consumed by Wildlife	7. Birds that feed on fish and other aquatic prey	Common merganser, belted kingfisher, herons, gulls, loons
	8. Mammals that feed on fish and other aquatic prey	Mink, otter, racoon
Air	9. Plants with foliage exposed to HAP in air	Trees, shrubs, herbs, grasses, crops

For each of the nine GEAE, the screen compares the estimated HAP exposure concentration for that media to a range of ecological benchmarks. Each ecological benchmark represents a level of HAP exposure in the environment that has been linked to a particular environmental effect. The screen includes ecological benchmarks at the following effect levels: "no effect levels" (*e.g.,* no-observed-adverse-effect level), "threshold effect levels" (*e.g.,* lowest observed adverse effect level), and "probable effect levels." In cases where multiple effect levels are available for a particular persistent and bioaccumulative HAP and assessment endpoint, all of the available effect levels are used to determine whether ecological risks exist and, if so, whether the risks could be considered significant and widespread. "No effect level" benchmarks (sometimes with additional "safety" factors applied) are generally used in ecological risk assessments to assess risks to threatened and endangered species.[84] Thus, by including "no effect levels" in the screen, the most sensitive species, such as threatened and endangered species are included.

The commenter stated that the EPA should add a proximity clause to the regulation for persistent pollutants since they will be found in higher concentrations in close proximity to where they were emitted. The multipathway model TRIM, which is used for the human multipathway screen and the environmental risk screen, models the deposition of persistent and bioaccumulative HAP from the air into the waterbodies, soils, sediment, and fish located around the facilities in the source category. The model includes 50 years of deposition, and the cumulative concentrations at the end of year 50 are used to estimate exposures. Areas located closer to the facility will typically receive higher levels of HAP deposition over the 50 years than those farther away. Thus, the multipathway and environmental risk screens do consider proximity by calculating higher rates of HAP deposition in waterbodies, soils, sediments, and fish that are located closer to the emissions source.

As stated in the preamble for the proposed rule, the EPA does not expect an adverse environmental effect as a result of HAP emissions from this source category. For more information on how the environmental risk screening assessment was conducted, including a

[84] For example, see U.S. EPA (2004). Overview of the Ecological Risk Assessment Process in the Office of Pesticide Programs, Endangered and Threatened Species Effects Determination. Washington, D.C.: Office of Prevention, Pesticides and Toxic Substances, Office of Pesticide Programs. Available at: https://www.epa.gov/sites/production/files/2014-11/documents/ecorisk-overview.pdf

discussion of the risk metrics used, how the environmental HAP were identified, and how the ecological benchmarks were selected, see Appendix 9 of the *Residual Risk Assessment for the Miscellaneous Organic Chemical Manufacturing Source Category in Support of the Risk and Technology Review 2019 Final Rule* (see Docket ID EPA-HQ-OAR-2018-0746).

3.6 Ample Margin of Safety Analysis

Comment 23: A commenter argued that recent court decisions regarding the term "ample margin of safety" in CAA section 112(d)(4) demonstrate that the EPA must show that it has provided this margin in setting a standard, and it cannot lawfully fail to provide "any margin of safety at all."[85] The commenter argued that the EPA has failed to consider whether uncertainties in the health risk assessments require an "ample margin" of safety, rather than the weaker proposed standards. The commenter further stressed that the EPA inappropriately considered only "cost- effective" measures to further reduce the risk, and that the EPA has given no lawful justification for considering costs in the "ample margin of safety to protect public health" analysis, as opposed only to consideration of environmental effects under CAA section 112(f)(2). Further, the commenter stated that although the EPA admitted that options it chose not to require under section 112(f)(2) would reduce cancer risk, the EPA failed to justify refusing to do so either to reduce the remaining unacceptable cancer risk or to provide an ample margin of safety. Specifically, the commenter pointed to three options the EPA considered to further reduce risk at the ample margin stage: (1) proposed Control Option 2 for EtO equipment leaks; (2) expanding Control Option 2 to all facilities in EtO service, as opposed to only the highest EtO emitting facilities; and (3) control options identified in its technology review which are not specific to EtO-emitting sources or units. The commenter contended that refusing to finalize the proposed exemptions from malfunction releases would further reduce cancer and acute risk, and requiring fenceline monitoring would improve compliance with the emission standards. A commenter stressed that the EPA may not allow any exemption from PRD and flare standards under section 112 (f)(2), stating that the cancer risk is an order of magnitude higher than the EPA's presumptive level of unacceptability, and there is also significant non-cancer risk. The commenter countered that the EPA has failed to demonstrate how it can allow uncontrolled releases of any HAPs contributing to cancer and non-cancer risk and still provide the required "ample margin of safety to protect public health." The commenter objected to the EPA not regulating emissions from PRDs in heavy liquid service, PRDs designed solely to release due to liquid thermal expansion, pilot-operated PRDs (where emissions can be released to the atmosphere through a pilot discharge vent), and balanced bellow PRDs (if the primary release valve is vented through a control system). The commenter contended that the EPA is legally required to eliminate all unacceptable risk, and has no valid excuse for not setting fugitive emission standards to reduce the unacceptable health risks from MON sources. The commenter contended that even if fugitive emissions did not contribute to unacceptable health risks, The EPA must provide an "ample margin of safety to protect public health" under section 112(f)(2). The commenter said the EPA must set stronger LDAR standards in order to provide an "ample margin of safety to protect public health" under CAA section 112(f)(2). The commenter also said the EPA must set standards for non-subset flares, uncontrolled Group 2 process vents not in EtO service, and uncontrolled Group 2 storage tanks not in EtO service in order to provide an "ample margin of safety to protect public health" under CAA section 112(f)(2). The commenter stated

[85] *Sierra Club v. EPA*, 895 F.3d 1, 13 (D.C. Cir. 2018).

that the EPA cannot lawfully or rationally ignore these on the basis of cost, and must make these improvements and require further emission reductions to eliminate unacceptable risk and provide an ample margin of safety.

Response: We agree with commenters that baseline risks for the Miscellaneous Organic Chemical Manufacturing source category were unacceptable. However, we disagree with commenters who objected to our determinations of ample margin of safety after implementation of controls. As explained at proposal, section 112(f) of the CAA expressly preserves the EPA's use of the two-step process for developing standards to address residual risk and interpret "acceptable risk" and "ample margin of safety" as developed in the Benzene NESHAP (54 FR 38044; September 14, 1989). As explained in the Benzene NESHAP, "the first step judgment on acceptability cannot be reduced to any single factor" and, thus, "[t]he Administrator believes that the acceptability of risk under section 112 is best judged on the basis of a broad set of health risk measures and information." (54 FR 38046, September 14, 1989) Similarly, with regard to the ample margin of safety determination, "the Agency again considers all of the health risk and other health information considered in the first step. Beyond that information, additional factors relating to the appropriate level of control will also be considered, including cost and economic impacts of controls, technological feasibility, uncertainties, and any other relevant factors." *Id.* As also explained at proposal, the EPA has adopted this approach in its residual risk determinations and the D.C. Circuit has upheld the EPA's interpretation that CAA section 112(f)(2) incorporates the approach established in the Benzene NESHAP into the statute. See *NRDC v. EPA*, 529 F.3d 1077, 1083 (D.C. Cir. 2008). For additional information on the EPA's determination regarding an ample margin of safety, see Section IV.A.3 of the preamble to the final rule.

We further disagree that we have not accounted for uncertainties with the health risk assessment or that we have inappropriately considered only "cost-effective" measures to further reduce the risk. Following the risk determination, in the first step we consider multiple health risk measures and information, including the MIR, and their associated uncertainties to determine whether the risk is acceptable. Where we conclude that the risk is not acceptable, we cannot and do not consider costs in requiring controls to bring risks down to an acceptable level. In the second step, once we determine that controls are sufficient to ensure that risk is acceptable, we again review the health risk measures and information (*e.g.*, cancer and chronic non-cancer risks) and their associated uncertainties in conjunction with the costs of controls, technical feasibility, and other relevant factors to determine whether further additional controls should be required to provide an ample margin of safety to protect public health. Under the ample margin of safety analysis, we evaluated the cost and feasibility of available control technologies and other measures (including the controls, measures and costs reviewed under the technology review) that could be applied in this source category to further reduce the risks (or potential risks) due to emissions of HAP, considering all of the health risks and other health information considered in the risk acceptability determination described above.

We disagree with comments recommending that the EPA should have proposed additional requirements under section 112(f)(2) to reduce cancer risk, provide an ample margin of safety, or eliminate all unacceptable risk, such as setting additional standards for equipment leaks, PRDs, flares, and Group 2 storage tanks. In our analysis, we considered the results of the technology review, the risk assessments, and other aspects of our MACT rule review to determine whether there were any cost-effective controls or other measures that would reduce emissions further and would be necessary to provide an ample margin of safety to protect public health. We provided a discussion for our ample margin of safety analysis, including our identification of technically feasible control options, costs and cost effectiveness associated with those options, and our review of the health metrics associated with those options identified for the various emission sources at miscellaneous organic chemical manufacturing facilities. Discussion of our ample margin of safety analysis can be found in the preamble to the proposed rule at 84 FR 68219-69220. Further, we note that in this final rule, the revised risk assessment results in reduced risks such that additional emission reductions beyond the application of controls for process vents, storage tanks, and equipment leaks under Control Option 1 is not warranted to achieved acceptable risks. Additionally, such additional controls as requested by the commenters (*e.g.*, revision of PRD or flare requirements, establishing standards for fugitive emissions, more stringent LDAR requirements, or fenceline monitoring) would not reduce facility-wide emissions or risks significantly enough to warrant the additional costs, and are not required to achieve an ample margin of safety. In addition, the source category-specific decision of what constitutes an acceptable level of risk should be a holistic one; that is, it should simultaneously consider all potential health impacts – chronic and acute, cancer and non-cancer, and multipathway – along with all their uncertainties, when determining the acceptable level of source category risk.

Further, our UREs for HAP are considered a plausible upper-bound estimate with an appropriate age dependent adjustment; actual potency is likely to be lower and some of which could be as low as zero. Our chronic noncancer dose-response reference values, including those derived by the EPA and similar authoritative agencies (*e.g.*, ATSDR and Cal EPA) have been derived considering the potential susceptibility of different subgroups, with specific consideration of children. These values represent chronic exposure levels that are intended to be health-protective, and are derived using an approach that is intended to underestimate risk in the face of uncertainty and variability. When there are gaps in the available information, uncertainly factors are applied to derive reference values that are protective against appreciable risk of deleterious effects.

3.7 Risk Acceptability and Stringency of Proposed Rule

Comment 24: Commenters supported the EPA's proposal that the risk from the Miscellaneous Organic Chemical Manufacturing source category is unacceptable. The commenters stated that the real-world health risks are higher than captured by the EPA's risk assessment, and the EPA should recognize that there is no "acceptable" or safe level of risk. However, the commenter urged that the EPA's proposed emission standard fails to reduce cancer risk from the Miscellaneous Organic Chemical Manufacturing source category to below the EPA's benchmark of unacceptability (100-in-1 million), and is still far too high. A commenter stated that the EPA has not demonstrated why a 300-in-1 million MIR is acceptable. The commenter argued that the EPA has long had a presumption that cancer risk above 100-in-1 million is unacceptable, as established in the Benzene Rule, referring to the D.C. Circuit.[86] The commenter stressed that the EPA must require further emissions reductions to reduce cancer risk, to at least below that benchmark, and without using cost to try to justify a less health-protective

[86] Commenter provided the following reference: See NRDC, 529 F.3d at 1082 (finding that "the Benzene standard established a maximum excess risk of 100-in-one million, while adopting the one-in-one million standard as an aspirational goal," and that "[t]his standard [was] incorporated into the amended version of the Clean Air Act").

standard, or its actions will be inconsistent with the Act, with the 2008 NRDC HON decision, with the Benzene Rule, and with the EPA's application of its own guidelines. The commenter further contended that the EPA did not even consider further reducing this cancer risk or evaluate alternatives that would do so, even though there are multitudes of additional ways in which the EPA could reduce emissions beyond what it proposes. The commenter argued that citing "uncertainties" to avoid reducing the risks below the EPA's benchmark is unlawful and arbitrary. Two commenters stated that the EPA recognizes there are always uncertainties in risk assessment, but CAA section 112(f)(2) requires the EPA to protect the "individual most exposed" based on the maximum risk they face. One commenter noted that the EPA pointed to "uncertainties" in equipment leak emissions data but that does not justify ignoring the risks. The commenters stated that the EPA describes the numbers it modeled for the two highest risk facilities as its "best estimate" of equipment leak emissions. The commenter noted that for the Lanxess facility, the EPA "used the highest emission estimate in our model run to be conservatively health protective"[87], and cannot write the number off as too health protective. For Huntsman, the commenter noted that the EPA states that it modeled emissions and used "engineering calculations" for estimates that "are not based on measured values"; the commenter stressed that these estimates are usually underestimates, not overestimates. The commenter asserted that the EPA did not perform emission testing or fenceline monitoring that would have allowed it to substitute more reliable emission numbers for the "best estimates" of leaks that it provides. The commenter asserted that, if anything, the uncertainties in these data favor health protection, because there are so many ways in which the EPA is underestimating cancer and other kinds of health risks from MON sources, and any uncertainties are due in part to the agency's own refusal to collect emission data, refusal to follow the most current science, or take other action to improve on the "best estimates" it has. Commenters demanded that "uncertainties" warrant stronger standards, not weaker ones. The commenter also contested that the EPA justified not reducing the risk farther because industry asked the EPA to question its own toxicologists' final 2016 IRIS cancer risk value for EtO. The commenters stressed that the EPA can provide no lawful or rational ground to ignore the cancer risk. Another commenter indicated the EPA did not provide adequate rationale for considering the "central estimate" for the EtO URE in its risk acceptability discussion. The commenter pointed out the citation the EPA used, EPA's Guidelines for Carcinogen Risk Assessment[88], did not provide specific guidance on the use of the "central estimate" when human data were available in the derivation of the URE.

Conversely, one commenter urged that the EPA should recognize that the MIR is substantially below the presumptive threshold, even if all the acknowledged uncertainties associated with the administrative record and supporting information cannot be resolved in time to meet the regulatory deadline. The commenter stated that this recognition would allow the EPA to find that risks are acceptable. The commenter stressed that the ability to take uncertainties into account – such as those regarding the URE and the quantity of existing emissions – when making a "safe" determination is well within the EPA's authority. The commenter quoted the Benzene NESHAP, reiterating "EPA believes that it is essential to consider the quality of the information that it uses to make decisions when the decisions are being made. Thus, the EPA agrees with commenters that it would be inappropriate to evaluate the 'safe' level... without taking

[87] Commenter referenced 84 Fed. Reg. at 69,216.

[88] *Guidelines for Carcinogen Risk Assessment*, EPA/630/P-03/001F, 2005. Available at: *https://www.epa.gov/sites/production/files/2013-09/documents/cancer_guidelines_final_3-25-05.pdf*

uncertainties (both scientific and technological) into account." [89] The commenter stated that similar action is appropriate for the MON, where all of these uncertainties indicate that risks are well below the level calculated in the proposal. The commenter pointed to the EPA's acknowledgement of several uncertainties within the proposal that result in MIRs that "are likely biased high", which is attributed to a variety of factors, including updated emissions information that was received but not used to inform the proposal, its use of engineering calculations over actual emissions, and modeling emissions from sources that may not be subject to MON. The commenter urged that, given these acknowledgements, if the EPA were to proceed based on those erroneous MIRs, it would be deciding that a residual risk exists based on data that it knows are more likely than not to be wrong or inaccurate. The commenter contended that if the EPA had fully addressed the submitted information (especially related to the IRIS value) at the time of proposal, the inevitable conclusion would have been that the MIR was below the presumptive safe level of 100-in-1 million. The commenter argued that the EPA cannot ignore this new information and simply proceed based on its original conclusion, and must make the determination that there is no residual risk. The commenter suggested that if the EPA finalizes a rule based on an MIR that it knows is too high, it could result in significant consequences for companies subject to the rule, who would be required to comply even if the EPA subsequently undertakes a full review of the IRIS value and affirms that that value overstates the risks of EtO exposure. On the other hand, the commenter stated that a conclusion that risks are acceptable given the uncertainty would not result in meaningful additional risk, because even using the current IRIS value, only long-term exposures are of concern, and the EPA can mitigate that minimal additional risk by initiating a prompt and full review of the IRIS value. Commenters also urged that the existing regulations ensure that EtO emissions are safe at current levels, as validated through current means of enforcement.

Response: Regarding the comments that the EPA should recognize that there is no "acceptable" or safe level of risk, that the EPA's proposed emission standards fail to reduce cancer risk from the Miscellaneous Organic Chemical Manufacturing source category to below the 100-in-1 million benchmark, and that the EPA must require further emissions reductions to reduce cancer risk to at least below that benchmark, we disagree, and refer to the response to comments in Section IV.A.3 of the preamble to the final rule.

We further disagree with commenters that the EPA cited "uncertainties" to avoid reducing the risks below the EPA's benchmark. Our consideration of uncertainties (*i.e.*, the emissions dataset, dispersion modeling, exposure estimates, and dose-response relationships) was discussed in section III of the proposal preamble. We contend that such uncertainties are considered in light of all potential health impacts – chronic and acute, cancer and non-cancer, and multipathway - to determine whether the risk is acceptable. Once we determine that controls are sufficient to ensure that risk is acceptable, we again review the health metrics (*e.g.*, cancer and chronic non-cancer risks) and their associated uncertainties in conjunction with the costs of controls, technical feasibility, and other relevant factors to determine whether further additional controls should be required. These considerations are consistent with the Benzene NESHAP decision framework of 1989, which incorporates knowledge of scientific uncertainty in making the residual risk decision. The D.C. Circuit has upheld the EPA's interpretation that CAA section

[89] Commenter provided the following reference: FOOTNOTE: 54 Fed Reg. 38062.

112(f)(2)(B) incorporates the approach established in the Benzene NESHAP. See *NRDC v EPA*, 529 F.3d 1077 1083 (D.C. Cir 2008).

We note that, based on comments received during the public comment period, we are revising the residual risk assessment for the final rule to incorporate newly obtained measurement data into the emissions estimates for the Lanxess and Huntsman facilities to reflect the best available data (including stack test data received in a CAA section 114 ICR for the Lanxess facility, and improved estimates for EtO emissions based on measured values provided by Huntsman). These revisions address the commenter’s concerns regarding uncertainties associated with the prior use of estimated emissions and engineering calculations. In lieu of these revisions, we believe that the risks estimates are more representative in the final rule. See Section IV.A.3 of the preamble to the final rule for additional information.

Regarding commenters’ concerns that the EPA should recognize that the MIR is substantially below the presumptive threshold, we disagree. However, we acknowledge that following the revised risk assessment and the implementation of controls for process vents, storage tanks, and equipment in EtO service, the number of people estimated to have a cancer risk greater than 100-in-1 million is reduced to 107, the incidence is reduced from to 0.09, and the MIR is expected to be 200-in-1 million. When weighing the evidence of the uncertainties previously discussed (and inherent in all risk assessments as discussed in the preamble to the proposed rule (see 84 FR 69219)) and the EPA’s use of the 2016 IRIS URE for EtO, after application of the EtO-specific controls, we find that the risks are acceptable.

For responses to comments related to the use of the IRIS EtO URE for the risk assessment for this source category (both in support of using it and against using it), the reader is referred to section 4.0 of this document. Regarding the comment on the EPA’s rationale for considering the “central estimate,” we note that the preamble discussion of dose-response modeling uncertainty has been revised and no longer references the 2005 Guidelines for Carcinogen Risk Assessment.

Comment 25: Commenters supported the EPA finalizing the proposed controls based upon (1) the best risk information from the current IRIS values without amending it through the application of uncertainty estimates, and (2) the latest advancements in control technology. Commenters urged that this agency must finalize all proposed improvements to reduce emissions, including for flares, leaks, storage tanks, and vents, and removing the unlawful exemption for emissions during periods of SSM. One commenter urged that the proposed regulations seem far too casual with respect to EtO losses to the environment, and remain inadequate to meet the spirit and goals of the CAA. The commenter stated that the amendments must include key emission controls and reductions for toxic air pollutants. Commenters urged that the EPA must require further emission reductions and strengthen the proposed emission standards, to eliminate unacceptable risks and protect the public with an ample margin of safety. Commenters stated that the EPA must require fenceline monitoring and additional emissions reductions (*e.g.*, stronger LDAR, further emissions limits and reductions and emissions from flares and pressure-release devices, prevention of emergency releases, and preparation for storms). Commenters asserted that the EPA must require air monitoring to account for the uncertainty in emissions measurement and estimations. These commenters also contended that the EPA must finalize all proposed improvements to control technology and emissions reduction, but further reduce emissions consistent with the IRIS URE. One commenter requested that companies be expected to use backup systems for stronger leak detection and shutting down of damaged lines to quickly prevent further leakage, and to immediately repair the source of leaks. Commenters stated that the MON rule must be the strongest it can be.

Some commenters stated that the EPA must not leave any community facing emissions that cause cancer risk as high as 200 to 300-in-1 million, two to three times the EPA's benchmark for unacceptable risk. Commenters requested the EPA reevaluate the proposed rule to reduce cancer risk below 100-in-1 million. One commenter referenced the CAA Handbook, quoting, "If the analysis shows a lifetime cancer risk of less than one in 1,000,000, the existing MACT standards are deemed to provide an "ample margin of safety" and no further action is required. If the maximum risk is one in 10,000 (*i.e.,* 100 in 1,000,000) or greater, the standard generally is not considered protective and additional actions are necessary to reduce risks. If the MIR is between these two thresholds, the EPA will consider costs, technical feasibility, and other factors to determine whether additional actions are needed." The commenter urged that while the 100-in-1 million threshold is not a hard limit at that exact value, it is not purely discretionary, and the exact risk level must be reasonably close to this level or it is presumptively unacceptable. The commenters argued that the cancer risk in the proposed rule is 20 to 30 times the benchmark, with one commenter specifying that under the EPA's proposed rule, the remaining cancer risk is as high as 2,000-in-1 million from breathing air near a MON source, and 3,000-in-1 million from breathing near a MON facility. Commenters requested the EPA require standards that have an acceptable risk level at no more than 100 additional cases of cancer per one million people. Other commenters stated that the EPA should apply additional requirements only as necessary to bring the risk below the presumptive limit of 100-in-1 million, and that EtO specific requirements are not warranted at other facilities that do not generate unacceptable risk.

Response: Consistent with the proposal, the EPA is promulgating final amendments to the MON pursuant to CAA section 112(f) that require control of EtO for process vents, storage tanks, and equipment in EtO service. For process vents and storage tanks in EtO service, the EPA is finalizing the requirements, as proposed. For equipment leaks, the EPA is not promulgating final amendments for co-proposed equipment leak "Control Option 2" for controlling emissions from MON equipment in EtO service; instead, we are finalizing the co-proposed equipment leak "Control Option 1", which requires more stringent monitoring and LDAR. We find that these control requirements achieve acceptable risks and provide an ample margin of safety to protect public health, and more stringent standards are not necessary to prevent an adverse environmental effect. Regarding the comments that the EPA must require further emission reductions and strengthen requirements that would reduce cancer risk, provide an ample margin of safety, or eliminate all unacceptable risk, we disagree. As discussed in Section IV.A.3 of the preamble to the final rule, we note that the revised risk assessment results in reduced risks such that additional emission reductions beyond the application of controls for process vents, storage tanks, and equipment leaks under Control Option 1 is not warranted, given that such additional controls as requested by the commenters (*e.g.,* stronger LDAR, further emissions limits and reductions and emissions from flares and pressure-release devices, fenceline monitoring, or back-up systems for storms) are not considered cost-effective and would not reduce facility-wide emissions or risks significantly enough to warrant the additional costs.

Finally, regarding the comments that the EPA must reduce the remaining cancer risk below 200-in-1-million, we disagree and note that, under the two-step approach developed in the

Benzene NESHAP, the 100-in-1 million cancer risk is not a bright line indicating that risk is "acceptable." For additional information regarding the EPA's determinations of risk acceptability, see Section IV.A of the preamble to the final rule.

Likewise, we disagree with the comments that fenceline monitoring or air monitoring should be required. Unlike petroleum refineries, MON facilities are quite varied in the chemicals they manufacture and emit. Therefore, requiring a national standard for fenceline monitoring is not reasonable in this situation. Specifically for EtO, the technology to conduct fenceline monitoring is not yet feasible to require it at all facilities. Requiring air monitoring will not help address emissions uncertainties unless they are specifically cited to be source-oriented monitors.

Finally, we refer the reader to the Section IV.A.3 of the preamble where we discuss risks greater than 100-in-1 million being acceptable. In brief, 100-in-1 million is not a bright line and must be considered along with all the other health metrics (*e.g.*, population exposed) and associated uncertainties. We agree with the commenter that facility-wide risks remain elevated around some MON facilities, however they are driven by emissions from units regulated by other source categories present at the facility and not the MON. Therefore, requiring additional MON reductions will not appreciably alter the remaining facility-wide risk.

Comment 26: One commenter suggested using an alternative to the EPA IRIS URE would result in a post-control MIR at or below 100-in-1 million. The commenter also suggested that two alternatives to the IRIS URE (Valdez-Flores and TCEQ) would result in a pre-control MIR below 100-in-1 million. The commenter conducted their own risk modeling using alternatives to the IRIS URE, which were substituted for the IRIS URE in the HEM-3 (Human Exposure Model) dose-response library, with the risk model re-run for the two facilities with the highest category-specific cancer risk. The commenter provided summarized results in a table. The commenter provided alternatives to the IRIS URE adjusted by applying a factor of 1.5 for early life sensitivity to mutagenic compounds, using the IRIS URE, TCEQ URE and Valdez-Flores URE. The commenter contended that these other alternative values more accurately reflect the cancer risk associated with EtO, and that if the EPA were to adopt a more accurate URE it would necessarily conclude that risks from the source category are acceptable. The commenter also recommended that the Agency should evaluate the pre-control risks using the standard log-linear Cox Proportional Hazard (CPH) model – as used and validated by TCEQ's analysis – or as they have proposed. The commenter said the upper-bound UREs for these approaches are 3 orders of magnitude lower than that derived by IRIS. The commenter argued that any of the EPA's alternatives to the IRIS URE in the memorandum, *Sensitivity of Ethylene Oxide Risk Estimates to Dose-Response Model Selection* (*i.e.*, based on combinations of linear regression categorical data, log-linear spline and linear models) are more appropriate than the IRIS (2016) value, not by virtue of the specific models selected, but because the resulting central or upper-bound estimates are 5-10 fold lower than the IRIS value, moving in the correct direction towards the more valid biologically-based estimates proposed by TCEQ.

The commenter's risk modeling also incorporated revisions to emissions data as provided by the two facilities with elevated risk levels. The commenter noted that with these corrections, and using the EtO IRIS URE, the estimated maximum cancer risk associated with the Huntsman facility drops to less than 100-in-1 million prior to imposition of additional controls, and the Lanxess facility is estimated to be approximately 300-in-1 million, which drops to the 100-in-1 million after application of additional emission refinements and Control Option 1, and would resolve any excess risk issues.

Alternatively, one commenter suggested that since the EPA finalized the IRIS factor for EtO in 2016, TCEQ has made every effort to ignore or discredit it in a manner that fails to protect Texas communities. This commenter also contrasted the TCEQ methodology to that of the IRIS program. They state that "Just as instructed by the ACC, and despite TCEQ's own March 2017 conclusions, TCEQ selected Valdez-Flores et al. (2010) as its key study; (2) incorporated the unpublished, not peer-reviewed update, Bender et al., with the help of Dr. Valdez-Flores, an EtO and sterilant trade group consultant; (3) ignored breast cancer, even though TCEQ admits that breast cancer incidence data supports a much stronger toxicity factor, because the "results [were] not consistent with TCEQ conclusions;" and (4) ignored what it described as endogenous exposure. The commenter urged that neither TCEQ's proposed DSD, Dr. Valdez-Flores's analyses, nor the underlying study Bender et al. have undergone any independent peer review.

Response: We are not incorporating an alternative to the EPA IRIS URE for EtO in the final rule. Instead, as indicated in the preamble, we have decided to continue to use the EPA IRIS EtO URE in the risk assessment for this source category. Although a commenter suggested use of the TCEQ dose-response value, it had not yet been finalized by the close of the public comment period for this rulemaking and could not be considered. The Valdez-Flores value that the commenter suggested as an alternative value does not meet the criteria for consideration for use for a regulatory purpose (*i.e.*, a dose-response value that has been developed in a manner consistent with the EPA guidelines, has undergone public review, and has undergone a peer review process).[90]

We note that we have revised the residual risk assessment to take into account improved emissions estimates for certain facilities provided through a CAA section 114 request and during the public comment period. These changes incorporate the current best available data for facilities that were previously driving the source category risk, and result in reduced risk estimates that we believe are more representative of the source category. For responses specific to the IRIS URE, please see section 4.0 of this document. With respect to the revised emissions, we have incorporated that data along with other information on emissions into our final emissions inventory for use in the risk assessment for the final rule for this source category, as discussed in Section IV.A.3 of the preamble to the final rule. Details on the emissions can be found in Appendix 1 to the risk assessment report, *Residual Risk Assessment for the Miscellaneous Organic Chemical Manufacturing Source Category in Support of the 2020 Risk and Technology Review Final Rule,* available in the docket for this rulemaking. Details on the risk assessment itself can also be found in the risk assessment report.

[90] Documentation of this approach, as applied in the CAA section 112(f)(2) reviews, is in the EPA report titled "Risk and Technology (RTR) Risk Assessment Methodologies: For Review by the EPA's Science Advisory Board: Case Studies – MACT I Petroleum Refining Sources and Portland Cement Manufacturing." June 2009. EPA-452/R-09-006. This approach is also documented in the *Residual Risk Assessment for the Miscellaneous Organic Chemical Manufacturing Source Category in Support of the 2020 Risk and Technology Review Final Rule*, which is available in the docket for this rulemaking

4.0 EtO IRIS URE

4.1 IRIS Process

4.1.1 General Comments on the IRIS Process

Comment 27: A range of general comments were submitted on aspects of the IRIS process in relation to the assessment of EtO, as summarized in "Evaluation of the Inhalation Carcinogenicity of EtO (CAS Registry Number 75-21-8)" (hereafter referred to as the IRIS EtO Assessment).[91] Some commenters opposed aspects of the IRIS process while other commenters expressed support for the IRIS process.

Two commenters indicated that the assessment did not implement National Research Council (NRC) recommendations encouraging the EPA to move away from the old paradigm of selecting the "best" model and the "best" toxicity value, and instead develop approaches for integrating multiple toxicity values rather than selecting one value or study that appears to be the "best."[92] One commenter claimed that, without implementation of the NRC recommendations, the EtO URE is not scientifically defensible. Another commenter suggested that the IRIS program lacked an appropriate framework for systematic review and integration of all applicable lines of evidence.

Commenters stated that the EPA failed to provide incidence data from the National Institute for Occupational Safety and Health (NIOSH) study and that prevented a complete review by stakeholders and prevented other researchers from evaluating how the data would impact alternate or improved methodologies and models.

One commenter claimed that the NAS and the US Government Accountability Office (GAO) released reports that challenge the IRIS assessment. This commenter claimed that arguments supporting the scientific basis of the outcome are inconsistent with recommendations that the NAS has made to the IRIS program over the years.

Several commenters questioned the objectivity of the assessment. Commenters claimed that the EPA lacked objectivity because they used biased language to describe some data not included in the assessment. The commenter also claimed that the IRIS program violated principles regarding scientific objectivity in the 2006 proposed OMB Risk Bulletin which specifies that risk assessments must be scientifically objective, and weight should be given to both positive and negative studies, in light of each study's technical quality.

Many commenters supported the IRIS program in general and noted that IRIS has been praised by the NAS, the medical community, the public health community and environmental organizations. Numerous commenters stated that the recently completed IRIS assessment of EtO represents the best available science, because the assessment was systematic, well-researched, and peer-reviewed. The commenters specifically noted that the IRIS assessment "was completed

[91] The IRIS EtO Assessment and Appendices are located online at https://cfpub.epa.gov/ncea/iris_drafts/recordisplay.cfm?deid=329730

[92] National Research Council, National Academy of Sciences. 2011. Review of the Environmental Protection Agency's Draft IRIS Assessment of Formaldehyde.

after an extensive development period, going through a rigorous internal and external peer review, including by the Science Advisory Board in a public setting."

The commenters also stated that the IRIS program is intentionally separated from policymaking "to ensure independent, impartial, and robust consideration of toxicity information." These commenters also stated that the EPA should withdraw its attempt to reopen the standard on EtO and suggested that some organizations wish to discredit the IRIS program and pressure the EPA to alter the IRIS EtO risk estimates. Similarly, one commenter expressed concern that there is an attempt to politicize the science and depart from the use of the IRIS EtO Assessment. Another commenter stated, "Since the Agency invested so significantly in the resources to produce the 2016 IRIS value, it is unreasonable for the Agency to seek alternatives only a few years after publishing a value it confidently believed to be accurate." Other commenters noted that the EPA could not ignore or stop using the 2016 IRIS value without following the usual IRIS external peer-review process to create a new value, and this would require external peer-review. Numerous commenters stated that the EPA cannot arbitrarily alter the IRIS risk factor based on industry pressure.

Another commenter noted that the EPA's IRIS program has been praised by the National Academies of Science, the nation's premiere scientific institute, as well as the medical community, public health community, and the environmental community. The same commenter noted that for more than thirty years the program has used a rigorous, science-based process to assess the human impacts of chemicals found in the environment.

One commenter also indicated, with regard to referencing the memorandum from Dr. White to Dr. Thayer reviewing the choice of the two-piece linear spline model, that "The White memo and the EPA's consideration of it is itself highly unusual and out of step with EPA practice."

Response: Many of the general comments received on the IRIS assessment have been addressed previously as part of the response to peer and public review comments on the 2013 draft IRIS EtO assessment (IRIS, 2016, Appendix K, p. K-1-2) and as documented in the 2016 IRIS EtO assessment:

> The EPA has complied with applicable guidelines. The EtO assessment was largely developed before the IRIS program [fully implemented] … the 2011 NRC recommendations and formalizing approaches to conducting and documenting systematic review. Although not presented in the formalized [systematic review] manner IRIS has been developing [recently], the EtO assessment [underwent two rounds of public external peer review and]… [presents] weight-of-evidence analysis based on the best available science. [There is no reason to expect that conclusions would be different if the assessment had been conducted with full implementation of systematic review.] Considerations used in assessing the epidemiological studies are summarized at the beginning of Section 3.1, and the considerations used in the weight-of-evidence analysis for carcinogenic hazard are detailed in Section 3.5.1, culminating in a synopsis of how the evidence fits the lines of evidence for the characterization of "carcinogenic to humans" laid out in the EPA's 2005 *Guidelines for Carcinogen Risk Assessment*. Considerations used in selecting the epidemiology study(ies) for quantitative risk

estimation are summarized in Section 4.1, along with considerations used in selection of exposure-response models. A …[comprehensive] literature search was conducted from January 2006. Major new studies identified in the literature search as well as even more recent studies noted by the ACC in its public comments have been added to Appendix J. The charge to the SAB include[d] questions addressing adequacy, transparency, and clarity of the assessment and completeness of the appendix on new studies. With respect to the breast cancer incidence data, the EPA's Information Quality Act guidelines do not require that all underlying raw epidemiology data be publicly available; they allow for confidentiality constraints.

One commenter claimed that the NAS and the GAO released reports that challenge the IRIS assessment. This is inaccurate. The NAS and the GAO have made recommendations on the IRIS program.[93,94] They did not focus on the IRIS EtO assessment. In its most recent assessment, the NAS indicated the IRIS program has made substantial progress in implementing recommendations from past reports.[95] In March 2019, the GAO issued a report on 1) the IRIS Program and 2) EPA's implementation of TSCA, as amended. One of the conclusions from the report is that the IRIS Program has addressed many process challenges, including by making changes to address the length of time it takes to develop chemical assessments and to increase transparency.[96]

With regard to a commenter's reference to the 2006 OMB proposed bulletin on risk assessment, on January 9, 2006, the OMB did release a proposed bulletin on risk assessment for comment by the public and peer review by the NAS. In January 2007, the NAS committee reported that the proposed bulletin was "fundamentally flawed" and should be withdrawn by OMB. The NAS committee said that OMB should issue a bulletin that outlines goals and general principles of risk assessments that federal agencies could use to develop their own guidance. On September 19, 2007, OMB withdrew the proposed bulletin and instead issued a memorandum

[93] National Research Council of the National Academies, Review of EPA's Draft IRIS Assessment of Formaldehyde (Washington, D.C.: National Academies Press, 2011); Review of EPA's Integrated Risk Information System (IRIS) Process (Washington, D.C.: National Academies Press, 2014); and Progress Toward Transforming the Integrated Risk Information System (IRIS) Program: A 2018 Evaluation (Washington, D.C.: National Academies Press, 2018).

[94] U.S. Government Accountability Office (GAO). Chemical Assessments: An Agencywide Strategy May Help EPA Address Unmet Needs for Integrated Risk Information System Assessments, GAO-13-369 (Washington, D.C.: May 10, 2013) and High-Risk Series: Progress on Many High-Risk Areas, While Substantial Efforts Needed on Others, GAO-17-317 (Washington, D.C.: Feb., 15 2017) and Chemical Assessments: Status of EPA's Efforts to Produce Assessments and Implement the Toxic Substances Control Act, GAO-19-270 (Washington, D.C.: March 2019). https://www.gao.gov/assets/700/697212.pdf

[95] National Research Council of the National Academies, Progress Toward Transforming the Integrated Risk Information System (IRIS) Program: A 2018 Evaluation. Washington, D.C.: National Academies Press, 2018.

https://www.nap.edu/catalog/25086/progress-toward-transforming-the-integrated-risk-information-system-iris-program

[96] U.S. Government Accountability Office (GAO). 2019. Chemical Assessments: Status of EPA's Efforts to Produce Assessments and Implement the Toxic Substances Control Act. March 2019. GAO-19-270. https://www.gao.gov/assets/700/697212.pdf

reiterating and reinforcing principles for risk assessment that were originally written in 1995, indicating that agencies should comply with the principles.[97]

As explained in the preamble to the final rulemaking, the Agency decided to continue to use the EPA URE for EtO for the risk assessment performed for the final RTR NESHAP rulemaking for the MON source category.

4.1.2 Weight of Evidence

Comment 28: Several comments focused on the use of the weight of scientific evidence for the EtO IRIS toxicological review. Two commenters stated that the EPA failed to use the larger body of epidemiologic data available for risk quantification of EtO. They claimed that the assessment is inconsistent with direction from NAS committees and the EPA's own risk assessment guidance documents on using the weight of scientific evidence. One commenter referenced NAS guidance that "strongly suggests that the EPA consider approaches to integration of as much of the evidence as possible rather than selecting a limited segment of the evidence in deriving an organ-specific, system-specific, or an overall toxicity value."[98] The commenter further stated that "the NRC/NAS has repeatedly admonished IRIS to avoid biases toward inclusion of certain outcomes, such as only positive outcomes..." The commenter indicated that the EPA inappropriately omitted studies that did not show a dose-response relationship. Specifically, the commenter noted that the goal should be to "interpret possible reasons for disagreement among studies, not to select the 'best' ethylene oxide study and rely on it even if it is contradicted by other study results for ethylene oxide."

In contrast, several commenters suggested that a key strength of the EPA's EtO IRIS toxicological review is the use of a weight-of-evidence approach to weigh multiple lines of scientific evidence. One commenter stated that the IRIS process was "recent, robust, and transparent" and considered all relevant human and animal carcinogenicity, and included a sensitivity analysis. One commenter noted the duration of SAB review and stated that "Ethylene oxide risk was under review by Science Advisory Board at the EPA for more than 20 years, persisting across multiple administrations and their priorities. The EPA followed a prescribed process, ensuring its integrity by relying on expertise of its own professional scientists, as well as independent scientists with particular knowledge on different related topics." One commenter noted that science is self-correcting, and that the IRIS URE will be revised in the future as more data become available. The commenter stated that "This is particularly true because the majority of what we understand of ethylene oxide carcinogenicity comes from occupational cohorts (where some cancers are significant) and animal exposures (where the evidence for carcinogenicity is overwhelming)."

Several comments addressed the weight of evidence for the carcinogenicity of EtO. Two commenters stated that toxicological, epidemiological, and mechanistic studies do not support the scientific basis for both International Agency for Research on Cancer (IARC) and the EPA

[97] Congressional Research Service (CRS). CRS Report for Congress: OMB and Risk Assessment. Updated March 14, 2008.
https://www.everycrsreport.com/files/20080314_RL33500_c9ccc307e68a7b7dce49667be3b07ad21571218b.pdf

[98] NRC. 2014. Review of *EPA's* Integrated Risk Information System (*IRIS*) *Process*. Washington, DC: The National Academies Press.

classifications of EtO as a known human carcinogen. Several commenters stated or endorsed the statement that "[The IRIS value is] (1) statistically significantly over-predictive; and not supported by: (2) carcinogenic mode of action (MOA)…" Two commenters cited lack of supporting studies in animals, stating that the animal evidence cited by the EPA found no reliable indication that animals exposed to EtO developed more mammary gland tumors or lymphoid cancers than unexposed animals. The commenter cited studies that do not support EtO carcinogenicity in animals.[99,100]

Other commenters noted that the EPA finding of EtO carcinogenicity is consistent with findings from other agencies, including the National Toxicology Program and IARC. Several commenters noted that numerous other agencies and studies support the carcinogenicity conclusions of the IRIS EtO Assessment and that the IRIS EtO Assessment findings are strongly supported by mechanistic studies, animal studies, and human studies. One commenter specifically cited occupational exposure studies in Sweden, Hungary and the United States, stating that "the undisputed, bottom line conclusion to the IRIS evaluation was that compounds such as ethylene oxide are carcinogenic." Several commenters noted the evidence included analysis of inhalation exposure and noted that other scientists and health experts have independently confirmed this finding, including the National Toxicology Program, IARC, and OSHA.

Numerous commenters specifically noted the supporting epidemiological data, including in occupationally exposed persons, and stated the URE for EtO is "based on strong epidemiological evidence supplemented by other lines of evidence on lymphoid and breast cancers." Several commenters noted supporting toxicological and mechanistic studies, stating that IRIS conclusions were strengthened by rodent studies with "evidence of cancer in blood and breast tissue and cellular mechanistic evidence that ethylene oxide is genotoxic and mutagenic."

Another commenter observed that positive DNA adduct data in mice and rats support the conclusion that EtO is mutagenic and the determination that EtO is a human carcinogen.[101,102]

One commenter summarized support for the conclusion that EtO is carcinogenic to humans with four lines of evidence: "(1) epidemiological evidence of lymphohematopoietic cancers and breast cancers in EtO exposed workers; (2) tumors in laboratory animals, including lymphohematopoietic cancers in rats and mice and mammary carcinomas in mice following inhalation exposure; (3) clear evidence of genotoxicity with MOA of mutagenicity; and (4) precursor events likely occur in humans, including evidence of chromosome damage."

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[99] National Toxicology Program. Toxicology and carcinogenesis studies of ethylene oxide (CAS no 75-21-8) in B6C3F1 mice (inhalation studies). Natl Toxicol Program Tech Rep Ser. 1987; 326:1-114.

[100] Lynch DW, Lewis TR, Moorman WJ, et al. Carcinogenic and toxicologic effects of inhaled ethylene oxide and propylene oxide in F344 rats. Toxicol Appl Pharmacol. 1984;76(1):69-84.

[101] Steenland K, Stayner L, Deddens J. Mortality analyses in a cohort of 18 235 ethylene oxide exposed workers: follow up extended from 1987 to 1998. Occup Environ Med 2004; 61(1):2-7.

[102] International Agency for Research on Cancer, IARC Monographs 100F Ethylene Oxide (2012), https://monographs.iarc.fr/wp-content/uploads/2018/06/mono100F-28.pdf.

Response: Comments on these topics have been addressed previously as part of the response to peer and public review comments on the 2013 draft IRIS EtO Assessment and as documented in the 2016 IRIS EtO Assessment (Appendix K, p. K-1):

> Considerations used in assessing the epidemiological studies are summarized at the beginning of Section 3.1, and the considerations used in the weight-of-evidence analysis for carcinogenic hazard are detailed in Section 3.5.1, culminating in a synopsis of how the evidence fits the lines of evidence for the characterization of "carcinogenic to humans" laid out in the EPA's 2005 *Guidelines for Carcinogen Risk Assessment*. Considerations used in selecting the epidemiology study(ies) for quantitative risk estimation are summarized in Section 4.1, along with considerations used in selection of exposure-response models.

4.1.3 Peer and Public Review of the EPA IRIS EtO Assessment

Comment 29: Several commenters raised concerns about the peer or public review processes for the EPA IRIS EtO Assessment. These included concerns about adequacy of the peer review, objectivity of the peer review, and ample opportunity for peer or public review of the assessment. One commenter stated that review by the EPA SAB is not equivalent to review by the NAS. This commenter requested NAS review of the 2016 IRIS EtO Assessment. Another commenter stated that the NIOSH exposure model used to derive the EPA IRIS risk estimate is not acceptable due, in part, to a lack of adequate SAB peer review, citing a lack of transparency by the EPA and rigorous independent review by the EPA SAB.

Several commenters claimed that the SAB did not provide objective peer review. Two commenters suggested that the SAB included members with financial conflicts of interest due to accepting grants from a government agency that included the EPA. One stated that, "unlike NAS review, the SAB review process is neither independent nor free from financial conflict."

While a draft of the EtO IRIS assessment was reviewed by the SAB, several commenters noted that the *final* IRIS EtO Assessment was not reviewed by the SAB and expressed concerns about revisions to the assessment made following the SAB review. For example, commenters indicated they were not given an opportunity to review the application of the two-piece linear spline model to the lymphoid cancer data.

Other commenters stated their support of the EPA SAB review of the IRIS EtO Assessment and the objectivity of the SAB. One commenter stated that "Ethylene oxide risk was under review by Science Advisory Board at the EPA for more than 20 years, persisting across multiple administrations and their priorities. Another commenter described the SAB review as follows: "The SAB is a statutorily established committee mandated to 'provide advice and recommendations to the Agency on scientific and technical matters." Regarding the final IRIS assessment, two commenters stated that IRIS ensured that parameters advised by the SAB were fully considered in selecting the final dose-response model for the 2016 EtO toxicological assessment. Commenters also noted that key results were published in a peer-reviewed scientific journal.

Response: For the EtO IRIS assessment, the EPA followed its normal review process, which includes internal agency review, interagency review, public external peer review, and public review. The EtO IRIS assessment underwent two peer and public review processes over a 10-year period. After the second peer and public review, the Agency followed its normal process to finalize the assessment by considering the peer and public review comments received, making final revisions to the assessment in response to those comments, and then issuing the final EtO IRIS assessment.

As described in the EPA's *Peer Review Handbook*,[103] there are a range of types of peer review. For the EtO IRIS assessment, the Agency requested review by the EPA SAB. The EPA's SAB is a statutorily established committee with a broad mandate to provide advice and recommendations to the Agency on scientific and technical matters. The SAB considers requests for advice and peer review from across the Agency as part of an annual process, initiated by a request from the Deputy Administrator to the EPA's senior leadership to identify requests for review by the EPA. Highly Influential Scientific Assessments, such as IRIS assessments, or other scientific work products associated with highly visible or controversial environmental issues are most suited to review by the SAB. Much of the SAB's peer review work is done using ad hoc panels formed to review specific EPA draft technical products. All SAB panels provide advice through the chartered SAB, which is composed of approximately 50 nationally renowned scientists, engineers and economists who are screened for conflicts of interest. The SAB reports directly to the EPA Administrator.

With regard to peer and public review opportunities of the two-piece linear spline model and its use for the IRIS EtO Assessment, the two-piece linear spline model underwent peer review. In 2011, use of the two-piece linear spline model for the EtO breast cancer data set was published in a peer-reviewed journal (*Environmental Health Perspectives*).[104] The EPA included the two-piece linear spline model in its 2013 draft IRIS EtO Assessment (for breast cancer for women), and this underwent peer review by the EPA SAB. The public had an opportunity to review and comment on the two-piece linear spline model and its use for the IRIS EtO Assessment during the public review process for the 2013 draft assessment. For the final 2016 IRIS EtO Assessment, the EPA also applied the two-piece linear spline model for lymphoid cancer; in their 2015 peer review recommendations, the SAB supported this approach (for more detail, see Section 4.3.3: Dose-response model selection).

4.2 Cohort Selection

Comment 30: Comments were submitted both supporting and opposing the cohort selection decisions of the IRIS EtO Assessment. Several commenters criticized the inclusion of the NIOSH cohort study and exclusion of the Union Carbide Corporation cohort study in the IRIS EtO Assessment. Several commenters claimed that the EPA failed to include negative results from other studies. One suggested that exposure assessment uncertainties in the Union Carbide Corporation study are no greater than those involved with the use of the NIOSH study.

[103] U.S. EPA, 2015. Peer Review Handbook, 4th edition. Science and Technology Policy Council. October 2015. EPA/100/B-15/001.
https://www.epa.gov/sites/production/files/2016-03/documents/epa_peer_review_handbook_4th_edition.pdf

[104] Steenland et al. (2011) https://ehp.niehs.nih.gov/doi/full/10.1289/ehp.1002521?url_ver=Z39.88-2003&rfr_id=ori:rid:crossref.org&rfr_dat=cr_pub%3dpubmed

Response: Comments arguing that the Union Carbide Corporation cohort should be included in the dose-response data analysis were previously submitted and addressed during the review process for the IRIS EtO Assessment. For example, a comment on the IRIS 2013 draft stated "EPA failed to incorporate the Union Carbide Corporation (UCC) data into the dose-response assessment. The NIOSH exposure assessment also suffered from limitations." The EPA provided the following response (IRIS, 2016, Appendix K, p. K-6):

> As recommended by the 2007 SAB panel, the EPA considered using the UCC data and determined that they were not of sufficient quality to add useful information to the NIOSH study's data for the derivation of unit risk estimates (see the reasons discussed in detail in the assessment [*e.g.*, Section A.2.20 of Appendix A] and in the responses to the SAB comments [p. H-6 to H-8]). Thus, the EPA decided to use the NIOSH data as the basis for the exposure-response modeling (see also Section 4.1).
>
> Although no exposure assessment is without limitations, the NIOSH regression model includes a number of relevant variables and had a high validity when tested against independent data (see Section A.2.8 for details). The approach used to derive the UCC exposure estimates was much less rigorous and there is considerable uncertainty in the resulting estimates. The 2007 SAB panel supported the use of the NIOSH study as a basis for risk estimates.

The SAB provided the following evaluation of the EPA's response to a public comment in the 2015 SAB report, as documented in the Appendices of the IRIS EtO Assessment (IRIS, 2016, Appendix I, p. I-50):

> ix. **COMMENT:** *Comment 7:* The comment criticizes the EPA for failing to incorporate the Union Carbide Corporation (UCC) data into the dose-response assessment. It goes on to state that the NIOSH exposure assessment also suffered from limitations. The EPA response is concise and clear. This issue is discussed in detail in the draft assessment and was supported by the SAB (2007) report. The NIOSH study meets the criteria of being a high-quality study much more strongly than the UCC data. This response is well-supported and appropriate. The SAB concurs with the EPA decision to not combine UCC EtO exposure data with those from the NIOSH study.

4.3 Dose-response Model Development

4.3.1 Inclusion of breast cancer data

Comment 31: Some commenters said that the weight of evidence does not support breast cancer as an endpoint and cited a meta-analysis by Marsh et al. (2019)[105] in support of this argument.

Response: Marsh et al. (2019) conducted a meta-analysis of five of the same studies evaluated by the EPA. The Marsh et al. meta-analysis used external comparisons of the breast cancer mortality in the workers with national or regional rates and excluded the published

[105] Marsh et al. (2019). Ethylene oxide and risk of lympho-hematopoietic cancer and breast cancer: a systematic literature review and meta-analysis. Int. Arch. Occup. Environ. Health. 92(7): 919-939.

incidence findings based on internal response trends within members of the cohort receiving different exposures. For the IRIS EtO assessment, the EPA selected two of the five studies, and analyses used internal comparisons of breast cancer incidence rather than mortality because many women survive breast cancer.

Comments on the evidence for breast cancer as an endpoint following EtO exposure were previously submitted and addressed during the review process for the IRIS EtO Assessment. For example, a public comment on the IRIS 2013 draft stated that "The evidence for breast cancer is too weak," to which the EPA responded (IRIS, 2016, Appendix K, p. K-3):

> Although the epidemiological database for breast cancer is more limited (*i.e.*, few studies with sufficient numbers of female breast cancer cases) than that for lymphohematopoietic cancers, the EPA determined that the available evidence is sufficient to consider breast cancer a potential hazard from ethylene oxide exposure. In addition, the epidemiological database is strengthened by the follow-up study (Mikoczy et al., 2011) of the Swedish cohort of sterilizer workers first reported on by Hagmar et al. (Hagmar et al., 1995; Hagmar et al., 1991) (see Section J.2.2 of Appendix J), and the epidemiological evidence is supported by the finding of mammary gland carcinomas in female mice exposed to ethylene oxide by inhalation (NTP, 1987) and by mechanistic data (see Section 3.4.1.3). The 2007 SAB panel did not object to the derivation of unit risk estimates based on the available breast cancer evidence.

4.3.2 Historical exposure estimates

Comment 32: Several commenters claimed that the pre-1978 occupational exposures used in the EPA's dose-response model were underestimated by Hornung et al. (1994). They argued that historical worker exposures were highest in the 1930s and decreased through the 1990s, in line with evolution of the American Conference of Governmental Industrial Hygienists (ACGIH) threshold limit value-time-weighted averages and in contrast to the NIOSH estimates that showed an increase in exposure estimates leading up to 1978. The commenters claimed that the regression model used to estimate historical exposure made incorrect assumptions for two key variables, sterilizer volume and calendar year, leading to pre-1978 exposure estimates being lower than 1978 estimates. The commenters claimed that the EPA's model was not well-validated prior to 1978 because measured exposures were not available for the years before 1976. Commenters submitted a poster presentation as supporting material describing an alternative model that suggested offgassing during storage and accumulation of EtO in the work room was the key source of exposure that caused higher estimates for the years 1938 to 1964. Other commenters cited Bogen et al. (2019)[106] to support the claim that historical exposure estimates were likely underestimated, leading to more conservative risk estimates.

Response: With regard to the NIOSH model, the EPA noted, in its 2013 draft IRIS EtO Assessment (IRIS, 2016, Appendix K, p. K-6), "Although no exposure assessment is without

[106] Bogen et al. (2019). Reevaluation of historical exposures to ethylene oxide among U.S. sterilization workers in the National Institute of Occupational Safety and Health (NIOSH) study cohort. Int J Environ Res Public Health; 16(10): 1738.

limitations, the NIOSH regression model includes a number of relevant variables and had a high validity when tested against independent data (see Section A.2.8 for details)."

The suggestion that pre-1978 exposure estimates were underestimated was submitted as public comment on the 2007 IRIS draft, 2013 IRIS draft, and at the public SAB meeting on November 18 – 20, 2014 to discuss the revised 2013 external review draft. The EPA responded to the SAB's comments on the 2013 external review draft in the final IRIS EtO Assessment Appendices (IRIS, 2016, Appendix I, p. I-27 and Tables I-2 and I-3):

> In brief, contrary to public comments made at the SAB meeting, the NIOSH EtO exposure patterns were not anomalous, but rather reflected the underlying changes in variables predicting exposure over time. One of the principal drivers of the NIOSH exposure levels was the cubic feet of the sterilizers used, and sterilizer volumes increased over time in some plants.

Additionally, in its summary of 2007 external peer review and public comments, the EPA provided a detailed explanation for setting the pre-1978 "year" variable at 1978 levels (IRIS, 2016, Appendix H, p. H-8):

> As discussed by Hornung et al. (1994), including the engineering controls in the NIOSH exposure model could not completely explain the decreases in EtO levels observed since the late 1970s. Thus, Hornung et al. (1994) also included calendar year in the model as a surrogate for improvements in work practices, above and beyond the engineering controls, resulting from increased awareness in the late 1970s of the potential carcinogenicity of EtO. Fitting the measurement data from 1976 to 1985 showed that the effect of calendar year on exposure estimates was maximal between 1976 and about 1978−1979 and reduced exposure estimates after that. Thus, the calendar year effect in the exposure model was fixed at 1978 for years prior to 1978. Assuming the effect of calendar year to be constant before 1978 was both consistent with the available data for exposure levels prior to 1978 and reasonable given that the increasing awareness of EtO carcinogenicity in the late 1970s could explain the calendar year effect decreasing exposures only after that time. Exposure estimates prior to 1978 were then determined entirely by the other variables in the model, for which data were available for the years before 1978.

Bogen et al. (2019) presented a simulation model that they described was based on data from published literature, interviews with former sterilization operators, and input from sterilization experts on former and current technologies and practices, to develop scenario-based projections of time weighted averages of EtO concentrations prior to 1978. The 8-hour time weighted average exposure level for workers within the 90th percentile concentrations (C90) based on the Bogen et al. engineering/industrial hygiene model were 190 parts per million (ppm) for 1935 to 1955 and 120 ppm for 1955 to 1965.

Bogen et al. attempted to project EtO concentrations for time periods preceding the available measurement data; however, the methodology was not sufficiently documented to evaluate how the model was derived. For example, results of the interviews with the senior sterilization workers were not reported; however, it was noted that these workers' employment was limited to the final period simulated by the authors of the study. Thus, the content and relevance of the interview results is unclear. An additional area of uncertainty arises as supporting documentation was not provided for assumed major changes in the mass of residual EtO remaining in treated product for the early periods of the simulations. Finally, model projections of industry-wide exposures of sterilizer operators for much of the earlier time periods were in excess of then current ACGIH health criteria.

4.3.3 Dose-response model selection

Comment 33: Comments on dose-response model selection included those that supported the linear or log-linear CPH model, originally proposed by Valdez-Flores et al. (2010),[107] and those that supported the IRIS model over alternative models. Commenters against use of the two-piece linear spline dose-response model selected by IRIS argued that it did not represent the best model fit because they thought inaccurate model inputs and inappropriate model parameters were used. Specifically, commenters disagreed with use of visual fit to categorical data as a key factor in model selection and argued that the knot of the two-piece linear spline model should have been counted as a parameter in the analysis used to identify the model with the best statistical fit. Commenters also suggested the selected model was inconsistent (*i.e.*, not linear) with EtO's mutagenic mode of action.

Response: Several comments on aspects of the dose-response model were previously addressed during the review process for the IRIS EtO Assessment. The EPA included a thorough discussion of the Valdez-Flores et al. (2010) analysis in the 2016 IRIS EtO Assessment (IRIS, 2016, Appendix A, A-27-35); therefore, it is not addressed further here. Additionally, a public comment that was submitted on the IRIS 2013 draft prior to the SAB 2014 review, in reference to the EPA's use of the two-piece linear spline model, stated that "EPA used a non-peer-reviewed supralinear spline model," to which the EPA responded (as documented in IRIS, 2016, Appendix K, p. K-7):

> The spline model the EPA used for the breast cancer incidence data was the best fitting of the continuous models considered, and others have used this model with similar data sets to estimate risk. The breast cancer modeling work was published in a peer-reviewed journal (Steenland et al., 2011), and the ethylene oxide spline model will receive further SAB review. Moreover, the two-piece spline model used is not inherently supralinear; it is a flexible model that can accommodate sublinear or supralinear (or linear) exposure-response relationships. The EtO two-piece spline models become supralinear models because the underlying exposure-response relationships of the data to which they are being fitted are supralinear.

In the 2016 IRIS EtO Assessment, the EPA evaluated 12 dose-response models for lymphoid cancer mortality (Figure 4-3; 15-yr lag) and nine dose-response models for breast cancer incidence (Figure 4-7; 15-yr lag). For each cancer endpoint, all except two of these models (the categorical model and linear regression of the categorical results) were based on the continuous individual-level data. The EPA determined the optimal model for low exposure risk estimation by following recommendations from the SAB (2015) on several aspects of model

[107] Valdez-Flores C, Sielken RL Jr, Teta MJ. 2010. Quantitative cancer risk assessment based on NIOSH and UCC epidemiological data for workers exposed to ethylene oxide. Regulatory Toxicology Pharmacol. 56(3): 312-20.

choice that, taken jointly, supported the choice of the two-piece linear spline model. Specifically, the SAB recommended prioritizing functional forms of the exposure that allow regression models with more local fits in the low exposure range (*e.g.*, spline models), preferred the use of continuous individual-level exposure data over the use of categorical results, and advised that any model that is to be considered reasonable for risk assessment must have a dose-response form that is both biologically plausible and consistent with the observed data. These considerations led the EPA to select the two-piece linear spline models for dose-response assessment for both lymphoid and female breast cancers. In its response to the SAB's recommendations, the EPA noted (IRIS, 2016, Appendix I, p. I-3):

> The EPA has followed the SAB's recommendations for model selection. Model selection for both the breast cancer incidence (see Section 4.1.2.3) and lymphoid cancer (see Section 4.1.1.2) data prioritizes functional forms that allow more local fits in the low-exposure range (*e.g.*, spline models), relies less on AIC, and includes consideration of biological plausibility...

A commenter suggested that the visual fit was based on how closely a model overlaid the categorical (rather than individual) data points. Specifically, the commenter broadly contends that it is not appropriate to compare the categorical estimates of relative risk for EtO with relative risk predictions from continuous models. In this regard the EPA notes that: (1) Plotting of fits of models in comparison with categorical breakouts of the data is a very useful and commonly used tool in epidemiology as it allows examination of the behavior of the parametric continuous models versus unstructured information on disease within ranges of the independent variable (exposure); (2) The categorical response predictions and continuous model fits were appropriately developed from the same individual level data on cancer; (3) The categorical and continuous results compared utilize the same referent group – individuals who have no estimated exposure after taking into account the lag period of the modeling; (4) Both categorical and continuous model results are utilizing proportional hazard methodology to estimate the relative risk of worker exposures compared to the same reference group and this relative risk is a well-defined quantity. Thus, the categorical and continuous relative risk estimates should be in general agreement within the statistical variability of model fitting and may reasonably be compared. The commenter cited a reference (Valdez-Flores and Sielken 2013)[108] that opines further on these matters. The EPA's evaluation of this reference does not change the Agency's conclusion that it is reasonable to compare the general pattern of relative risk estimates from categorial and continuous models as utilized in the IRIS EtO Assessment.

EPA's risk modeling and the comparison of categorical and continuous modeling results was extensively reviewed by the SAB. In its 2015 report, the SAB noted in reference to the underlying (*i.e.*, individual) data, "… one advantage of fitting and examining a wide range of models is to get a better understanding of the behavior of the data in the exposure regions of interest." The SAB listed several models in addition to the categorical model and noted, "From the comparisons, it is clear that these data suggest a general pattern of the risk rising very rapidly

[108] Valdez-Flores C, Sielken RL Jr. (2013). Misinterpretation of categorical rate ratios and inappropriate exposure-response model fitting can lead to biased estimates of risk: ethylene oxide case study. Regul Toxicol Pharmacol. 67(2):206-14.

for low-dose exposures and then continuing to rise much more slowly for higher exposures. It is reassuring to observe that many of the fitted models reflect this pattern even though they have different sensitivity to local data."

Based on one commenter's re-analysis of the lymphoid cancer data with the knot counted as a parameter, the commenter concluded, "…neither the 2-piece spline model nor the CPH[109] model are statistically significant, and the [Akaike information criterion] AIC values are similar. Based on statistics alone, the CPH model fits the data similarly to the supralinear 2-piece spline slope." With regard to model fit, the SAB wrote in their 2015 report to the EPA, "…the SAB has recommendations on improving the considerations used for model selection, including less reliance on the Akaike information criterion (AIC). However, if AIC is used for model selection, it should be used appropriately. There should be *a priori* considerations regarding the nature of the functional form being applied. Specifically, the SAB recommends prioritizing functional forms of the exposure that allow regression models with more local fits in the low exposure range (*e.g.*, spline models)."

Regarding the linearity of the model, the EPA's Guidelines for Carcinogen Risk Assessment[110] recommend application of a *low-dose-linear model*, not a fully linear model, for risk assessment for such compounds.[111] Specifically, the guidelines note that "A low-dose-linear model approximates a straight line only at very low doses; at higher doses near the observed data, a low-dose-linear model can display curvature. The term *"low-dose-linear"* is often abbreviated "linear," although a low-dose-linear model is not linear at all doses." In the case of the IRIS EtO Assessment, the two-piece linear spline model is a low-dose-linear model, as defined by the 2005 Guidelines for Carcinogen Risk Assessment.

4.4 Dose-Response Model Evaluation

4.4.1 Endogenous and ambient background EtO levels

Comment 34: Several commenters pointed out that EtO is produced by the human body (*i.e.*, endogenously). Some cited a meta-analysis of non-smoking individuals with no known exposure to external EtO by Kirman and Hays (2017).[112] They concluded that endogenous background EtO exposures were equivalent to a mean external exogenous EtO exposure of 1.9 ppb (3.4 μg/m^3) in air with a range of 0.13-6.9 ppb (0.2 to 12.4 μg/m^3). Based on this study, commenters noted that endogenously produced EtO was 19,000 times higher than what would be reached assuming inhalation of air containing EtO at a 1-in-1 million risk specific concentration (0.1 ppt; 0.0002 μg/m^3). The commenters indicated that the IRIS URE for inhalation exposure conflicts with available data on endogenous EtO production. The commenters further suggested

[109] Cox proportional hazards (standard Cox regression)

[110] *Guidelines for Carcinogen Risk Assessment*, EPA/630/P-03/001F, 2005. Available at: *https://www.epa.gov/sites/production/files/2013-09/documents/cancer_guidelines_final_3-25-05.pdf*

[111] USEPA, 2005, p. 1-11, see footnote 3. Also p. A-8

[112] Kirman, CR, and SM Hays. (2017). Derivation of endogenous equivalent values to support risk assessment and risk management decisions for an endogenous carcinogen: ethylene oxide. Regulatory Toxicology Pharmacol. 91: 165-172.

that the additional exogenous EtO exposure is a very small fraction of variation in normal human endogenous EtO exposures that is unlikely to contribute to increased cancer risks.

Other commenters noted that the method used by Kirman and Hays to estimate internal EtO concentrations was not sufficiently explained, and exogenous exposures to EtO would probably contribute additively to cancer risks from endogenously produced EtO. One commenter stated that "EPA's unit risk estimates are explicitly for extra risk above background, *i.e.*, above the risk from endogenous doses (unit risk estimates are derived from exposure-response modeling of exogenous exposures; endogenous doses are common to both exposed and unexposed subjects, independent of exogenous exposure, and thus are part of background risk). Variability in levels of background doses of endogenous EtO are accounted for in the modeling of the exogenous exposures, along with other sources of variability."

Commenters opposing the IRIS URE cited measurements of ambient air concentrations that are higher than the 0.1 ppt 10^{-6} (1-in-1 million) extra risk level implied by the URE. Numerous commenters stated that available air monitoring data indicate ambient air concentrations of EtO well above levels posing unacceptable risks to human health in several locations across the United States, and that these concentrations are consistent with cancer incidences in specific areas.

Response: Most of these comments are similar to a comment on the IRIS 2013 draft stating, "EPA should reexamine its risk determination given background and endogenous levels of EtO; EPA's risk estimates are unrealistically high." The EPA responded to this comment (in IRIS, 2016, Appendix K, p. K-9) as follows:

> The unit risk estimates the EPA developed are for extra risk (*i.e.*, above background); background and endogenous levels of EtO, which would be relevant to (the true) background risk, are not integral to the development of the estimates of extra risk. As discussed in the assessment (see Section 4.5), given the high background rates of lymphoid and breast cancers (lymphoid cancers have a background lifetime incidence risk on the order of 3%, while the background lifetime incidence risk for breast cancer is on the order of 15%), the EPA does not consider the risk estimates for exogenous exposure to be inconsistent with the data on background and endogenous levels.

Kirman and Hays (2017) estimated "endogenous equivalent" EtO levels in ambient air based on measurements of a biomarker in the blood, hemoglobin adducts (*i.e.*, EtO-bound hemoglobin). The authors attributed the total hemoglobin adduct measurement to exposure to EtO produced by internal biological processes; however, all study participants were also exposed to ambient background levels of EtO in the air, meaning the "endogenous equivalent" value is an approximation of exposure to endogenous *plus* ambient background levels of EtO. Additionally, the analysis was based on measurements of an exposure biomarker but did not include any direct measurements of endogenous EtO levels.

The IRIS EtO Assessment contains a substantial review of data on adducts produced by EtO exposures. As noted in section 3.3.2 of the IRIS assessment (IRIS, 2016), "In humans, hemoglobin adducts can be used as biomarkers of recent exposure to EtO (IARC, 2008; Boogaard, 2002; IARC, 1994b), and several studies have reported exposure-response relationships between hemoglobin adduct levels and EtO exposure levels [*e.g.*, (van Sittert et al., 1993; Schulte et al., 1992)]. Hemoglobin adducts are good general indicators of exposure because they are stable (DNA adducts, on the other hand, may be repaired or fixed as mutations and hence are less reliable measures of exposure)." Background levels of EtO adducts, and hemoglobin adducts in particular, also exist in rodents and humans without identified exposure to EtO. While hemoglobin adducts are useful to estimate EtO exposure levels, hemoglobin adducts do not lead to mutations; DNA adducts would be a more direct measure of potential cancer effects.

4.4.2 Consistency of dose-response with mode of action

Comment 35: Commenters opined that available data on the mutagenic MOA for EtO and the formation of DNA adducts are not consistent with what they called the "supralinear" two-piece spline model used for the 2016 IRIS EtO URE estimates. They suggested that the MOA instead suggests an overall linear or sublinear dose-response, and other lines of evidence suggest that EtO is at most a weak mutagen given physiological repair mechanisms including DNA repair at endogenous EtO levels. In contrast, other commenters pointed out that the hazard and dose-response assessments in the 2016 IRIS EtO Assessment are consistent with the available mechanistic (biological) data.

Commenters expressed the view that the two-piece spline model suggests that "the body's defense systems are highly ineffective at low-level exposures and become more and more effective as the exposures increase—precisely the opposite of actual experimental data indicating how the body manages EtO." Commenters said none of the biological defenses are expected to be saturated at low EtO exposures, particularly in the range of endogenous EtO production. One commenter noted that while NIOSH sub-analyses suggested increases in male lymphoid tumors and female breast cancers, the findings were actually limited to the highest cumulative exposure groups, not the lowest, consistent with exceeding biological repair mechanisms only at high exposures.

Several commenters noted that EtO is a weak mutagen. Citing the EPA's 2016 IRIS EtO Assessment, one commenter noted that "there is generally no strong correlation between potency in short-term mutagenicity tests and carcinogenic potency" by citing the very weak relationship between potency in the Ames bacterial mutagenicity test and carcinogenic potency.

Several commenters noted that the EPA should use information available from animal studies, particularly mechanistic data, to identify a reasonable cancer potency range. Data suggest the dose-response for DNA adduct formation should be similar between rodents and humans; they do not suggest that humans are much more sensitive to EtO than rodents as suggested by the IRIS EtO Assessment. One commenter stated that the biological plausibility of the EPA hypothesized low-dose supralinear dose response is inconsistent with the observation that "doses of EtO in rats did not increase DNA adducts, the molecular-initiating mode of action target of EtO-induced cancer, at approximately four orders of magnitude greater than the dose in a human exposed to 0.1 ppt EO.[113]"

In contrast, several commenters stated that dose-response at low exposures *is* consistent with mechanistic data. One commenter noted that a mutagenic MOA provides support for linear low-exposure extrapolation. Another commenter cited a study (Crump et al., 2014)[114] postulating that dose-response relationships for relevant cancers across that hypothetical range of doses are likely to be sublinear because the body has defense mechanisms (*e.g.*, DNA repair mechanisms) to deal with endogenous exposures. The commenter continued that those defenses "are imperfect and limited, which may account for some level of background cancer risk even without exogenous exposures." As endogenous EtO concentrations increase across the endogenous range, biological defenses are diminished yielding a linear dose-response curve at the point of zero exogenous exposures. The postulated sublinearity is not meant to apply to the range of exogenous exposures.

Another commenter stated that there is "extensive evidence" for EtO-induced carcinogenicity through "clearly defined mechanistic pathways in animal models". This commenter also noted that there is a clear MOA that EtO is genotoxic and mutagenic, with a clear understanding of precursor molecular mechanisms that induce tumors. The commenter linked the mechanism to breast cancer by stating that "EtO binds to DNA that can stop cells from making proteins. Most cells have the ability to recognize and repair such changes to DNA, but other tissues (*e.g.*, epithelial cells of blood vessels, structural stromal cells) replicate too quickly for repair to catch many of the alterations These sorts of alterations in breast epithelial and stromal cells can cause carcinomas and sarcomas respectively." This commenter added that a study conducted on human cells in vitro (not cited) showed that even small levels of exposure to EtO caused DNA damage in epithelial breast cells and that damage worsened at higher EtO concentrations.

Another commenter pointed out that supralinear, linear, and sublinear extrapolations all recognize increased risk with increased exposure and thus are consistent with EtO carcinogenicity. Threshold extrapolations (often used for non-carcinogenic exposure) assume that exposure below a certain limit, or threshold, is safe. "It is well-established that threshold models are unjustifiable for carcinogens, especially mutagenic carcinogens such as ethylene oxide." Citing the EPA's 2005 Cancer Guidelines, another commenter stated that "a mechanistic explanation for overall supralinear exposure-response relationships in the observable range of the EtO epidemiological data may not be known; however, such relationships are not uncommon with epidemiological data and there are other possible explanations. The conclusion of a mutagenic MOA supports linear low-exposure extrapolation, and the first part of the spline is a linear extrapolation from the knot to zero extra risk at zero exposure."

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[113] Marsden DA, Jones DJ, Britton RG, Ognibene T, Ubick E, Johnson GE, Farmer PB, Brown K. (2009). Dose-response relationships for N7-(2-hydroxyethyl)guanine induced by low-dose [14C]ethylene oxide: evidence for a novel mechanism of endogenous adduct formation. Cancer Res. 1;69(7):3052-9.

[114] Crump KS, Bussard DA, Chen C, Jinot J, Subramanium R. (2014). The ''bottom-up'' approach does not necessarily bound low-dose risk. Regulatory Toxicology Pharmacology 70:735-736.

Response: Comments on the MOA of EtO were submitted on previous drafts of the IRIS EtO Assessment, and the EPA responded to them accordingly. For example, the EPA received the comment that EtO is a weak mutagen on the 2007 draft. The comment and the EPA's response include the following excerpts (IRIS, 2016, Appendix H, p. H-36):

> **PUBLIC COMMENT 8.0:** EtO is Considered by Many to be a Weak Mutagen and EPA Should Consider This in Proposing a Unit Risk Factor. A chemical's mutagenic potency is necessarily related to its carcinogenic potency. If genotoxicity is considered the means by which a chemical induces cancer, it follows that it will not induce cancer under conditions where it does not induce mutations, at either the chromosome or gene level, thus providing a mechanistic basis for estimating carcinogenicity. EtO has been shown only to be a weak mutagen; therefore, it should not be automatically considered a human carcinogen and certainly not a potent carcinogen…
>
> **EPA RESPONSE:** The EPA does not consider the mutagenicity and carcinogenicity findings to be in conflict with the potency estimates. EtO is a relatively weak mutagen when compared to strong mutagens such as cancer chemotherapeutic agents and diepoxides but not necessarily when compared to other environmental mutagens. Also, EtO is clearly carcinogenic in mice and rats. The inhalation unit risk estimate based on human data is notably larger than that based on rodent data (about 23 times larger), and the reasons for this discrepancy are unknown; however, such species differences are not unusual. …

Additional comments comparing potency and carcinogenicity were received on the 2007 IRIS draft and addressed by the EPA as documented in the Appendices of the final IRIS EtO Assessment (IRIS, 2016, Appendix H, p. H-37):

> **PUBLIC COMMENT 9.0:** EPA's Risk Estimates Do Not Pass Simple Reality Checks.
>
> **PUBLIC COMMENT 9.1:** The results of the Draft Cancer Assessment (resulting in negligible risk only at levels less than a part per trillion), are not reasonable when compared with the results generated for other substances that are considered potent mutagens and/or potent carcinogens, and do not comport with the results of other assessments the EPA has undertaken.
>
> **EPA RESPONSE:** The procedures used in this assessment comport with those used in other assessments the EPA has undertaken. Differences in relative potency across chemicals based on exposure levels may reflect differences in absorption, distribution, metabolism, excretion, or the pharmacodynamics of the chemicals.

The EPA also received the comment that EtO is a weak mutagen on the 2013 IRIS draft, to which the EPA responded (IRIS, 2016, Appendix K, p. K-3):

> The EPA agrees that EtO is a relatively weak mutagen compared to the anticancer agents and the other reactive epoxides investigated in the Vogel and Nivard (1998) paper. Vogel and Nivard (1998) compared 37 anticancer agents, which are generally highly mutagenic by design, and four epoxides, including EtO, one of which was a cross-linking diepoxide.

> The EPA notes, however, that there is generally no strong correlation between potency in short-term mutagenicity and genotoxicity tests and carcinogenic potency. For example, for the Ames assay, Fetterman et al. (1997) found a "very weak" relationship between quantitative mutagenic and carcinogenic potencies. In addition, EtO is highly volatile and concentrations can become much reduced over the course of an in vitro assay, making potency from such assays difficult to determine.

The SAB confirmed that this was an appropriate response in their 2015 report, as summarized in the Appendices of the IRIS EtO Assessment (IRIS, 2016, Appendix I, p. I-49):

> **COMMENT:** *Comment 5:* The comment notes that EtO is a weak mutagen. Both the response and the draft assessment never claim that EtO is a strong mutagen. The "weakness" of EtO as a mutagen as compared to many anticancer compounds and other reactive epoxides is clearly stated. In their response, the EPA provides further justification by noting that there is seldom a good correlation between mutagenic and carcinogenic potencies. This response is clear and appropriate.

The EPA also received comments from the SAB and public regarding the expected shape of the dose-response curve considering the body's defense mechanisms, including molecular repair processes. The EPA discussed the complexity of DNA repair processes in Appendix C: Genotoxicity and Mutagenicity of Ethylene Oxide (IRIS, 2016). The EPA also noted (IRIS, 2016, Appendix D, p. D-2):

> "Plateau-like" exposure-response curves, in which the exposure-response curve begins steeply but is attenuated at higher exposure, have been seen for many occupational carcinogens. This may occur for a variety of reasons, including depletion of susceptible subpopulations, mismeasurement at high exposure resulting in attenuation, and the healthy worker survivor effect (Stayner et al., 1993).

4.4.3 Cancer mortality rates predicted using IRIS URE

Comment 36: A number of commenters suggested that the 2016 EtO URE, in combination with monitoring data on EtO concentrations in air across the country, predicts higher rates of lymphoid cancer nationwide than actually occur. Several commenters also suggested that the URE predicts much higher lymphoid cancer rates in the NIOSH cohort used to derive the EtO URE than actually occurred, which indicates that the low-dose extrapolation part of the two-piece spline model is inconsistent with the original data. In contrast, other commenters supported the data IRIS used to support the incidence and mortality associated with EtO and pointed to recent studies linking elevated cancer rates to EtO exposures in the vicinity of EtO-emitting facilities.

Several commenters suggested IRIS should have used lymphoid mortality as the critical endpoint for quantitative cancer risk. Some commenters stated that IRIS converted lymphoid mortality to lymphoid incidence based on unsupported assumptions that have been shown to introduce error and bias into the analysis[115,116]. Other commenters supported the IRIS calculation of lymphoid incidence, stating that the EPA's SAB (2015) had endorsed the IRIS method of calculating incidence from mortality for lymphoid cancers.[117]

Response: Several comments related to mortality predictions for the NIOSH cohort were previously addressed during the review process for the IRIS assessment. For example, a comment on the IRIS 2006 draft stated that "The Draft Cancer Assessment grossly over predicts the observed number of cancer mortalities in the study upon which it is based by more than 60-fold." Although the dose-response models used in the final 2016 IRIS assessment differ from those in the 2006 draft, the EPA's response to the comment on the 2006 draft (included in IRIS, 2016, Appendix H, p. H-37) is still appropriate:

> The unit risk estimates are derived from, and are consistent with, the results of the NIOSH epidemiology study, as long as they are used in the low-exposure range, as intended. Because the exposure-response relationships for the cancers of interest in the NIOSH study are generally supralinear, the unit risk estimates will overpredict the NIOSH results if applied to the region of the exposure-response relationships where the responses plateau. The potency estimates derived in the assessment are constructed for use with low dose levels consistent with environmental exposure and are not appropriate for use with exposures in occupational settings, as stated explicitly in the document. Occupational exposure scenarios are addressed in Section 4.7 of the [2006] assessment document. Extra risks associated with occupational exposures are in the "plateau" region of the exposure-response relationships, and thus, increase proportionately less than risks in the low-dose region.

Similar comments were received on the IRIS 2013 draft, including the suggestion that use of the IRIS URE would result in "…over-predictions of the cancer deaths in the NIOSH study." While the dose-response model described in the final assessment differs from that described in the 2013 draft, the EPA's response (in IRIS, 2016, Appendix K, p. K-8) addresses the comments received in the current rulemaking:

> These estimates are based on the upper confidence limits on the models, however; a more suitable basis for comparison with the observed deaths is the maximum likelihood estimates (MLEs) of the models. According to Figure E.1 in the ACC's Appendix I, the best estimate from the MLE of the model for lymphoid cancer mortality is only about a 1.6-fold difference, and Figure A.1 suggests less than a 1.3-fold difference for breast cancer mortality.

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[115] Sielken R.L., and C. Valdez-Flores. (2009). Life-table calculations of excess risk for incidence versus mortality: ethylene oxide case study. Regulatory Toxicology and Pharmacology 55(1):82-89.

[116] Teta M.J., Tran N., Mink P.J., and Barraj L.M. (2004). Validity of using background leukemia incidence rates with cohort mortality-based potency estimates to calculate excess lifetime risk. Hum. Ecol. Risk Assess. 10: 923–938.

[117] SAB. (2015) Science Advisory Board Review of the EPA's evaluation of the inhalation carcinogenicity of ethylene oxide: Revised external review draft - August 2014 [EPA Report]. (EPA-SAB-15-012) Washington, DC: U.S. Environmental Protection Agency, Science Advisory Board. Pg. 15.

Comments on the 2016 IRIS EtO Assessment received on the MON rulemaking argued that using the full, two-piece linear spline model (including the higher exposure plateauing region) does not predict the number of mortalities in the NIOSH cohort. Here, the commenters assumed that national background mortality rates represent the unexposed cohort in the NIOSH worker dataset. Importantly, the recognition that the national mortality rates may not be appropriate for this worker cohort is a primary reason that NIOSH developed "internal" risk estimates in preference to a national mortality rate-based analysis. This approach is documented in the EPA's responses to SAB comments on the 2014 IRIS external review draft (as documented in IRIS, 2016, Appendix I, p. I-30):

> The SAB recommends down-weighting all epidemiological results that are based on external standards (*e.g.*, standardized mortality ratio, standardized incidence ratio). The presence of the healthy worker effect cannot be denied in these occupational data and the use of an external standard for comparison does not avoid healthy worker types of biases.
>
> **EPA RESPONSE:** The EPA agrees that internal comparisons are superior to external comparisons, and all of the EPA's quantitative estimates are based on internal comparisons.

A "healthy worker effect", as often seen in occupational epidemiology, will also lead to lower observed tumor rates in a worker study. Accordingly, the EPA disagrees with the claims that agency risk models, when applied to the NIOSH cohort lead to "statistically significant overpredictions of risk". Such comparisons may have some practical value as approximate indicators of numbers of cancers that would be predicted if national cancer rates were indeed directly applicable to the NIOSH cohort – but they do not provide the basis for statistical tests.

As a second matter, when upper bound results for a risk model are applied back to the same data set (*i.e.*, the NIOSH cohort), the predicted results will be higher than the observed result. This is essentially the definition of an upper bound derived from the dataset. This does not imply, though, that the same upper bound relationship would be high if applied to a different independent data set.

4.4.4 IRIS URE Compared to Existing Regulatory Limits for EtO

Comment 37: Several commenters noted that the 2016 IRIS URE means that the air concentration associated with 10^{-6} to 10^{-4} risk of cancer from inhalation exposure to EtO is well below virtually all other standards for EtO exposure across the world. In contrast, a number of other commenters suggested that the 2016 IRIS URE for EtO implies that workers in several industrial sectors in the United States and the general population in some geographic areas might be exposed to EtO at levels that pose unacceptable risks.

A few commenters observed that the URE implies a significant departure from EtO limits imposed by other regulatory bodies in the United States. The OSHA limit is 1 ppm for an 8-hour exposure, which is 10 million times higher than the air concentration implied by the URE for a 1 x 10^{-6} cancer risk; the ACGIH limit also is 1 ppm.

One commenter stated that the 2016 IRIS EtO "is over 5 million times more stringent than the scientific judgments underlying all other regulatory limits on EtO in the U.S. and worldwide, and this discrepancy has not been adequately explained or justified." Another commenter pointed out that other countries' health protective limits range from 0.6 ppm to 5 ppm, with 1 ppm adopted by most. Another commenter summarized that worldwide, current occupational exposure limits for EtO range from 6 million to 50 million times higher than the EtO 10^{-6} risk specific concentration.

Several commenters, in contrast, noted that comparisons to existing regulatory limits are not appropriate. One commenter noted that occupational exposure limits and values to protect public health are not comparable: "...the OSHA standard with much higher allowable levels has been cited by companies, but it only applies to short-term exposure for adult workers inside plants, not to children and pregnant women living in close proximity. OSHA also have not updated their standard since the 1980s."

Response: The regulatory limits referenced by several commenters are occupational exposure limits that are not directly comparable to cancer risk estimates for the general population. The risk assessment for the MON RTR NESHAP rulemaking applies to general population exposures. The OSHA permissible exposure limit (PEL) for occupational exposure to EtO (1 ppm) applies to an 8-hour workday (40 hours per week) exposure for adult workers. The PEL is a maximum allowed limit, defined by OSHA as the exposure level of EtO above which no employee may be exposed under normal workplace conditions.[118] In contrast, the IRIS inhalation URE is an upper-bound estimate of the excess cancer risk estimated to result from a lifetime of continuous exposure to EtO at a concentration of 1 ug/m^3 in air; the URE is designed to be protective of the general population through all stages of life (*i.e.*, including childhood and retirement). Due to EtO's mutagenicity, when assessing general population exposures that include children, the EPA also applies an age-dependent adjustment factor to the URE.

While one commenter noted that the OSHA PEL and ACGIH threshold limit value are 1 ppm, they omitted the 10-fold lower NIOSH recommended exposure limit (REL) for a 10-hour workday (40 hour workweek), which is an 8-hour time weighted average of <0.1 ppm (<0.18 mg/m3).[119] This commenter also included the Food and Drug Administration tolerance limit for ground spices, 50 ppm. However, this limit is for oral exposures; it is not applicable to general population inhalation exposures.

Although occupational exposure limits are not comparable to risk-specific concentrations for general population exposures, one commenter stated, "Converting the occupational exposure limits to continuous lifetime exposure, as would be done for the general population, produces concentrations that are consistent with the concentrations of endogenously formed, exhaled ethylene oxide." The commenter did not provide any details to explain how they calculated this conversion. Also, the derivation of occupational exposure limits is not based on the same rigorous process used by the IRIS program to develop the URE for EtO. Therefore, it is not appropriate to attempt to convert occupational exposure limits to general population lifetime exposure limits. The commenter also based their estimate of endogenous levels on a manuscript

[118] Ethylene oxide (EtO): Understanding OSHA's exposure monitoring requirements. OSHA 3325-01N. https://www.osha.gov/Publications/ethylene_oxide.html

[119] NIOSH Pocket Guide to Chemical Hazards. https://www.cdc.gov/niosh/npg/default.html

by Kirman and Hays (2017) that did not directly measure endogenous EtO levels (see section 4.4.1 of this document for more detail).

NIOSH has a special policy for chemicals labeled as carcinogens which is available online.[120] The policy notes a few specific carcinogens, including EtO, for which the quantitative RELs are based on the ability to detect the chemical in the workplace and not on observed health effects at the REL (the relevant paragraph is quoted below, with underline of the chemical-specific text added for emphasis). Considering the basis for the occupational values, comparison of the REL (or any other occupational value) for EtO to the values derived by the EPA based on observable adverse health effects are less relevant than several commenters assert.

> The effect of this new policy will be the development, whenever possible, of quantitative RELs that are based on human and/or animal data, as well as on the consideration of technological feasibility for controlling workplace exposures to the REL. Under the old policy, RELs for most carcinogens were non-quantitative values labeled "lowest feasible concentration (LFC)." [Note: There are a few exceptions to LFC RELs for carcinogens (*e.g.*, RELs for asbestos, formaldehyde, benzene, and ethylene oxide are quantitative values based primarily on analytical limits of detection or technological feasibility). Also, in 1989, NIOSH adopted several quantitative RELs for carcinogens from OSHA's permissible exposure limit (PEL) update.]

Finally, the OSHA PEL and NIOSH REL have not changed since 1989.[121] The IRIS URE is based on the best available science, including studies published since 1989, and is based on observed health effects without considerations of other limitations, such as the feasibility to measure concentrations in a wide range of workplace settings.

5.0 EtO – Controls and Emissions

5.1 General

Comment 38: Commenters contended that the EPA failed to demonstrate that process vents and storage vessels with concentrations of EtO at levels as low as 1 ppm result in unacceptable risk. A commenter explained that the EPA's source category MIR for two of the three facilities with emissions of EtO from storage tanks identified in the background document were equal to or less than 50-in-1 million, and application of controls to the facility with a risk of 50-in-1 million results in only 22 pounds per year of EtO emissions reductions and a marginal risk reduction to 40-in-1 million. The commenter added that the EPA's source category MIR for two of the three facilities with emissions of EtO from process vents identified in the background document were 3-in-1 million and 0.7-in-1 million. The commenter concluded that these facilities are below the EPA's presumptive level of risk acceptability, showing the EPA's proposed thresholds for establishing which process vents and storage tanks are "in ethylene oxide service" are arbitrary and must be revised prior to promulgation of the final rule.

[120] Appendix A - NIOSH Potential Occupational Carcinogens. https://www.cdc.gov/niosh/npg/nengapdxa.html

[121] Ethylene Oxide Sterilizers in Health Care Facilities: Engineering Controls and Work Practices. DHHS (NIOSH) Publication Number 89-115. 1989. https://www.cdc.gov/niosh/docs/89-115/default.html

Another commenter claimed that there are examples of facilities that emit more than 5 pounds per year of EtO from a process vent and the EPA has calculated the residual risk to have a MIR less that 100-in-1 million. The commenter contended that for those facilities, there is no justification for the additional emission controls, especially given the cost to control these emissions

Response: In the final rule we are revising the definition of "in ethylene oxide service" for storage tanks to be storage tanks of any capacity and vapor pressure storing a liquid that is at least 0.1 percent by weight of EtO, instead of the 1 parts per million by weight (ppmw) threshold in the proposed rule. A detailed discussion of our decision is found in Section IV.A of the preamble to the final rule. As also discussed in Section IV.A of the preamble to the final rule, we are not revising the threshold for process vents. We considered the proposed 1 parts per million by volume (ppmv) threshold reasonable in terms of being measurable and quantifiable, and also appropriate for the vent stream characteristics we intended to regulate that resulted in risk reductions. We acknowledge every facility is different. Some facilities may pose less risks than others, but in a densely populated area with a nearby receptor and under specific conditions, the risks could none-the-less be unacceptable. In order to be protective of public health, we took a conservative approach. Section 112(f) requires us to set limits on a category-by-category approach, which is in keeping with CAA section 112(d) and standing precedent. Regarding comments that there is no justification for adding additional controls for low risk sources given the cost, section 112(f)(2) does not allow us to consider cost in setting standards if risks are unacceptable, and at proposal, and in the final rule, we determined that prior to application of the control requirements being finalized, the risk was unacceptable.

Comment 39: One commenter recommended clarifying that testing is only required if information exists that suggests EtO could be present. The commenter requested the EPA to allow facilities the option to designate process vents, storage tanks, and equipment as in EtO service because some facilities may choose to reduce their risk of non-compliance by preemptively designating sources as in EtO service where information and test results are inconclusive as to whether EtO is present. Several commenters recommended the EPA explicitly indicate that engineering judgment can be used in addition to "sampling and analysis" to identify equipment leaks, process vents, and storage tanks that may be in EtO service. One commenter recommended that the EPA add flexibility to the language in 40 CFR 63.2492(a) and (b) for determining the concentration of EtO for process vents and the weight percent EtO in the storage tank liquid, similar to the options provided in the equipment leaks section in 40 CFR 63.2492(c)(2)-(4), by allowing the use of good engineering judgment and/or calculations (based on safety data sheets, material balances, process stoichiometry, or previous test results provided the results are still relevant to the current operating conditions to determine that a process vent is in EtO service) rather than the sampling and analysis procedures.

One commenter requested that the EPA clarify that the threshold of 0.1% by weight EtO for triggering the more stringent LDAR provisions applicable to equipment in EtO service is to be applied as an annual average, because a shorter time period would pose significant obstacles to determining regulatory applicability. The commenter noted that the EPA did not specify an averaging period. The commenter added that if the EPA intended to apply this as an instantaneous value, then the EPA failed to conduct any analysis of why that should be the threshold value, and did not analyze whether a higher threshold or longer averaging period would also reduce risk sufficiently. The commenter also recommended that an annual average basis also be used for liquid stored in storage tanks.

One commenter stated that as proposed, the introductory text of 40 CFR 63.2492(a) and (b), in and of itself, could be interpreted to require testing of all process vents and storage tanks to determine whether they are in EtO service. The commenter recommended incorporating the language from the proposed definition of “in ethylene oxide service,” into 40 CFR 63.2492(a) and (b) indicating that testing is required to demonstrate process vents and storage tanks are not in EtO service only if knowledge or information exists that EtO could be present.

Response: We are not making changes to 40 CFR 63.2492(a) and (b) as suggested by the commenters. We believe the rule is clear regarding determining whether storage tanks, process vents, and equipment are “in ethylene oxide service.” In order to determine the requirements for storage tanks, process vents, and equipment in EtO service, facilities must look at both the definition of “in ethylene oxide service” and the requirements in 40 CFR 63.2492 together. The rule already explicitly allows an avenue for an owner or operator to use good engineering judgement using calculations based on safety data sheets, material balances, process stoichiometry, or previous test results provided the results are still relevant to the current operating conditions.

Specifically, 40 CFR 63.2492(c)(2) allows the use of good engineering judgement for equipment leaks to determine the percent EtO in processes fluid in contact with equipment. This was specified for equipment leaks due to the difficulty and issues with sampling and testing fluid in process lines, particularly if the fluid contains EtO. Regarding comments that the final rule specifies that the equipment leak applicability be based on an annual average, in 40 CFR 63.2492(c)(1), the rule already specifies that the percent EtO content of the process fluid that is contained in or contacts equipment can be reasonably expected to not exceed 0.1 percent by weight be on an annual average basis.

For process vents and storage tanks, the definition of “in ethylene oxide service” provides examples of information that could suggest EtO could be present, including calculations based on safety data sheets, material balances, process stoichiometry, or previous test results provided the results are still relevant to the current operating conditions. We also note that in the final rule we are revising the definition of “in ethylene oxide service” for storage tanks to be storage tanks of any capacity and vapor pressure storing a liquid that is at least 0.1 percent by weight of (or 1,000 ppmw) EtO, instead of the 1 ppmw threshold in the proposed rule. A 1,000 ppmw threshold corresponds to the chemical inventory reporting requirements under the Emergency Planning and Community Right-to-Know Act (EPCRA) and other supplier notification requirements, so facilities should have knowledge of the amount of EtO stored from these sources. A detailed discussion of our decision is found in Section IV.A of the preamble to the final rule.

The rule does not preclude facilities from designating storage tanks, process vents, or equipment to be in EtO service, even if the facility has not tested to verify the amount of EtO present or test results or process knowledge have provided inconclusive information on the amount of EtO present. However, if a storage tank, process vent, or equipment are designated to be “in ethylene oxide service”, they are required to meet the requirements in 40 CFR 63.2493, *i.e.*, the emission streams for process vents storage tanks must be controlled and the streams must be tested before and after the control device, and equipment must meet the equipment leak control option 1 requirements.

Comment 40: Commenters contended that the EPA must require fenceline monitoring for EtO. A commenter urged that self-reporting of estimated emissions is unreliable. Commenters iterated that real-time fenceline monitoring is key to helping communities know what they are being exposed to when it happens, and to protect their families. Commenters stated fenceline monitoring is necessary to determine if the chemicals are crossing the fencelines of the MON facilities, migrating into the community and at what concentrations the chemicals are potentially impacting community members. Another commenter urged that EtO is present in "virtually every aspect of the modern environment" and may be captured by current measurement technologies even in areas where manufacturing or industrial and commercial use of EtO does not exist. Commenters argued that the EPA must investigate sources of EtO background levels above 0.2 ug/m^3 in community settings to bring the levels down. The commenters further called on the EPA to improve models for evaluating emission levels and risk, since the air dispersion model used by the HEM-3 model has large errors and underestimates emissions and community risks.

A commenter indicated that the Agency cannot rely on computer modeling to determine ambient levels of EtO, stating that the accuracy of computer modeling runs contrary to community experience. The commenter noted that when the Agency conducts computer models of ambient EtO, it must input assumptions for what it expects fugitive levels to be. The commenter contended that the EPA cannot fully account for fugitive emissions without first conducting ambient air monitoring. The commenter pointed to a lack of data on national background levels of EtO and noted the National Air Toxic Assessment has brought to light the scale of EtO emissions nationally. The commenter urged that only once national background levels are fully understood can the EPA begin to assess what might constitute safe ambient levels.

Response: The EPA is not revising the final rule to incorporate fenceline monitoring for EtO. The EPA is not aware of any methodology or technology with the necessary accuracy, precision, and detection sensitivity to require fenceline monitoring for EtO. We and others outside the agency are currently undergoing research, development and evaluation of technologies to measure EtO in a fenceline monitoring application. When monitoring technology capable of accurately measuring the expected concentrations of EtO becomes available, the EPA will assess the feasibility of requiring such technology in a future regulatory action.

With respect to the statement "that EPA cannot fully account for fugitive emissions without first conducting ambient air monitoring" we disagree with that statement. Ambient monitoring currently cannot detect EtO at all levels in the air, and it is not typically used to identify the source of emissions. To calculate fugitive emissions, information about levels of EtO inside a facility or at the point of release, can be used to estimate fugitive emissions. We do not rely on air toxics ambient monitoring in our regulatory program. We use validated mathematical computer modeling in our air toxics risk assessments, and we have worked closely with the SAB to make sure that our modeling-based methods are sound and based on the latest science.

As stated by the commenter, there is a lack of data on national background levels of EtO. The EPA is working to better understand potential background levels across the country. The Agency's national contract laboratory has measured EtO in the air quality samples from 18 existing, longstanding monitors that are part of the National Air Toxics Trends Stations network and the Urban Air Toxics Monitoring Program, and the Agency is training other laboratories to analyze for EtO at other monitors in these two networks. The EPA is working to improve its measurement methods for EtO in the outdoor air, with a focus on characterizing the chemical at lower concentrations and over shorter time periods. This work will be critical to helping us understand background EtO in different areas of the country.

Comment 41: A commenter requested more stringent requirements for EtO-emitting facilities. The commenter recommended that facilities must submit proof that EtO is not harmful to humans, or must fund and report the results of independent testing at the stack and facility perimeter. The commenter urged that the EPA must establish clear minimums for EtO based on science, and impose significant fines on facilities in violation of the standards.

Response: The EPA is not revising the rule in response to this comment because the CAA does not require facilities to take on such responsibilities and we are unsure how such an approach would be implemented. Instead, consistent with CAA and as explained in the proposal, the EPA is promulgating final amendments to the MON pursuant to CAA section 112(f) that require control of EtO for process vents, storage tanks, and equipment in EtO service. For process vents and storage tanks in EtO service, the EPA is finalizing the requirements, as proposed. For equipment leaks, we are finalizing the co-proposed equipment leak "Control Option 1", which requires more stringent monitoring and LDAR. Additionally, we are requiring initial and periodic tests to confirm the performance of the controls used for storage tanks and process vents in EtO service. We find that these control requirements achieve acceptable risks and provide an ample margin of safety to protect public health, and more stringent standards are not necessary to prevent an adverse environmental effect. As discussed in Section IV.A.3 of the preamble to the final rule, we note that the revised risk assessment results in reduced risks such that additional emission reductions beyond the application of controls for process vents, storage tanks, and equipment leaks under Control Option 1 is not warranted, are not considered cost-effective, and would not reduce facility-wide emissions or risks significantly enough to warrant the additional costs.

Regarding the basis of our risk assessment for EtO, we have used the more protective EPA IRIS URE in determining the cancer risk in the revised risk assessment, which provides a protective health effect (which given uncertainties in the value, could be as much as five times lower). We believe that the 2016 IRIS URE represents the best available science as the IRIS EtO Assessment has undergone review by Agency and non-Agency experts, public review, and been published in a peer-reviewed journal. We note that we have revised the residual risk assessment to take into account improved emissions estimates for certain facilities provided through a CAA section 114 request and during the public comment period. These changes incorporate the current best available data for facilities that were previously driving the source category risk, and result in reduced risk estimates that we believe are more representative of the source category.

5.2 Process Vents and Storage Tanks

Comment 42: Commenters supported the proposed emission reductions for process vents and storage tanks, but advocated that additional emission reductions are required to eliminate unacceptable cancer risk below the EPA's threshold of 100-in-1 million, and to create an ample margin of safety to protect public health and the environment.

Response: The EPA acknowledges the commenter's support of the proposed emission reductions for process vents and storage tanks in EtO service. We are finalizing the control requirements for storage tanks and process vents in EtO service as proposed. The controls finalized for process vents and storage tanks require venting emissions through a closed vent system to a control device that reduces EtO by greater than or equal to 99.9 percent by weight or to a concentration less than 1 ppmv for each storage tank vent, or venting emissions through a closed vent system to a flare meeting the flare operating requirements in the proposed and final rule. Regarding the comment that the EPA must further reduce emissions to create an ample margin of safety, the commenter is referred to Section IV.A.3 of the preamble for our responses to similar comments. However, based on comments received on the proposed rulemaking, we are revising the proposed definition of "in ethylene oxide service" for process vents and storage tanks and refer the commenter to the preamble for the final rule for additional detail.

Comment 43: One commenter questioned the parameters that should be monitored for scrubbers to control emissions from storage tanks and process vents in EtO service, particularly for batch plants. The commenter suggested that appropriate compliance monitoring requirements will vary from plant to plant based on product mix and equipment set up. Two commenters stated that continuous monitoring of the scrubber gas/liquid flow ratio could be difficult in batch processes with periods without gas flow. One commenter explained that at many times in a process controlled by a scrubber, no gas flow is passing through the scrubber column; therefore, setting standards around liquid-to-gas ratios, as suggested in the proposal [40 CFR 63.2493(a)(2)(iv)], would not be a helpful indicator. The commenter added that batch reactions, which are widely used in specialty and fine chemical manufacturing, cannot be reasonably run under the proposed feedback loops based on continuous monitoring due to the inherent dynamic nature of their processes over time. Another commenter also contended that continuous pH measurement would be difficult to maintain on very low pH systems since it is a relatively dirty stream, and on-line analyzers for acid value or glycol content are expensive and difficult to maintain for small companies. The commenter recommended periodic sampling and laboratory testing for verification of acid value, pH, solids content, glycol content, etc.

Another commenter contended that the EPA must require continuous monitoring of maximum liquid flow rate, tank levels for reactant and solution feed tanks, and ethylene glycol content of the tanks to ensure emission reductions occur.

One commenter contended that industry anticipates having difficulty meeting a minimum pressure drop requirement during startup and shutdown of a source due to reduced and variable volumetric flow rate of exhaust gases during such time. The commenter requested that the EPA include an exemption in the final rule such that sources are not required to meet a minimum pressure drop operating limit during startup and shutdown. The commenter suggested that sources would instead be required to demonstrate compliance using the proposed minimum liquid to gas ratio, minimum pH of the scrubber liquid, and maximum water temperature. The commenter concluded that without an exemption from the minimum pressure drop operating limit, sources would most likely experience a deviation from the operating parameter limits each time the unit is in startup or shutdown mode.

Commenters stated that some facilities use a different scrubber technology than the water/acid system. A commenter stated that the EPA provides information on only one type of absorber or scrubber in the Analysis of Control Options document, and the commenter argues that several options exist for scrubbing liquids that are in compliance with the MON rule and other Part 63 NESHAPs. The commenter stated that such scrubbers use scrubbing liquid other than water and do not rely on the addition of sulfuric acid. The commenter requested the EPA to revise the reference to water to instead be scrubbing liquid. The commenter contended that other scrubbing liquids, such as a caustic solution, or other alcohols are even used to absorb EtO. Commenters added that the requirement to monitor pH in 40 CFR 63.2493(a)(2)(vi)(B) and (b)(4)(ii) should be removed or modified to only be required if an acid or caustic solution is used as the scrubbing fluid. A commenter stated that the EPA should consider relevant alternatives to continuously measuring and recording pH as specified in 40 CFR 63.2493, based on the scrubber fluid and, for example, should also allow continuous monitoring and recording of caustic strength of the scrubber effluent or liquid in the reactant tank.

One commenter noted that for EtO concentrations, initial and periodic stack testing are acceptable for conditional major sources with batch plants and would be less burdensome than continuous monitoring. Another commenter supported the current approach of allowing a design evaluation in lieu of performance testing to validate compliance. The commenter explained that the approach avoids needing to measure existing EtO levels surrounding facilities, which may reflect completely different sources.

Response: We maintain that parametric monitoring of the scrubber L/G ratio, pH of the scrubbing liquid in the reactant tank, pressure drop of the scrubber column, temperature of the water entering the scrubber column, and liquid feed pressure to the scrubber column, are all necessary to ensure the scrubber system is working appropriately to reduce EtO emissions. However, we recognize there are situations where establishing operating limits based on the manufacturer’s performance specifications or an engineering analysis can provide the same level of assurance of proper operation of the scrubber as when operating limits are established during the performance test. As a result, we have revised the scrubber monitoring requirements in the final rule to provide more flexibility in establishing the pressure drop range across the scrubber and the liquid feed pressure range. We have also changed the continuous compliance requirement demonstrations for operating parameters from instantaneous to 1-hour averages. We believe this will alleviate the commenter’s concern on feedback loops. See Section IV.A of the preamble to the final rule for a detailed discussion of the changes.

We maintain that the liquid-to-gas ratio is the primary parameter of concern in a typical wet scrubber system because it ensures that there is enough liquid available to contact the gas flowing through the system. While we understand that there may be periods in batch operations where there is no gas flow through the scrubber column, we do not understand the commenters’ concern over this point. If there is no gas flow through the column, there is no scrubbing occurring, and as such, no operating parameter (L/G or other) could indicate whether the scrubber is working. There should also be no concern with being in compliance with the L/G ratio during periods of low to no gas flow because the L/G ratio is a minimum limit; as gas flow decreases, less liquid is needed to maintain compliance with the operating limit. When the gas flow approaches zero, it will take very little liquid to stay above the minimum L/G ratio.

The commenter did not provide data to demonstrate why maintaining a pH meter on these systems would be costly or difficult. We maintain that pH is an important indicator of performance in EtO scrubbing systems, because it ensures there is enough acid catalytic capacity to convert EtO to ethylene glycol in the reactant tank within the necessary timeframe. We believe that it is necessary to monitor the pH continuously because the sulfuric acid content of the reactant tank is key to the conversion reaction, a main mechanism of EtO control in these systems. We are also not providing alternatives to pH, such as caustic strength, because we have no information to support whether such alternatives will provide the same level of assurance of proper operation of the scrubber. Sources wishing to use different operating parameters may request an alternative monitoring method under 40 CFR 63.8(f)(1)-(5).

We recognize there may be potential issues meeting minimum pressure drop limits during startup and shutdown. As stated previously, in the final rule we are allowing a pressure drop range to be established based on the manufacturer's recommendation or engineering analysis. We note that different operating parameter ranges can be established for different operating scenarios.

To our knowledge, the wet scrubbing systems that have been used to control EtO emissions to the performance required in this rulemaking for this source category have all used water with sulfuric acid as the scrubbing media. We do not have information on any other types of scrubbing systems that may be in use, and the commenters did not provide any additional information. If a source has another control system, they may request an alternative monitoring method under 40 CFR 63.8(f)(1)-(5).

We disagree that additional continuous monitoring of operating parameters is necessary. We maintain that continuous monitoring of the scrubber L/G ratio, pH of the scrubbing liquid in the reactant tank, pressure drop of the scrubber column, temperature of the water entering the scrubber column, and liquid feed pressure to the scrubber column provide a sufficient guarantee that the scrubbing system is operating efficiently and meeting the required standards. While other operating parameters may provide information on the operation of the scrubber, we do not believe that it will be information beyond what it already known based upon the parameters that we are requiring be continuously monitored. The commenter provided no information to demonstrate that any additional knowledge on the operation of the scrubber would be obtained through continuous monitoring of additional parameters.

We disagree with the commenter's request to continue to allow the use of a design evaluation instead of performance testing for controls used to reduce EtO emissions. We maintain that initial and periodic testing, with continuous parametric monitoring, is necessary in order to ensure that the control device is meeting the performance requirements and reducing EtO emissions. A design evaluation alone will not provide sufficient assurance the standards are being met. We are finalizing the removal of the option to use a design evaluation in lieu of performance testing to demonstrate compliance for both process vents and storage tanks in EtO service.

Comment 44: One commenter noted that for their facility the EPA assumed that the baseline emissions are 0.1025 tpy, prior to a scrubber with a lower efficiency. The commenter contended that this assumption is not correct, because there is not currently a scrubber on these 83 different vessels since they store heavy liquids. The commenter added that the projected cost to control these trace levels of emissions is: Total Annual cost = $265,014, Total Emission Reduction = 0.0109 tpy, Cost-effectiveness = $24,313,211/ton of EtO. The commenter added that more than one scrubber system or other emission control system may be needed in order to capture vents from all of these storage tanks and mixing vessels, so these annualized costs may be even higher than almost $25 million/ton.

Response: The approach incorporated into the CAA and used by the EPA to evaluate residual risk and to develop standards under CAA section 112(f)(2) is a two-step approach. In the first step, the EPA determines whether risks are acceptable. This determination "considers all health information, including risk estimation uncertainty, and includes a presumptive limit on maximum individual lifetime [cancer] risk (MIR) of approximately 1 in 10 thousand." 54 FR 38045, September 14, 1989. If risks are unacceptable, the EPA must determine the emissions standards necessary to reduce risk to an acceptable level without considering costs. In the second step of the approach, the EPA considers whether the emissions standards provide an ample margin of safety to protect public health "in consideration of all health information, including the number of persons at risk levels higher than approximately 1-in-1 million, as well as other relevant factors, including costs and economic impacts, technological feasibility, and other factors relevant to each particular decision." Id. The EPA must promulgate emission standards necessary to provide an ample margin of safety to protect public health or determine that the standards being reviewed provide an ample margin of safety without any revisions. After conducting the ample margin of safety analysis, we consider whether a more stringent standard is necessary to prevent, taking into consideration costs, energy, safety, and other relevant factors, an adverse environmental effect.

In the risk assessment for the MON RTR, risks were determined to be unacceptable and driven by emissions of EtO from process vents, storage tanks, and equipment leaks. To reduce risks to an acceptable level, the EPA proposed controls for process vents, storage tanks, and equipment leaks (Co-Proposed Option 1) under the first step of the above-described approach, which does not allow consideration of costs and economic impacts. Furthermore, for storage tanks, in the final rule we are revising the definition of "in ethylene oxide service" to mean storage tanks of any capacity and vapor pressure storing a liquid with a concentration of EtO greater than or equal to 0.1 percent by weight instead of 1 ppmw as was proposed. Based on information provided by the commenter and information in the commenters permit for their facility, we have determined their storage tanks no longer meet the definition of "in ethylene oxide service", as the content of EtO stored is below the 0.1 weight percent threshold.

Comment 45: Commenters contended that demonstrating a 99.9% destruction efficiency is not always practicable with a scrubber system. A commenter stated that the presence/quantity of steam (or moisture) and/or polymerizing VOC may interfere with sampling and analysis, and the volumetric flow of gas exiting a scrubber system may also be difficult to measure for small vents or tanks venting into the scrubbing system. A commenter added that technology may prevent confirming a 99.9% removal efficiency when the concentration of EtO at the inlet to a scrubber (or other non-flare control device) is relatively low. The commenter concluded that the EPA should provide an option to demonstrate compliance by showing that the concentration of ethylene is less than or equal to 1 ppmv.

Response: The EPA is retaining the option to show compliance by demonstrating the emissions concentration of EtO is less than 1 ppmv; however, we are not adjusting the language to include "or equal to". The EPA agrees that there may be situations where proving 99.9% destruction efficiency will be difficult due to the inlet concentration of EtO to the control device. As for the commenter's concern that the detection limit for some analytical approaches is at 1 ppmv, the EPA believes those approaches are still able to be used for determining compliance because anything below the detection limit would demonstrate compliance. Owners and operators may apply to use an alternative test method in accordance with the provisions of 40 CFR 63.7(f) for any site-specific issues that may make the specified methods difficult to use, such as interferants, unusual flow situations, etc.

Comment 46: A commenter objected to pressure vessels being required to meet the proposed requirements. The commenter contended that there is no reason to remove an exemption for storage tanks that are considered closed systems and have no emissions to the atmosphere. The commenter concluded that imposing control requirements on high-pressure vessels in EtO service will not result in any risk reduction because such vessels are not a source of emissions or risk.

The commenter assumed that the EPA proposed to remove the pressure vessel exclusion for EtO storage tanks (that otherwise meet the pressure vessel definition in 40 CFR 63.2550) because of a concern about the possibility of a fugitive emission leak from a manway or other bolted hatch on a pressure vessel. The commenter contended that by introducing new LDAR requirements for pressure vessels in EtO service, the EPA should not default to the adoption of a no emission policy and provide no time frame for the owner/operator to address a fugitive emission leak if one is detected. The commenter contended that monitoring initially and annually of each point on the pressure vessel through which EtO could potentially be emitted using Method 21, initially and annually, is a new performance standard. The commenter requested the EPA should provide appropriate repair time limits that must be met before such an event is considered a deviation. The commenter added that the requirements in 40 CFR 63.2493(c)(1) to design the pressure vessel to operate with no detectable emissions at all times should be changed into a work practice standard rather than a performance standard. The commenter explained that a pressure vessel can be designed not to leak, but can occasionally experience a leak in actual operation since sources cannot guarantee perfection.

The commenter noted that the proposed pressure vessel monitoring provisions of 40 CFR 63.2493(c) do not take into account that a pressure vessel containing EtO may be located such that monitoring is not feasible, such as inside of a containment area or partially buried. The commenter concluded that Method 21 monitoring should only be required on potential leak sources that are readily accessible and safe to monitor.

Response: We did not revise our pressure vessel requirements from proposal. Our intent in removing the exemption for "pressure vessels designed to operate in excess of 204.9 kPa and without emissions to the atmosphere" was to eliminate any ambiguity in applicability or control requirements and instead require standards for pressure vessels storing EtO that are based on best practices. The long-standing exemption described above is ambiguous with respect to what "without emissions to the atmosphere" means. For example, most pressure vessels have relief devices that allow for venting when pressure exceeds setpoints. In many cases, these vents are routed to control devices, as we understand is the case for EtO tanks; however, control devices are not completely effective, and therefore there are emissions to atmosphere from these pressure vessels, even if they are controlled. There are also instances where other components in pressure systems may allow for fugitive releases because of leaks from fittings or cooling systems. All of these events arguably are "emissions to the atmosphere" and therefore it is likely that even if this exemption were maintained, owners and operators of EtO tanks would still have uncertainty regarding whether or not they were subject to substantive requirements. Our proposal therefore removed the ambiguity associated with the exemption and set standards intended to limit emissions to the atmosphere from pressure tanks.

Our proposed and final standards are based on similar no-detectable emission requirements required for closed vent systems and PRDs (5 days after relief) in most of our chemical sector rules. As such, they do not provide for repair time but instead impose a standard that requires no detectable emissions at all times, recognizing that pressure vessels can be designed with appropriate capture and containment systems for leak interfaces such that the owner or operator can avoid "willful" deviations. We are also providing up to 2 years to come into compliance. Finally, with regard to the commenter's request to provide allowances for inaccessible conditions in this rule, we note, as explained in our response to comment 48, the unsafe and difficult to monitor provisions in 40 CFR part 63, subparts UU (63.1027(e)), and H (63.174(g) and (h)), and 40 CFR 65, subpart F (65.108(e)) still apply to equipment in EtO service (*e.g.*, pressure relief valves and valves associated with pressure vessels).

Comment 47: Commenters requested confirmation on their interpretation that only the emission limits for Group 1 storage tanks in Table 4, Items 1 and 2 apply to surge control vessels and bottoms receivers that meet the capacity and vapor pressure thresholds for a Group 1 storage tank, and the EtO requirements for storage tanks in Table 4, Item 3 do not apply to surge control vessels and bottoms receivers. The commenter explained that Table 4 (Item 3) of Subpart FFFF, the requirements in 40 CFR 63.2493 applicable to storage tanks in EtO service, and the definition of "in ethylene oxide service" apply to "storage tanks" of any capacity and vapor pressure. The commenter added that the Group 1 storage tank requirements are distinctly separate from the EtO requirements for storage tanks. The commenter concluded that because the definition of storage tank specifically excludes surge control vessels and bottoms receivers, only the emission limits for Group 1 storage tanks in Table 4, Items 1 and 2 apply to surge control vessels and bottoms receivers that meet the capacity and vapor pressure thresholds for a Group 1 storage tank.

A commenter argued that the EPA should extend the 240 hours per year allowance for control device maintenance to surge control vessels and bottoms receivers. The commenter expressed belief that the EPA did not include a provision allowing maintenance of the control device as there is at 40 CFR 63.2470(d) for storage vessels because the EPA is not aware that some surge control vessels such as those operated by Eastman can be fairly large vessels that serve to control flow in a large continuous process. The commenter clarified that they operate MCPUs with surge control vessels that, for the same reason as storage vessels, need an allowance of time for planned routine maintenance of control devices. The commenter noted that surge control vessels are regulated by MON as part of the equipment leak standards which reference 40 CFR part 63, subpart H, which then points to section 63.172 for control device requirements. The commenter explained that, when the process is down for maintenance, these fixed roof vessels are typically not emptied; there are no working losses, but the vessel will still have breathing losses while the control device is out of service for maintenance. The commenter also explained that bottoms receivers fall into this same category and are typically not emptied while maintenance is being performed on the control device.

Response: We agree that the proposed rule was unclear regarding the requirements for surge control vessels and bottoms receivers in EtO service. Emissions from surge control vessels and bottoms receivers are process vents, but many of our existing chemical sector rules regulate these emissions sources as if they are storage tanks, including the MON. However, we consider surge control vessels and bottoms receivers in EtO service to be potentially significant sources of EtO emissions and therefore believe they should be regulated with other process vents in EtO service. The commenter is correct that in the existing section 40 CFR 63.2450(r) was not amended to account for EtO service surge control vessels and bottoms receivers. However, we note that this was a drafting error and this paragraph should have referenced requirements for process vents. The final rule reflects this revision. We have also not provided an additional exemption from control for control device maintenance, as requested by one commenter. We did not propose an alternative standard during periods of control device maintenance on any control system as the control requirements must be met at all times.

5.3 Equipment Leaks

Comment 48: Commenters recommended adopting the unsafe to monitor, unsafe to repair, or inaccessible provisions found in 40 CFR part 63, subpart H, subpart UU, and 40 CFR 65, subpart F for connectors in EtO service. One commenter contended that the EPA cannot suddenly require connectors that are unsafe to monitor or repair must still be monitored or that connectors under insulation must be monitored at the same frequencies as other connectors that do not have these issues. The commenter added that the EPA has not articulated why these particular provisions are needed in order to reduce risk.

Another commenter supported requiring leakless connectors to reduce the risk.

Response: The commenters are incorrect in their interpretation. The unsafe-to-monitor and difficult-to-monitor component provisions still apply to connectors in EtO service. The proposed and final rule requires sources with equipment in EtO service to comply with the equipment leak provisions in 40 CFR part 63, subparts UU or H or 40 CFR 65, subpart F, except as specified in 40 CFR 63.2493(d) and (e). The requirements in 63.2493(d)(2) for connectors indicate the leak definition and monitoring frequency for connectors in EtO service. The requirements in 40 CFR 63.2493(e) indicate which parts of the referenced subparts do not apply. The unsafe and difficult to monitor provisions in 40 CFR part 63, subparts UU (63.1027(e)), and H (63.174(g) and (h)), and 40 CFR 65, subpart F (65.108(e)) are not included in 63.2493(e), and therefore, they still apply. Regarding leakless connectors, we did not consider these at proposal because we did not know of any Miscellaneous Organic Chemical Manufacturing sources that use them for EtO service and because of potential safety considerations with welded connectors and flanges.

Comment 49: A commenter requested that the final rule incorporate provisions that allow facilities to reduce the frequency of connector monitoring based on the percentage of leaking connectors. The commenter explained that unlike valves and pumps, connectors lack moving parts that contribute to equipment leaks. The commenter added that gasket failure is the primary reason for connector leaks and once repaired, connectors have a low frequency of repeat leaks. The commenters suggested including or cross-referencing to requirements in 40 CFR part 63, subpart H, 40 CFR part 63, subpart UU, and 40 CFR part 65, subpart F.

A commenter contended that if the EPA selects Option 2, the frequency of connector monitoring should be annual and not monthly. The commenter explained that unlike valves and pumps, connectors lack moving parts and have a low rate of leaks and the recurrence rate of leaks on the same connector is practically zero. The commenter concluded there is no reasonable justification to require such frequent monitoring. The commenter added that monthly monitoring of thousands of connectors would require a dedicated full-time employee working year-round while achieving little to no emissions reductions. The commenter stated that additional controls for EtO are unnecessary to address risk, and monthly connector monitoring is not cost-effective.

Commenters contended that connector monitoring within 5 days of initial startup is not practical for connectors that are added or replaced, especially in cases where significant changes are made to piping and a larger number of connectors is involved. Commenters suggested initial monitoring occur within 30 days after new or replacement connectors are placed into service.

Response: We are finalizing Control Option 1 for equipment in EtO service for the final rule. Control Option 1 requires annual connector monitoring. We are not reducing the connector monitoring frequency for good performance. We maintain the annual monitoring of connectors is necessary to ensure that emissions and the risk due to EtO exposure is reduced. We note the commenter that suggested reducing connector monitoring frequency also recommended annual monitoring for equipment leaks Control Option 2 instead of monthly. Regarding initial monitoring for connectors within 5 days of initial startup, we are not changing the requirements in the final rule. Facility specific information was not provided by the commenters supporting their assertion that such a requirement was an excessive burden. For the one facility that provided counts of connectors in EtO service, the average number of connectors in EtO service per process is 35 and not hundreds of connectors. It is likely only a fraction of these connectors would be directly affected at any one time due to construction, changes to piping, or changes to the process. No information was provided by commenters for us to reassess our decision.

Comment 50: A commenter stated that when addressing residual risks in the ample margin of safety analysis, the EPA not only takes into account “health risks and other health information,” it also evaluates the cost and technical feasibility of such controls. The commenter stated that a careful review of the costs and emissions reductions of Control Option 1 clearly demonstrates the option is not cost effective, and Control Option 2 even less so.

Response: The approach incorporated into the CAA and used by the EPA to evaluate residual risk and to develop standards under CAA section 112(f)(2) is a two-step approach. In the first step, the EPA determines whether risks are acceptable. This determination "considers all health information, including risk estimation uncertainty, and includes a presumptive limit on maximum individual lifetime [cancer] risk (MIR) of approximately 1 in 10 thousand." 54 FR 38045, September 14, 1989. If risks are unacceptable, the EPA must determine the emissions standards necessary to reduce risk to an acceptable level without considering costs. In the second step of the approach, the EPA considers whether the emissions standards provide an ample margin of safety to protect public health "in consideration of all health information, including the number of persons at risk levels higher than approximately 1-in-1 million, as well as other relevant factors, including costs and economic impacts, technological feasibility, and other factors relevant to each particular decision." Id. The EPA must promulgate emission standards necessary to provide an ample margin of safety to protect public health or determine that the standards being reviewed provide an ample margin of safety without any revisions. After conducting the ample margin of safety analysis, we consider whether a more stringent standard is necessary to prevent, taking into consideration costs, energy, safety, and other relevant factors, an adverse environmental effect.

In the risk assessment for the MON RTR, risks were determined to be unacceptable and driven by emissions of EtO from process vents, storage tanks, and equipment leaks. To reduce risks to an acceptable level, the EPA proposed controls for process vents, storage tanks, and equipment leaks (Co-Proposed Option 1) under the first step of the above-described approach, which does not allow consideration of costs and economic impacts. At proposal, the EPA solicited comment on whether to finalized equipment leak Co-Proposed Option 1 or Option 2, and if Option 2 was finalized, the EPA also solicited comment on whether it should be applied under the first step ("acceptable risk") or the second step ("ample margin of safety") of the above-described approach. However, upon review of updated emissions data, the EPA has decided to finalize controls for process vents, storage tanks, and equipment leak Co-Proposed Option 1 under the first step, which does not allow consideration of costs and economic impacts.

Comment 51: A commenter contended that the cost calculation was flawed resulting in an underestimation of cost-effectiveness. The commenter stated that the EPA should have based the emissions reductions on using the emission values contained in the modeling file provided by facilities instead of "model plant emission estimates," The commenter also objected to the EPA calculating "model plant emissions" using model equipment counts, previously determined emission factors and leak frequencies, and the incorrect assumption that leaks at the identified facilities are 100% EtO. The commenter contended that this assumption is unrealistic as facilities do not transport pure EtO throughout all the equipment at their facilities. The commenter added that EtO is either produced or used as a reactant, and the purity of EtO when used as a reactant can vary if the EtO is contained in a mixture with other chemical compounds. The commenter contended that if pure EtO or mostly pure EtO is present at all, it is only in a subset of equipment and not the entire process, thus the EPA's assumption that all equipment leaks at the model facility consist of 100% EtO is unreasonable. Another commenter said the EPA's assumption that leaks are comprised of 100% EtO is directly refuted by actual facility data. The commenter provided an example where a facility's process units subject to the HON have an average EtO concentration of 42%; and the commenter said these EtO concentrations are expected to be representative of MON units based on a review of the processes involved. The commenter also cited Docket Item EPA-HQ-OAR-2018-0746-0069 for concentration and equipment count data for the Lanxess facility indicating an EtO concentration of 37% on an equipment count weighted average basis. The commenter said that by incorporating a value of 42% into the EPA's impact analysis for equipment leaks, the EtO emissions reductions of Control Option 1 decreases from 3.6 tpy to 1.5 tpy and the emissions reductions of Control Option 2 decreases from 4.5 tpy to 1.9 tpy.

Response: At proposal, we used the best data available to us to conduct the cost and impacts analysis. We did not have data on the actual counts of equipment, operating hours, or the composition of streams at EtO processes. In order to conduct the cost and impacts analysis we used model equipment counts from the original MON rule, equipment leak emission factors that are used in similar analyses for other regulatory standards, and assumed the streams were composed of 100 percent EtO, and therefore, material leaking from the equipment would be only EtO. The commenters are incorrect in that the assumption of 100 percent EtO was made on a MON facility basis. The assumption was used on a model facility comprised of only EtO processes, and only to those where the EPA knew had processes in EtO service. Data provided by the facility referenced by the commenter, Lanxess, shows that there are processes and equipment with 100 percent EtO in service. After proposal, we revised the cost and impacts analysis for equipment in EtO service using facility specific data provided by commenters. One facility, Lanxess, provided updated information on equipment counts, EtO content in each of their processes, and hours operation of their processes. The revised analyses are provided in the memorandum, *Analysis of Control Options for Equipment Leaks at Processes that use Ethylene Oxide Located in the Miscellaneous Organic Chemical Manufacturing Source Category For the Final Rule*, which is available in the docket for this rulemaking.

Comment 52: Commenters contended that for Control Option 2, setting a leak definition of "any value above the measured background concentration" is impracticable and should not be finalized. Commenters explained that "background" levels are constantly fluctuating throughout a facility and vary based on an array of factors including wind speed, wind direction, emissions from other nearby sources, ambient air concentrations, and temperature. Commenters added that finding a reading above "background" is not a meaningful indicator of whether valves are, in fact, leaking, and may reflect constantly varying surrounding conditions or emissions from other sources that are not leakless valves. Commenters added that such a low threshold makes it impossible to identify the emissions of a specific component. Commenters continued that it would be similarly impossible to verify whether an attempt to repair a "leak has been successful and therefore no way to demonstrate compliance.

Commenters stated that if Option 2 is selected, the EPA should adopt a reasonable and measurable leak detection threshold so facilities can properly identify and address equipment leaks, such as level of 500 ppm as the leak detection threshold. One commenter also suggested the leak definition at a minimum could be changed to 100 ppmv or greater similar to connectors in EtO service under 40 CFR 63.2493(d)(3)(ii)(A) for the higher risk facilities. Commenters added that the language should also be amended to include the "no detectable emission" standards in 40 CFR part 63, subpart V or H, which requires the owner/operator to annually demonstrate that the leakless valve or pump is operating with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background as measured by the methods specified. The commenter stated that this is because valves that are not considered leakless valves are not designed to operate with no instrument reading above the background concentration level; and although leakless valves and pumps are designed to operate with no instrument readings above the background concentration level, monitoring may pick up background concentrations due to another source that is not a leak on the valve or pump in EtO service in the vicinity.

Response: In the final rule, we are requiring facilities with equipment in EtO service to meet the proposed Option 1 requirements (monitoring light liquid pumps at a leak definition of 1,000 ppm and connectors at a leak definition of 500 ppm). The leak definition levels for proposed equipment leak Option 2 are not being finalized.

Comment 53: A commenter objected to the EPA using different standards between facilities when determining whether to regulate a facility or for making applicability determinations. The commenter objected that the EPA tailored a standard to a particular company or facility and contended this was discriminatory. The commenter recommended that the EPA should not conclude all facilities in the source category must be reviewed under section 112(f), since only one or two facilities do not meet the risk criteria of 100-in-1 million or less.

Response: In the final rule, we are requiring facilities with equipment in EtO service to be meet the proposed equipment leak Option 1 requirements (monitoring light liquid pumps at a leak definition of 1,000 ppm and connectors at a leak definition of 500 ppm). We are applying this requirement to all facilities in EtO service and not finalizing standards to a particular facility or company.

Comment 54: A commenter contended that leak definitions of 1,000 ppm or 500 ppm are unacceptably high. The commenter stated that any individual entering an area with a leak of this magnitude would be exposed to concentrations at which acute health effects can be expected. The commenter suggested using Rule 1405 in California as a guideline for defining a possible leak point as "leak free" by setting a concentration (10 ppm) and distance from the leak point (1 cm).

Response: In the final rule, we are requiring facilities with equipment in EtO service to meet the proposed Option 1 requirements (monitoring light liquid pumps at a leak definition of 1,000 ppm and connectors at a leak definition of 500 ppm). As shown in the memorandum, *Analysis of Control Options for Equipment Leaks at Processes that use Ethylene Oxide Located in the Miscellaneous Organic Chemical Manufacturing NESHAP Source Category For the Final Rule*, which is available in the docket for this rulemaking, we evaluated lower leak definitions for equipment in EtO service. However, the reduced leak definitions result in incrementally smaller emissions and a higher cost. The rule cited by the commenter is specific to sterilization and fumigation processes and not MON processes, which have different equipment, operating conditions, and EtO content. The cited rule also applies to specific compositions of sterilant gas, and applies to leaks from process equipment such as sterilizers, aerators, control equipment, and emissions collection systems, and not to equipment leaks as regulated by the MON.

Comment 55: A commenter contended that if the EPA determines additional controls for EtO are necessary, the EPA should set a consistent leak definition of 1,000 ppmv for pumps and 500 ppmv for valves and connectors for equipment in EtO service, and additionally require a more stringent repair timeline and a directed maintenance program, similar to TCEQ's, for facilities with unacceptable residual risk.

Commenters noted that the TCEQ fugitive emission rule for Highly Reactive Volatile Organic Compounds (HRVOCs) under 30 TAC 115, Subchapter H, Division 3, Fugitive Emissions applies to components that contact a process fluid containing 5.0% or more HRVOC by weight on an annual average basis. At these affected facilities, the commenters added that TCEQ requires that for leaks detected over 10,000 ppmv, the first attempt at repair must be made no later than one business day after the leak is detected, and the component must be repaired no later than 7 calendar days after the leak is detected. A commenter explained that a directed maintenance program requires that a gas analyzer be used in conjunction with the repair or maintenance of leaking components to assure that a minimum leak concentration is achieved. The commenter stated that conducting directed maintenance will result in the lowest leak rate possible and may result in valves being repaired to background levels, or to the maximum extent possible, if repairs to background level are not possible.

Commenters recommended that instead of the leakless pump and valve requirements in the proposed rule, the final rule should adopt a stringent repair time limit of 1 business day for the first attempt at repair and 7 calendar days for the final repair unless delay of repair is justified instead of the 5/15-day repair time limits for leaks above 1,000 ppmv from pumps and leaks above 500 ppmv for valves. The commenters also recommended a directed maintenance provision, which would require monitoring with a gas analyzer following component maintenance or replacement to confirm successful repair of the leak.

The commenter added that such a program is the most practical way to reduce EtO emissions while still allowing facilities to design and operate equipment safely and according to their existing engineering specifications.

Response: In the final rule, we are requiring facilities with equipment in EtO service to be meet the proposed Option 1 requirements (monitoring light liquid pumps at a leak definition of 1,000 ppm and connectors at a leak definition of 500 ppm). The leak definition levels for proposed equipment leak Option 2 are not being finalized. The repair timelines of first attempt at repair in 5 days and repair no later than 15 days after detection that are in the proposed and final rule are consistent with requirements in the directed maintenance programs identified by the commenters. The proposed and final rules do not allow delay of repair for equipment in EtO service. Since we did not propose the commenters suggested alternatives, finalizing any such provisions would violate our notice and comment obligations under CAA section 307(d).

6.0 Technology Review

6.1 General

Comment 56: Commenters contended that the EPA must require fenceline monitoring and the monitoring data should be made available to the public in real time. One of these commenters pointed to recently released data on petroleum refineries that demonstrates how important the fenceline monitoring requirements are. The commenter stated that though the EPA did not finalize the fenceline monitoring requirements in the final Organic Liquids Distribution

(OLD) NESHAP, the EPA did not undo its finding that fenceline monitoring is a "development" under CAA section 112(d)(6). The commenter concluded that the EPA's rationale for not requiring fenceline monitoring in the OLD source category is unlawful and arbitrary; and refusing to require fenceline monitoring in the MON rulemaking would be similarly unlawful and arbitrary. The commenter provided suggestions for fenceline monitoring including monitoring frequencies, chronic RELs, monitoring plans, corrective action plans. The commenter favored using open-path monitoring and provided reasons why it should be required.

Response: We are not incorporating a fenceline monitoring work practice in the rule for several reasons. First, nothing in the CAA requires the EPA to mandate that MON facilities perform fenceline monitoring, particularly with respect to CAA sections 112 (d)(6) and CAA section 112 (f)(2). Second, while we adopted a fenceline monitoring requirement in the petroleum refinery NESHAP (40 CFR part 63, subpart CC), we find no compelling reasons to require fenceline monitoring by MON facilities. For petroleum refineries, the rulemaking record showed significant concern about the quality and accuracy of emissions data from fugitive sources, especially the concern that the fugitive emission estimates available for characterizing public health risks were underestimated. While fenceline monitoring is one of many tools that could be used to address fugitive emissions, we have no basis to conclude that the magnitude and uncertainty of fugitive emissions at MON facilities is similar to that of petroleum refineries. Accordingly, we see no reason to impose additional monitoring beyond the additional LDAR requirements being adopted in the final rule. Third, other CAA statutory authorities exist for requiring additional monitoring if needed in individual cases (*e.g.,* CAA section 114), and the Agency can reassess the need for monitoring information in future CAA section 112(d)(6) technology reviews should we find a need for fenceline monitoring information from miscellaneous organic chemical manufacturing sources in the future. We also note that the Miscellaneous Organic Chemical Manufacturing source category contains a diversity of processes and chemicals reacted, produced, and emitted that would make selecting compounds and setting action levels for fenceline monitoring difficult and in some cases impossible. Lastly, since we did not propose to require fenceline monitoring for MON facilities in this RTR, finalizing any such provisions would violate our notice and comment obligations under CAA section 307(d). Thus, for all the reasons mentioned above, we are not requiring fenceline monitoring for MON facilities in this RTR.

Comment 57: A commenter argued that the EPA must set a limit on all fugitive emissions. The commenter stated that is unlawful under CAA section 112(d)(2), (3), and (6), and arbitrary and capricious for the EPA not to set limits on fugitive emissions that require the "maximum achievable" degree of emission reduction. The commenter urged that the EPA must, at least, set a floor for existing source standards under CAA section 112(d)(3) to limit fugitive emissions according to the average emission limitation "achieved" by the top 12 % of existing sources, and must match the best source, for the new source standards.

Response: We disagree with commenters that we must set a limit on all fugitive emissions in this action given that we have already set MACT standards for these sources (*e.g.,* equipment leaks, waste operations, storage tank) in the original NESHAP promulgated in 2003. In addition, commenters have failed to highlight with any specificity any other fugitive emission sources the EPA has failed to regulate and that is not considered part of the affected source for MON facilities under the NESHAP. Commenters suggestion that the EPA has an obligation to review prior MACT determinations and recalculate MACT floors as part of each 112(d)(6) review also has no merit. That argument has repeatedly been rejected by the courts. *See, e.g., Nat'l Ass'n of Surface Finishing v. EPA*, 795 F.3d 1 (D.C. Cir. 2015); *Association of Battery Recyclers v. EPA*, 716 F.3d 667, 673 (D.C. Cir. 2013), *NRDC v. EPA*, 529 F.3d 1077(D.C. Cir. 2008). We are also finalizing our determination that, after application of the finalized controls, risks are acceptable for this source category and that the NESHAP provides an ample margin of safety under our residual risk review. No change is being made as a result of this comment.

6.2 Equipment Leaks

Comment 58: A commenter stated that the EPA must revise the MON to reflect the additional control options 2, 3, and 4 for all MON equipment leaks (*i.e.*, not only ethylene oxide) to further reduce the unacceptable health risks as required under CAA section 112(f)(2), and cannot consider costs. One commenter objected to the EPA not requiring additional controls for all MON equipment leaks, such as lower leak definitions, for leaking equipment because the control options were not cost-effective. The commenter added that the EPA's proposed inaction is unlawful, arbitrary, and capricious because it ignores key statutory purposes that are required factors to consider. The commenter contended that CAA section 112(d)(6) does not authorize the EPA to refuse to update standards based on cost. The commenter added that where "developments" have occurred, the EPA must "account" for those. The commenter noted that many refineries have already complied with stronger LDAR provisions in air districts and under EPA consent decrees, demonstrating that such requirements are technologically and economically feasible. The commenter continued that the EPA should follow the plain text of section 112(d)(2)-(3) of the CAA and applicable precedent requiring that the EPA may not consider cost without explicit authorization. The commenter added that the EPA's cost-focused analysis ignores the statutory objective of assuring the "maximum" achievable degree of emission reduction provided in section 112(d)(2) and implemented through the review required by section 112(d)(6). The commenter stated that it also ignores the statutory goal of protecting public health, which is the core purpose behind this provision and the stated purpose of section 112(f)(2). The commenter contended that the agency's job is simply to determine the "maximum" degree of reduction that can be achieved considering cost, under section 112(d)(2), and to assure an "ample margin of safety to protect public health" under CAA section 112(f)(2).

The commenter contended that the EPA's decision to make cost-per-ton the standard-setting criterion and to choose a number it deems unreasonable, without a rational explanation, is arbitrary and capricious. The commenter stated that the cost/ton removed that the EPA found unreasonable for MON equipment leaks is lower than costs in other rules that the EPA found appropriate (citing the Modified El Paso Method for heat exchange systems in this rule and an example in the NESHAP for secondary lead smelting). The commenter added that the cost-per-ton of reduction says nothing about whether a stronger standard is feasible, and does not consider at all whether the industry could easily bear the costs of additional controls that would strengthen emissions reductions and health protection. The commenter stated that the analysis of economic impacts of the rule the EPA decided to promulgate shows that most of the firms with regulated facilities are well-prepared to take on some additional cost in order to reduce leaks.

The commenter stated that cost-per-ton, alone, says nothing about health risk. The commenter noted that a ton of hazardous air pollution is a very large amount, and the EPA's own risk assessment shows that the pollutants emitted by these source categories are known to be hazardous at an exposure level of micrograms or less, and the carcinogens emitted by MON facilities have no safe level of exposure. The commenter stated that treating a ton of one HAP or combination of pollutants like a ton of any other HAP is not supported by the data showing how toxic the emitted pollutants at issue here are at low levels of exposure. The commenter concluded that the value of removing the HAPs emitted by these sources from the air cannot be expressed in dollars per ton or dollars per pound. The commenter noted that if the EPA wishes to consider cost-effectiveness, it has shown where it has accepted higher dollar per ton figures than for the equipment leak options. The commenter cited the cost-effectiveness calculated for the Modified El Paso Method for heat exchange systems in the MON and also the secondary lead smelting rule. The commenter stated that because the EPA has found higher cost-reduction ratios appropriate, it is arbitrary and capricious for the EPA not to require greater reductions here, when they are clearly achievable and would provide more protection for public health, as statutorily provided.

Response: Commenters suggestion that the EPA has an obligation to review prior MACT determinations and recalculate MACT floors as part of each 112(d)(6) review has no merit. That argument has repeatedly been rejected by the courts. *See, e.g., Nat'l Ass'n of Surface Finishing v. EPA*, 795 F.3d 1 (D.C. Cir. 2015); *Association of Battery Recyclers v. EPA*, 716 F.3d 667, 673 (D.C. Cir. 2013), *NRDC v. EPA*, 529 F.3d 1077(D.C. Cir. 2008). Thus, we are not re-evaluating and re-opening what is considered MACT for equipment leaks under CAA sections 112(d)(2) and (3) in this action. For all MON equipment leaks (*i.e.*, not only ethylene oxide), our technology review under CAA section 112 (d)(6) identified four developments in LDAR practices and processes: (1) lowering the leak definition for pumps in light liquid service at batch processes from 10,000 ppm to 1,000 ppm, (2) lowering the leak definition for pumps in light liquid service at batch and continuous processes to 100 ppm, (3) requiring connector monitoring with a Method 21 monitoring at a leak definition of 500 ppm for connectors in gas and light liquid service, and (4) Lowering the leak definition for valves in gas and vapor service or in light liquid service from 500 ppm to 100 ppm,. We evaluated these options as developments under CAA section 112(d)(6). We proposed and are finalizing the requirement to lower the leak definition of light liquid pumps at batch processes to 1,000 ppm. We found that three of the options (lower the leak definition for light liquid pumps to 100 ppm, lower the leak definition for valves to 100 ppm, and monitoring connectors at 500 ppm) were not cost-effective with cost-effectiveness exceeding $17,000 per ton with recovery credits and exceeding $25,000 per ton without recovery credits. See the technical memorandum, *Clean Air Act Section 112(d)(6) Technology Review for Equipment Leaks Located in the Miscellaneous Organic Chemical Manufacturing Source Category*, which is available in the docket for this rulemaking, for details on the assumptions and methodologies used in this analysis. Commenters also failed to provide any new information for equipment leaks from MON processes for us to consider in our analysis. With respect to the role of cost in our decisions under the technology review, we note that courts have not required the EPA to demonstrate that a technology is "cost-prohibitive" in order not to require adopting a new technology under CAA section 112(d)(6); instead, the court has affirmed the EPA's consideration of cost-effectiveness of controls in the technology review. See *Association of Battery Recyclers, et al. v. EPA, et al.*, 716 F.3d 667, 673-74 (D.C. Cir. 2015) (approving the EPA's consideration of cost as a factor in its CAA section 112(d)(6) decision-making and the EPA's reliance on cost-effectiveness as a factor in its standard-setting). Additionally, while CAA section 112(d)(6) does not prescribe a cost-effectiveness analysis method, the EPA has sometimes presented cost/ton-reduced numbers in the supporting analyses for regulations that we issue. See for example, *Husqvarna AB v. EPA*, 254 F. 3d 195 at 200 (D.C. Cir. 2001) ("Because section 213 does not mandate a specific method of cost analysis, we find reasonable the EPA's choice to consider costs on the per ton of emissions removed basis.").

The commenter's comparison of cost per ton values against other rules and other requirements within this final rule are also misplaced. The commenter draws a comparison to an analysis for metal HAP in the Secondary Lead NESHAP RTR, where those costs per ton were determined to be within the range of metal HAP values for other section 112 rules (see 77 FR 576, January 5, 2012). However, organic HAP are the issue of concern for equipment leaks, and the EPA has historically used a different and significantly lower cost effectiveness scale for organic HAP versus metal HAP due to their relative toxicity. When the organic HAP is a carcinogen or has certain noncancer effects, we may find a higher cost-effectiveness for the organic HAP to be reasonable.

Lastly, we also disagree that we did not consider more stringent air district and consent decree requirements for equipment leaks for MON sources. The thresholds we considered for equipment leaks for valves in gas and vapor service or in light liquid service of 100 ppm and pumps in light liquid service of 500 ppm are comparable to those found in some consent decrees and TCEQ's HRVOC rule.

Comment 59: One commenter supported the EPA's findings in the technology review for equipment leaks. The commenter stated that the EPA correctly concluded that none of the identified controls, except for one option for equipment leaks, lowers the MIR, incidence, or population exposed to cancer risks greater than or equal to 1-in-1 million, and the EPA correctly found that the one option, for connector monitoring, was not cost-effective.

One commenter contended that a leak is a type of malfunction. Therefore, the commenter insisted that the EPA may not lawfully allow any leaks in any amount. The commenter stated that the EPA's proposal not to change the leak definition to recognize leaks of all sizes as a problem violates the Act, and that authorizing facilities to leak below a given threshold, and to do so without repairing or ending the leak, means that the EPA's standards do not apply continuously, as the Act requires. The commenter stated that the EPA must finalize a rule that sets a leak prohibition and establishes up to date and stronger LDAR requirements.

The commenter objected to the EPA's proposal to retain the leak definition of 500 ppm for valves in gas and vapor service or in light liquid service; 1,000 ppm for pumps in light liquid service; and 10,000 ppm for agitators in gas and vapor service and in light liquid service. The commenter stated that the EPA and other governmental entities have set a lower leak definition by regulation, and the EPA should set similar requirements here. The commenter cited the oil and gas rules, requirements in air districts in California, and the EPA consent decrees that have required low-leak valves that "virtually eliminate pollutant leaks" and stated that such requirements should be included in this rule. The commenter also pointed to additional developments including the use of low-leak technologies; lowering the leak definition for valves, connectors, and other equipment to 100 ppm; lowering the leak definition for pumps, compressors, and PRDs to 500 ppm; and requiring tighter timelines for minimization of leaks to within 24 hours of identification and repairs within seven days.

The commenter stated that the EPA must review the data it has collected to determine the best performers on the basis of the sources that consistently have the lowest leak detection levels, the fewest leaks, and the smallest percentage of unrepairable leaks to set standards under CAA section 112(d)(2) and (3). The commenter urged that sources must be required to follow leak standards based on currently available "zero emissions technologies" and practices as demonstrated by the best performing sources, including leak-free pumps, leakless valves, and improvements in practices that reduce the number of leaks by using a greater percentage of other kinds of leakless devices. At a minimum, the commenter contended that the EPA must require that when leaks are detected and must be repaired, existing facilities should be required to install leakless or "low-emission valves". The commenter pointed to similar requirements in various consent decrees. Another commenter supported the lowering of the leak definition and increasing the leak inspection frequency.

One commenter further noted that the current rules allow sources to delay and defer leak repair indefinitely, which they stated is an unlawful malfunction exemption and must be removed from the final rule. The commenter noted that the EPA proposes to continue to incorporate into the MON the requirements of 40 CFR part 63, subpart UU, which contains a number of deferred monitoring and repair provisions. The commenter stated that these requirements included unlawful exemptions that do not contain any cap on the amount of HAP emissions which may result. The commenter added that the EPA must remove all leak repair deferral exemptions from the LDAR provisions and set a firm, enforceable deadline for the repair of all leaks found. The commenter concluded that the EPA must not exempt any valves, connectors, or other equipment from the LDAR standards and requirements. Another commenter recommended requiring leaks be fixed within 15 days.

Response: As previously discussed, we are not re-evaluating and re-opening what is considered MACT for equipment leaks under CAA sections 112(d)(2) and (3) in this action. We also note that there are no MON facilities in CA air districts with the more stringent requirements, and that LDAR improvements for oil and gas sources are not apposite given that they are not comparable to our already more stringent equipment leak standards specific to the source category of concern in this action, miscellaneous organic chemical manufacturing. Further, we disagree with commenters that we did not properly consider all information when performing the equipment leaks technology review. One of the supporting memorandum for our equipment leaks technology review in the docket at Docket ID No. EPA-HQ-OAR-2017-0357-0014, *Analysis of Emissions Reduction Techniques for Equipment Leaks*, mentions most of the developments identified by the commenter, such as sealless pumps and "low leak" packings for valves. The memorandum does not address an evaluation of the cost and emission reduction impacts of these developments, as the necessary data were not available. For the analysis of controlling equipment leak emissions from processes containing EtO, we gathered limited information on the cost of leakless equipment and assumed 100 percent of the process fluid would be HAP, *i.e.*, EtO. The analysis showed the use of leakless equipment was not cost-effective. Transferring that cost information to all MON light liquid pumps and gas and light liquid valves would yield even higher cost-effectiveness results as an average HAP content of 10 percent was used in the MON equipment leaks analysis. Also, comments that the EPA received that would allow the refinement of the analysis all indicated significantly higher costs for leakless equipment. We also note that these requirements, such as sealless pumps and "low leak" packings for valves, are more stringent and more labor and equipment intensive than other approaches and thus almost certainly more costly. In fact, some consent decrees that require use of "low leak" equipment still require leak detection at the leak definitions we evaluated in our technology review. Since we rejected those approaches as not cost effective, we also would have rejected other more costly approaches as well and concluded they were not necessary under CAA section 112(d)(6).

In addition, we note that the requirements in consent decrees are negotiated settlements and are not based on an analysis of the nationwide impacts, including costs, conducted as part of a technology review. The analyses conducted for this final rule package supports the requirements in this national rulemaking and are based on the nationwide costs and emissions reductions achieved.

We also disagree with the commenter's claim that the types of equipment leaks addressed in the MON standards are "malfunctions." Equipment leaks typically occur from equipment such as pumps, compressors, agitators, sampling collection systems, open-ended valves or lines, valves, and connectors. At the time we developed the MACT standards for this source category, we recognized that these emission points even at the best performing facilities regularly emit small quantities of HAP, and we promulgated work practice standards regulating equipment leaks from these components based on what the performance of the best performing sources were and we are not re-opening the MACT standards for equipment leaks in this action. These provisions require MON facilities to monitor for leaks and to repair any detected leaks. While any specific equipment leak is not predictable, the types of equipment leaks addressed by the regulations are fairly routine emissions from sources and they are not the type of unpredictable or infrequent event for which we cannot anticipate when, where or how they may occur, and that we generally consider to be malfunctions.

The delay-of-repair provisions were included in the original MACT standard to prevent the undesirable impact of creating more emissions from shutting down and evacuating major process equipment than are emitted from the leaking equipment component. In such cases, the environment may be better served by allowing a small leak to persist until the next scheduled shutdown than to shut the unit down to replace the leaking component, and the owner or operator must make this demonstration to avail themselves of these provisions. Contrary to the suggestion of the commenter, the delay of repair requirements do establish firm timelines by which a leak must be repaired. Further, difficult to monitor equipment are still subject to audible, olfactory and visible emissions inspections (although from a distance), so these equipment components are not exempt from the LDAR provisions.

Comment 60: Commenters requested the EPA include optical gas imaging (OGI) in the equipment leak standards as an alternative monitoring option for detecting leaks. A commenter stated that the EPA fails to explain why it did not identify OGI provisions as an alternative monitoring option, as it did in the refineries rule. The commenter urged that the EPA should immediately develop protocols, noting that these devices can provide an extremely low cost means of filling LDAR program gaps. The commenter noted that even well-designed LDAR programs do not require monitoring of all devices at a facility (*e.g.,* leakless valves), and that remote scanning devices can serve to identify problem areas that may require more frequent monitoring. The commenter stated that when OGI is used, the EPA should require reporting of results of such scans, to ensure that there is oversight.

Response: MON facilities currently have an option to use OGI through an alternative work practice to detect leaks from equipment at 40 CFR 63.11(c), (d), and (e). This alternative work practice includes provisions for using OGI in combination with annual monitoring using Method 21 (and not as an alternative). Additionally, the EPA considered OGI as a monitoring option for the equipment leaks technology review (see the memorandum, *Clean Air Act Section 112(d)(6) Technology Review for Equipment Leaks Located in the Miscellaneous Organic Chemical Manufacturing Source Category,* EPA Docket ID EPA-HQ-OAR-2018-0746-0003). As noted in the memorandum, since there is not a standardized method for monitoring with OGI, it was not further evaluated. A standardized method is critical to ensuring that the same (or better) emissions reductions are achieved with OGI that are currently achieved with Method 21 of Appendix A-7 to 40 CFR part 60 ("Method 21"). This is particularly important for a source category like MON, where there could be a broad range of compounds contained in the fugitive emissions, some of which cannot be seen with current OGI technology. A standardized method would ensure equivalent emissions reductions through prescribing specifications OGI instruments must meet; verification procedures for ensuring instruments meet these specifications; procedures for proper instrument use and operator practices during field surveys; necessary operator training; and appropriate QA/QC procedures. The EPA believes that these issues are of paramount importance to resolve before OGI could be used as the sole leak detection technology at MON facilities, without the annual Method 21 survey required by the alternative work practice. No change is being made to the final rule as a result of this comment.

Comment 61: One commenter agreed with the EPA's conclusion that inclusion of instrument monitoring of connectors in a MON LDAR program is not cost-effective, but requested the EPA revise its cost analyses in the rulemaking record to accurately reflect the true cost of connector monitoring. The commenter pointed out five deficiencies in the EPA cost analysis that, if corrected, would result in the overall cost-effectiveness of connector monitoring to be in excess of $43,751 per ton of HAP reduced and not 17,390 per ton (with credits), which the EPA proposed. The commenter explained the five EPA cost estimate deficiencies are: applying a leak frequency not associated with the skip monitoring provisions of the rule, using too low an assumption for the cost of subsequent monitoring, not properly including annual administrative costs because the EPA only included these costs for MON facilities that are not co-located with other facilities that currently have LDAR regulatory requirements, not including management of change in its cost analysis, and using an inflated uncontrolled leak frequency taken from a 2011 memorandum related to development of the Uniform Standards rule.

Response: In the final rule, as at proposal, we are not requiring control of connectors. As such, no further analyses were conducted.

6.3 Process Vents

Comment 62: A commenter said exempting Group 2 process vents from the control requirements in the MON is unlawful, citing *Nat'l Lime Ass'n v. EPA*, 233 F.3d at 641-42, because the rule does not contain any HAP pollutant limitations to prevent unacceptable health risks from these sources.

Response: We disagree with the commenter's assertions. In the original 2003 MON rulemaking, the EPA finalized MACT standards for process vents and more stringent control requirements apply to certain process vents meeting certain criteria (*e.g.*, Group 1 process vents) compared to those below these thresholds (*e.g.*, Group 2 process vents), which are subject to certain monitoring, recordkeeping and reporting activities. In this rulemaking, we considered the health risks and have promulgated standards to protect health with an ample margin of safety. If a Group 2 source increases emissions significantly, then it would become a Group 1 source and be subject to the technology and health-based restrictions in the MON. The commenter's suggestion that the EPA has an obligation to review prior MACT determinations and recalculate MACT floors as part of each 112(d)(6) review has no merit. That argument has repeatedly been rejected by the courts. *See, e.g., Nat'l Ass'n of Surface Finishing v. EPA*, 795 F.3d 1 (D.C. Cir. 2015); *Association of Battery Recyclers v. EPA*, 716 F.3d 667, 673 (D.C. Cir. 2013), *NRDC v. EPA*, 529 F.3d 1077(D.C. Cir. 2008).

6.4 Storage Tanks

Comment 63: A commenter said exempting Group 2 storage tanks from the control requirements in the MON is unlawful, citing *Nat'l Lime Ass'n v. EPA*, 233 F.3d at 641-42, because the rule does not contain any HAP pollutant limitations to prevent unacceptable health risks from these emission sources.

Response: We disagree with the commenter's assertions. In the original 2003 MON rulemaking, the EPA finalized MACT standards for storage tanks, and more stringent control requirements apply to certain storage tanks meeting certain criteria (*e.g.*, Group 1 storage tanks) compared to those below these thresholds (*e.g.*, Group 2 storage tanks), which are subject to certain monitoring, recordkeeping and reporting activities. In this rulemaking, we considered the health risks and have promulgated standards to protect health with an ample margin of safety. If a Group 2 source increases emissions significantly, then it would become a Group 1 source and be subject to the technology and health-based restrictions in the MON. The commenter's suggestion that the EPA has an obligation to review prior MACT determinations and recalculate MACT floors as part of each 112(d)(6) review has no merit. That argument has repeatedly been rejected by the courts. *See, e.g., Nat'l Ass'n of Surface Finishing v. EPA*, 795 F.3d 1 (D.C. Cir. 2015); *Association of Battery Recyclers v. EPA*, 716 F.3d 667, 673 (D.C. Cir. 2013), *NRDC v. EPA*, 529 F.3d 1077(D.C. Cir. 2008).

6.5 Heat Exchange Systems

Comment 64: One commenter argued that requiring the Modified El Paso method is not cost-effective in all cases. The commenter argued that in certain cases, the current leak detection method (*i.e.*, cooling water sampling to detect leaks) is "adequate," and therefore, the costs to change to using the El Paso method are "not justified." The commenter contended that the Modified El Paso method should not be mandated for cases where soluble type HAP or VOCs are the dominant organic species on the process side of the heat exchanger. The commenter stated that they do not disagree that the Modified El Paso Method would be superior to direct water analysis if the cooling water contains <u>only</u> those type compounds likely to air strip; however, the commenter argued the current method [use of total organic compounds (TOC)] is "entirely adequate" to detect leaks in heat exchange systems that include high boiling point compounds (over 140 degrees F) that are miscible in water. The commenter referenced Appendix P of the Modified El Paso Method, citing: "<u>*While direct water analysis has been shown to be effective for cooling tower measurements of heavier molecular weight organic*</u>

compounds with relatively high boiling points,Texas Commission on Environmental Quality (TCEQ) has determined that this approach may be ineffective for capture and measurement of volatile organic compounds with lower boiling points, such as ethylene, propylene, 1,3-butadiene, and butenes." The commenter provided a detailed description of the adequacy of their "Sensitivity of Direct Water Analysis Method", noting that by nature of the heat exchanger design, the ratio of water flow to organic vapor flow is such that very small amounts of organics would be detected by a 1 ppm difference in the water entering and exiting the heat exchange system. The commenter insisted that if the leaking heat exchange system is combined with several heat exchangers in parallel before the exit sample point, a 1 ppm leak definition would still be a very small leak. The commenter described the costs associated with changing from the current method to the Modified El Paso Method for their 56 heat exchange systems subject to MON. The commenter explained that mandated conversion of these 56 systems to the Modified El Paso method would require installation of tubing and taps to set up sampling stations for the El Paso apparatus, or, where there is not room or access close by the HES, remote stations would have to be established. In order to take the measurements, the commenter stated that an LDAR Method 21 technician must accompany operators to the sampling locations and move the El Paso apparatus from location to location; otherwise, multiple El Paso sampling devices would have to be installed. The commenter insisted that the costs associated with the proposed change are not justified when the current method is adequate to detect leaks. The commenter noted that 35 of their HESs include methanol, a soluble HAP with a boiling point of 147 deg F, and many of the others do contain partially soluble HAPs such as xylene and methyl isobutyl ketone, and also contain non-HAP VOCs or ethylene glycol (a "non-Table 4 organic HAP) that would show up in the TOC analysis if the exchanger were leaking.

Response: See Section IV.B.3 of the preamble to the final rule for the EPA's response to this comment.

Comment 65: Some commenters requested the EPA retain the heat exchange system monitoring exemptions provided in 40 CFR 63.104(a)(1), (2), (5), and (6) by adding them to 40 CFR 63.2490(d). A commenter said they believe that this is an inadvertent oversight as the EPA does not explain why they were removed at proposal.

Response: The commenter is correct that the monitoring exemptions from 63.104(a)(1), (2), (5), and (6) were inadvertently removed in the proposed rule. We have revised the final rule at 40 CFR 63.2490(d) to incorporate back in these exemptions. As discussed in the memorandum, *Clean Air Act Section 112(d)(6) Technology Review for Heat Exchange Systems Located in the Miscellaneous Organic Chemical Manufacturing Source Category,* which is available in the docket for this rulemaking (Docket ID EPA-HQ-OAR-2018-0746-0007), we reviewed the criteria in 40 CFR 63.104 that exempt certain heat exchange systems from the LDAR requirements in the MON to see if the exemptions were still reasonable to maintain. In addition, we also compared these exemptions to those in the Petroleum Refinery MACT rule for heat exchange systems given that this MACT standard was more recently promulgated in 2009. Based upon this review, we determined that removing the exemptions for once-through heat exchange systems meeting certain National Pollutant Discharge Elimination System permit conditions at 40 CFR 63.104(a)(3) and (4) was warranted for purposes of demonstrating continuous compliance with the underlying MACT standard.

Comment 66: A commenter requested that the EPA allow facilities to demonstrate compliance with the proposed strippable hydrocarbon concentration standard using water sampling methods instead of the Modified El Paso Method (or methods other than the Modified El Paso Method, provided the alternative method has been validated according to the protocol in Method 301 of Appendix A of 40 CFR Part 63), and speciate the total strippable hydrocarbon into HAP and non-HAP compounds. The commenter said the EPA should only require action based on the cooling water concentration of HAP listed in Table 4 to Subpart F of Part 63 for recirculating heat exchange systems and in Table 9 to Subpart G of Part 63 for once-through systems. The commenter also said that if facilities find that the HAP content of the cooling water is below an equivalent HAP leak definition, then all that should be required is a record documenting these results; and if the HAP content is above the equivalent leak definition, then facilities would continue to comply with the proposed requirements in 40 CFR 63.2490(d)(2). The commenter argued that facilities have operations subject to standards and/or permit requirements that require VOC monitoring using methods other than the Modified El Paso Method. The commenter contended that the EPA's concern regarding sensitivity is not an adequate justification for requiring facilities to monitor using the Modified El Paso Method. The commenter said that, based on a review of the method detection limits reported by ethylene production facilities using water methods (from the CAA section 114 non-confidential business information heat exchanger system sampling results), EPA Method 624 and SW-846 8260C provide average detection limits, on a total HAP basis, well below the proposed equivalent leak definition of 80 ppbw in the cooling water (acknowledging benzene is not available for SW-846 8260C, but could be analyzed using a combination of methods).

The commenter also requested the EPA consider the proposed requirements as optional for heat exchange systems for which facilities can demonstrate the potential leak would contain organic compounds with higher boiler points (over 140 degrees F) and that are miscible with water. The commenter said even though Standard Method 5310B includes an acidification and sparging step which would remove some VOC, compounds like methanol that are prevalent in the Miscellaneous Organic Chemical Manufacturing source category would not be lost; thus, the EPA should continue to allow facilities to use water methods where appropriate.

Finally, the commenter said the EPA should, at the least, allow water sampling methods instead of the Modified El Paso Method for heat exchange systems with a total cooling water flow rate of 25,000 gpm or less. The commenter contended that a 1 ppmw difference between the entrance and exit of an individual heat exchanger or a bank of heat exchangers where the cooling water flow rate is relatively low or at the cooling water supply and cooling water return of a smaller system with a cooling tower, can still yield the detection of both low and higher emission rates depending on temperature and pressure conditions.

Another commenter also requested the EPA keep an option in the final rule to continue to use water sampling methods to directly measure the concentration of the HAPs in the cooling water. The commenter stated that this option is very helpful in cases where there are a small number of HAPs in the process fluid. Additionally, this commenter said the EPA should simplify the monitoring requirements for heat exchangers where the only HAPs present in the process fluids are listed on Table 9 to 40 CFR part 63, subpart FFFF. The commenter contended that these water-soluble compounds are expected to mostly remain in the cooling water and not be stripped out in the El Paso Stripper device and, and these compounds are not readily emitted to the atmosphere in significant quantities should a leak into the cooling water system occur.

A commenter said that the proposed requirements impose a significant additional burden that the EPA has not accounted for in their review. The commenter pointed out that many MON facilities monitor for leaks at a point where discharges from multiple heat exchange systems are combined, including systems not subject to the MON standards. The commenter contended that in such cases, under the proposed rule, a leak greater than 6.2 ppmv of non-HAP VOC in the stripping gas from an exempt heat exchange system included in the collection of systems covered by the sampling location would require repair, recordkeeping, and reporting even though the leaking process fluid contained no HAP material, which would be outside the scope or permissible regulation under section 112 since it would not control HAP. The commenter said the EPA's proposed definition of a leak on a VOC basis essentially requires facilities to sample each heat exchanger subject to Subpart FFFF individually if the facility detects a VOC leak, but does not believe the leak originates from a heat exchange system subject to the MON standards.

Response: We disagree with commenters that we should allow alternative leak detection monitoring techniques instead of the Modified El Paso Method and that leaks should not be based on total strippable hydrocarbons through use of a gas detector measurement. As discussed in our technology review memorandum, *Clean Air Act Section 112(d)(6) Technology Review for Heat Exchange Systems Located in the Miscellaneous Organic Chemical Manufacturing Source Category*, which is available in the docket for this rulemaking (Docket ID EPA-HQ-OAR-2018-0746-0007), use of the Modified El Paso method is much more sensitive in terms of being able to identify leaks of organic HAP compared to water sampling methods and monitoring for a single surrogate parameter of organic HAP such as total strippable hydrocarbon can be easily accomplished with a single measurement using a common FID. In addition, we also disagree with commenters that we should only require facilities fix leaks from heat exchange systems where they can prove that the leak does not contain HAP. Specifically, requirements at 40 CFR 63.104(a)(5) and (6) already exempt heat exchange systems that contain less than 5 percent by weight of total HAP listed in Table 4 and Table 9 to subpart F, so the likelihood of having a leak with no HAP is extremely minimal. As discussed in another comment, these exemptions were inadvertently removed in the proposed MON rule and we are adding it back into the final MON rule. In addition, repairing a leak identified from a simple flame ionization detector measurement based off a total strippable hydrocarbon leak action level will likely also result in some product being recovered and some cost savings to the facility. Thus, requiring use of a single leak detection method with a single leak action level reduces confusion, allows for more streamlined implementation and enforcement, and ensures all facilities are on an equal playing field when it comes to identifying and fixing leaks from heat exchange systems for organic HAP. We also disagree with one commenter's assertion that the Modified El Paso Method would impose a significant burden on facilities with combined streams from MON and non-MON sources. The definition of heat exchange system in the rule allows MON facilities to identify a heat exchange system as each separate heat exchanger or a collection of heat exchange systems. Additionally, several monitoring location options are provided in 63.2490(d)(1)(i) for closed-loop recirculation systems and 63.2490(d)(1)(ii) for once-through systems. These monitoring location options are essentially the same options that were afforded to owners and operators prior to this rulemaking. Therefore, we maintain that the flexibility afforded by the combination of the heat exchange system definition and the monitoring location options allows each facility to tailor the requirements specific to their needs. No changes are being made to the heat exchange system requirements as a result of these comments.

Comment 67: Some commenters said the requirement in 40 CFR 63.2490(d)(1)(iii) to use a flame ionization detector and perform on-site determinations represents a duplicative and unnecessary burden for facilities; and requested that the EPA allow facilities to use sample canisters and a gas chromatograph for off-site determination of speciated VOCs as described in sections 3.5, 4.2, 5.2, and 6.2 of the Modified El Paso Method. A commenter requested that if a facility performs a speciated analysis and finds that the leaking material is not HAP, then the facility should not be required to repair the leak and should only be required to keep a record of the analysis demonstrating the material is not HAP. The commenter said that the use of a speciated profile allows plant personnel to refine the list of potential leaking equipment based on process knowledge of the chemical compounds present in each piece of equipment. The commenter argued that finalizing the requirement at 40 CFR 63.2490(d)(1)(iii) to use a flame ionization detector and perform on-site determinations will require facilities that use sample canisters and off-site determination to develop new standard operating procedures, re-train operations personnel, and potentially procure new equipment and/or contract services while doing nothing to increase the effectiveness of the regulation or reduce HAP emissions.

Response: As described elsewhere in this document, we disagree with commenters that leaks from heat exchange systems should not be fixed where facilities can prove that the leak does not contain HAP. We also disagree with commenters that we should allow facilities to use sample canisters and a gas chromatograph for off-site determination of speciated HAP compounds. Allowing for this additional time to perform off-site analysis would allow for additional emissions from heat exchange systems to occur if a leak were present (given the time lag to generate and review the results) and this would not be consistent with best practices given that the same requirements being finalized in this action have been implemented in practice for some time for heat exchange systems subject to the Petroleum Refinery NESHAP at 40 CFR part 63, subpart CC. We also note that several companies that own and operate petroleum refineries also own and operate (or are even collocated with) MON facilities, therefore, finalizing the requirements in 40 CFR 63.2490(d)(1)(iii) ensures consistency in the EPA's approach to minimizing emissions from heat exchange systems.

Comment 68: Some commenters said the EPA should not eliminate the delay of repair option at 40 CFR 63.104(e) that allows facilities to delay the repair if emissions from the process shutdown to repair the leak are greater than the potential emissions of delaying the repair until the next shutdown. The commenters argued that more emissions could occur than would be emitted if delay of repair is allowed. A commenter said that this option allows facilities to repair the leak with as little emissions and environmental impact as possible by requiring the facility to evaluate the emissions of a continued leak against the emissions from an entire process shutdown. The commenter said that by forcing facilities to repair leaks based on a concentration-based threshold, it is likely that facilities with a smaller recirculation rate will ultimately end up emitting greater amounts of HAP than if they were allowed to assess the overall mass emissions from the leak versus shutdown and choose the option that minimizes emissions.

The commenter said that if the EPA insists on finalizing the new delay of repair requirements, then the EPA should exclude the proposed recordkeeping and reporting requirements for estimates of emissions from leaking heat exchange systems for which facilities delay repair. The commenter stated that the EPA's proposed revisions would require emission estimates in every instance a repair was delayed, even if the delay is less than two months. The commenter contended that the EPA has failed to provide any justification for requiring these emissions estimates for every delay of repair considering these estimates are duplicative with those required under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the EPCRA, and state- level emission inventory reporting. The commenter said that the EPA has also failed to account for the additional recordkeeping and reporting burden in their supporting statement for the proposed rule.

The commenter also said that facilities should be allowed to use either speciated sampling data or process knowledge to report potential emissions listed in Table 4 to Subpart F of Part 63 or Table 9 to Subpart G of Part 63 since the MON standards regulate emissions of HAP, not VOC. The commenter argued that potential reviewers of the reported emissions data may incorrectly assume high VOC emissions are representative of high HAP emissions when the actual HAP emissions may comprise only a small fraction of the VOC emitted.

Response: Contrary to commenters assertions, we did not propose to eliminate the delay of repair provisions for heat exchange systems, but rather, proposed to strengthen these requirements as part of our technology review under CAA section 112(d)(6). In particular, MON facilities can still take of advantage of the delay of repair provisions and not fix leaking heat exchange systems if repair is not technically feasible until a shutdown of the heat exchange system and provided that the leak identified stays below a delay of repair leak threshold that is an order of magnitude larger than what actually constitutes a leak. These provisions ensure that large leaks (*i.e.*, leaks with a total strippable hydrocarbon concentration (as methane) in the stripping gas of 62 ppmv or greater) will be fixed quickly and that facilities meet their general duty to minimize emissions. Given that these leaks are over an order in magnitude larger than the leak action level, they are also significantly more cost-effective to fix (by the same order in magnitude) and we disagree with commenters that they are not cost-effective to repair. We also disagree with commenters about their comments associated with recordkeeping and reporting. MON facilities have always been required in the NESHAP to keep records about leaks and submit reports about any delay of repairs they may have taken (see 40 CFR 63.104(f)(2)). The revised recordkeeping and reporting requirements we proposed are intended to be consistent with the new leak detection methodologies and format of the leak action level and delay of repair action level we are finalizing and we note that these levels are based on total strippable hydrocarbons leaks measured as methane. With the exception of finalizing an alternative mass-based leak action level and delay of repair action level (as discussed elsewhere in this document), no other changes are being made to the proposed recordkeeping and reporting requirements and we are finalizing these requirements as proposed.

Comment 69: A commenter noted that the current rules allow sources to delay and defer leak repair indefinitely, which they stated is an unlawful malfunction exemption and must be removed from the final rule. For heat exchange systems, the commenter remarked that the EPA proposed a delay of repair action level of total strippable hydrocarbon concentration (as methane) in the stripping gas of 62 ppmv, that if exceeded during leak monitoring, would require immediate repair (*i.e.*, the leak found cannot be put on delay of repair and would be required to be repaired within 30 days of the monitoring event).

Response: We disagree with the commenter's claim that the heat exchanger leaks addressed in the MON standards are "malfunctions." We recognized that heat exchanger systems even at the best performing facilities regularly emit small quantities of HAP, and we promulgated work practice standards regulating leaks from them. These provisions require heat exchange systems at MON facilities to monitor for leaks and to repair any detected leaks. While any specific leak is not predictable, the types of leaks addressed by the regulations are fairly routine emissions from sources and they are not the type of unpredictable or infrequent event for which we cannot anticipate when, where or how they may occur, and that we generally consider to be malfunctions.

Contrary to the suggestion of the commenter, the delay of repair requirements do establish firm timelines by which a leak must be repaired. The requirements in 40 CFR 63.2490(d)(4) specify that the repair must be made at the next scheduled shutdown, or within 120 days if the repair is technically infeasible without a shutdown and the necessary equipment, parts, or personnel are not available. However, as the commenter noted, if, during subsequent monitoring, the delay of repair action level is exceeded, then you must repair the leak within 30 days of the monitoring event in which the leak was equal to or exceeded the delay of repair action level.

Comment 70: A commenter requested that the EPA clarify whether the EPA intends for facilities to repeat initial heat exchange system monitoring upon the compliance date of the final rule. The commenter contended that the preamble discussion at 84 FR 69223 is inconsistent with the proposed rule language at 40 CFR 63.2490(d)(1)(iv) because it implies facilities are required to repeat initial monitoring upon the compliance date of the final rule and yet the proposed text requires sources to initially monitor monthly for 6-months beginning upon startup.

Response: We did not intend for facilities that have already completed their more frequent initial monitoring for heat exchange systems to repeat this requirement, and commenters are correct in their assertion that our intent to not require a repeat of the initial monitoring is consistent with the regulatory text that we proposed (and are finalizing) and not the preamble rationale they cite.

Comment 71: A commenter said that the EPA must require the more stringent monitoring frequencies of the Refinery rule (monthly monitoring) and the TCEQ HRVOC rule (continuous monitoring) to further reduce the unacceptable health risks as required under CAA section 112(f)(2), and cannot consider costs.

Response: We disagree with the commenter. The risk from heat exchange system emission sources are minimal for MON and do not drive risk for the Miscellaneous Organic Chemical Manufacturing source category. Requiring more stringent monitoring frequencies would not appreciably lower that number for heat exchange systems or for the Miscellaneous Organic Chemical Manufacturing source category. Additionally, the facility with the highest risk, Lanxess, did not report using a heat exchange system. Therefore, more stringent requirements on heat exchange systems would not apply or change risks levels at the location of the MIR.

Comment 72: A commenter questioned the EPA on how to address heat exchangers that switch between chilled water and HAP fluid, such as ethylene glycol. The commenter said that in this scenario testing heat exchangers for hydrocarbon may produce a false positive when ethylene glycol is present in the background.

Response: Heat exchange systems regulated by the MON are water-cooled heat exchange systems. It seems unlikely that such a system that switches between chilled water and HAP fluid, as suggested by the commenter, would not be a closed system (or intervening cooling system that meets the requirements of §63.104(a)(2), which is not subject to the leak detection and repair requirements) given that the facility would have emissions and a continuous loss of ethylene glycol (or other HAP fluid) directly to the atmosphere. This would be inconsistent with common practices given that significant money would have to spent to replace lost ethylene glycol (or HAP refrigerant fluid) and the general duty to minimize emissions, and the commenter did not provide additional examples or information on such systems. If the system does happen to switch to a system open to the atmosphere when chilled water is used (which seems unlikely), the owner/operator must ensure that all ethylene glycol (or HAP fluid) is removed before beginning operation of a system open to the atmosphere to ensure their test results don't show a false positive "leak." Further, ethylene glycol will generally stay in water and is not readily stripped via the Modified El Paso Method, so we consider the likelihood of a false positive leak for such a system to be small.

Comment 73: A commenter requested that the EPA revise 40 CFR 63.2490(d)(2) through (d)(4) to clarify that a repair and the need for a delay of repair is only required if the leaking heat exchanger is in organic HAP service.

Response: No change is being made to the final rule as a result of this comment. The final rule at 40 CFR 62.2490(d), as was proposed, already indicates that paragraphs (d)(2) through (4) only apply if paragraph (d)(1) applies; and paragraph (d)(1) only applies to "…each heat exchange system subject to the requirements of this subpart…". Therefore, no further action is necessary.

Comment 74: A commenter requested that the EPA revise the periodic reporting requirements in proposed 40 CFR 63.2520(e)(16) to clarify that the number of heat exchange systems and number of leaking heat exchange systems is for the time period covered by the periodic report, since these values can change from one reporting period to the next. The commenter also requested that the EPA revise the rule text to clarify that only leaks from heat exchange systems subject to 40 CFR 63.2490(d) are to be reported, as well as suggested other edits to 63.2520(e)(16)(i) through (v). The commenter also recommended the compliance report include an option to indicate that a leak [as reported under proposed 40 CFR 63.2520(e)(16)(iii)] is not from a heat exchange system subject to the MON standards. The commenter argued that many MON facilities monitor for leaks at a point where discharges from multiple heat exchange systems are combined, including systems not subject to the MON standards.

Response: We agree with the commenters suggested revisions to the periodic reporting requirements in proposed 40 CFR 63.2520(e)(16), and we are incorporating the revisions into the final rule except for their suggestions at 40 CFR 63.2520(e)(16)(v), because delay of repair could span over multiple reporting periods.

7.0 MACT CAA Section 112(d)(2)/(d)(3)

7.1 General

Comment 75: A commenter stated that, at a minimum, the EPA must codify the protections required for both workers and fenceline communities under the EPA's Chemical Disaster Rule amendments.[122] Additionally, the commenter requested that the EPA consider recommendations from former President Obama's "Executive Order Recognizing that Additional Measures Should be Taken to Improve Chemical Facility Safety and Security", the U.S. Chemical Safety Board, and the California Refinery Taskforce in this rulemaking to further strengthen facility safety and prevent accidents and the resulting toxic air releases they can cause. The commenter pointed to the objective of the EO, which is charged with creating "comprehensive and integrated standard operating procedures for a unified Federal approach for identifying and responding to risks in chemical facilities", as well as a coalition of petitioner groups who have petitioned the EPA to exercise its authority under CAA section 112(r) to require the use of inherently safer technologies.[123] The commenter stated that the EPA should apply inherently safer technologies requirements in the final rule and use its CAA authority in CAA section 112(d) and (f), as well as CAA section 112(r), to fulfill these objectives.

The commenter noted that the U.S. Chemical Safety Board made a formal recommendation to the EPA to "[r]evise the Chemical Accident Prevention Provisions under 40 CFR Part 68 to require the documented use of inherently safer systems analysis and the hierarchy of controls to the greatest extent feasible when facilities are establishing safeguards for identified process hazards."[124] The commenter requested that, at a minimum, the EPA must require under its CAA section 112(d) and (f) authorities safety precautions established in the Chemical Disaster Rule, which the agency recognizes as developments. The commenter pointed out that the Chemical Disaster Rule amended the EPA's regulations under CAA section 112(r) for the prevention of accidental releases at facilities that use or store certain extremely dangerous chemical substances (the "Risk Management Program" or "RMP"), and was the first major update to the prevention requirements of the EPA's chemical RMP in over 20 years, adding significant protections for vulnerable communities. The commenter stated that although the EPA is now taking action to roll back the Chemical Disaster Rule regulations, the EPA has expressly recognized these requirements as technological developments in the proposed rule relevant to CAA section 112(d)(6) and must therefore require them in the final rule under its CAA section 112(d) authority. In addition, because these measures would provide additional safety from toxic pollution released by sources during these incidents, the commenter urged that the EPA must evaluate these measures and require them to provide the requisite "ample margin of safety" under CAA section 112(f)(2). The commenter stated that refusing to do so would be both unlawful and arbitrary when evidence shows these would reduce both toxic releases and resulting injuries.

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[122] Commenter provided the following reference: 82 Fed. Reg. 4594 (Jan. 13, 2017), https://www.govinfo.gov/content/pkg/FR-2017-01-13/pdf/2016-31426.pdf.

[123] Commenter provided the following reference: See Petition of United Steelworkers et al. to EPA to Exercise Its Authority (July 25, 2012).

[124] Commenter provided the following reference: CSB, Tesoro Refinery Investigation Report (May 2014), available at https://www.csb.gov/tesororefinery-fatal- explosion-and-fire/.

The commenter stated that the EPA must require a system for back-up power, to prevent high emissions that can occur as a result of a power failure. The commenter asserted such systems represent a "development" within the meaning of CAA section 112(d)(6) and would assure an "ample margin of safety to protect public health" from all of the toxic air emissions likely to occur when power fails, as required by CAA section 112(f)(2). The commenter stated these would also assist in assuring compliance, by reducing the likelihood that violations or exceedances of the emission standards would occur as a result of a preventable power failure, such as through unnecessary flaring, releases from PRDs, and other upsets that cause emission spikes.

The commenter stated that the EPA should also investigate whether there are other similar safety techniques available; the commenter recommended that the EPA must ensure leaks are detected and repaired promptly, and the use of the best available fenceline monitoring techniques. The commenter urged that the EPA must assess and require all of these as "developments" under CAA section 112(d)(6) and to assure an "ample margin of safety to protect public health" under CAA section 112(f)(2).

Response: CAA section 112(r) was added in 1990 to address catastrophic releases, and the EPA's regulations on catastrophic releases appear in 40 CFR part 68. As described in more detail in the proposed rule (84 FR 69207, December 17, 2019), MON facilities are already subject to the EPA's Chemical Accident Prevention Provisions in 40 CFR part 68. In light of this, and in light of the statutory structure of CAA section 112, we view the request to enact chemical accident prevention provisions in this rule to be outside the scope of this current rulemaking effort, which is focused on conducting an RTR for the source category under CAA sections 112(d)(6) and (f)(2). We also disagree with commenters that requiring use of back-up power systems is a "development" under CAA section 112(d)(6) or that it should be required under CAA section 112(f)(2) to ensure that the standards provide an ample margin of safety. Requiring use of a back-up power system such a cogeneration power plant would have no impact on emissions from typical day to day operations at a MON facility and would not reduce emissions from the previously promulgated MACT emission standards for storage tanks, process vents, transfer racks, equipment leaks, wastewater, and heat exchange systems. Moreover, in our work practices for emergency flaring and PRDs, we require implementation of preventative measures to reduce the occurrence of emergency flaring and PRD release events; and we acknowledge that back-up power is a preventative measure option that could prevent some of these releases. However, use of a back-up power system is a decision that must be made on a case-by-case basis considering the energy needs of the facility as well as the demand and supply need for power. Additionally, we note that facilities would have to invest significant capital to build a back-up cogeneration power plant, and combined with these costs to construct and operate such a facility, significant additional emissions would also be generated from a cogeneration power plant to handle infrequent events and lead to a net environmental disbenefit given that the vast majority of time this facility would be operating in a stand-by mode and producing power that would go unused by MON facilities. Commenters also failed to provide any information for us to evaluate cost and emission reduction impacts for requiring use of back-up power. Lastly, we note that comments about equipment leaks and fugitive emissions management techniques such as fenceline monitoring for purposes of this RTR are discussed elsewhere in this document (see sections 6.1 and 6.2 of this document).

7.2 Flares

7.2.1 Flares – General

Comment 76: A commenter requested that the EPA remove the references to 40 CFR 63.10(b)(2)(vi) and 40 CFR 63.10(b)(2)(xi) in 40 CFR 63.2525(m)(15) because the provisions only apply to CEMS, which are not applicable to flares.

The commenter also pointed out that 40 CFR 63.10(b)(2)(xi) is duplicative with 40 CFR 63.2450(e)(5) which requires compliance with Table 13 to 40 CFR part 63, subpart CC. The commenter pointed out that Table 13 already contains recordkeeping requirements for adjustments and maintenance performed on continuous monitoring systems (CMS). The commenter also pointed out that the EPA appears to have acknowledged that applying 40 CFR 63.10(b)(2)(xi) is duplicative with Table 13 because Table 6 to 40 CFR part 63, subpart CC that lists the General Provision Applicability to 40 CFR part 63, subpart CC includes a "No" next to the entry for 40 CFR 63.10(b)(2)(xi).

Response: We agree with the commenter that 40 CFR 63.10(b)(2)(xi) is similar to 40 CFR 63.2450(e)(5) which requires compliance with Table 13 to 40 CFR part 63, subpart CC. However, we disagree that 40 CFR 63.10(b)(2)(xi) does not apply to flares subject to 40 CFR 63.2450(e)(5); we mistakenly failed to update the applicability table at proposal but intended for this section of the General Provisions to apply, as evidenced by the text in 40 CFR 63.2525(m)(15). Nevertheless, we don't think it is necessary to specifically point to just this recordkeeping requirement of the General Provisions in 40 CFR 2525(m)(15), and therefore, in the final rule, we have removed the proposed requirement at 40 CFR 63.2525(m)(15) in its entirety. We have also revised the Table 12 entry for 40 CFR 63.10(b)(2)(vi) to apply to continuous parametric monitoring systems (CPMS) for flares subject to 40 CFR 63.2450(e)(5).

Comment 77: A commenter recommended that the EPA not finalize the proposed record keeping requirement at 40 CFR 63.2525(m)(2)(i), and instead only require the record at proposed 40 CFR 63.2525(m)(11). The commenter argued that MON facilities use flares to control emissions from multiple source categories; and because each source of regulated material from MON affected sources may not be equipped with dedicated flow meters, it is impossible to identify all periods when regulated MON material is vented to the flare. The commenter said that without flow meters on every individual source, it is only possible to identify when waste gas is routed to the flare: therefore, the record requirement should presume regulated material is present when there is waste gas flow present.

Response: We agree with the commenter that in some instances where flares are used to control combined emissions from MON affected sources and non-MON affected sources, it may not be possible to identify all periods when material regulated by the MON is vented to the flare, particularly when dedicated flow meters are not installed on every individual MON affected source that is routed into the flare header. However, we disagree with the commenter's request to not finalize 40 CFR 63.2525(m)(2)(i). The commenter fails to explain why the knowledge needed to complete the record requirement proposed at 40 CFR 63.2525(m)(11) (periods of flaring unregulated material) is any different than the knowledge needed to complete the record requirement proposed at 40 CFR 63.2525(m)(2)(i) (periods of flaring regulated materials). Knowledge of when regulated material is vented to the flare is required to complete both these recordkeeping requirements, as one could not know that only unregulated material is flared without knowing whether or not regulated material is flared. Additionally, all of the flare operating limits in 40 CFR 63.670 apply when regulated material is routed to the flare, and as such, owners/operators must either know when regulated material is flared or can assume the flare is always receiving regulated material if insufficient monitoring and/or information is unavailable to make this determination. Therefore, we do not agree that the record in 40 CFR 63.2525(m)(2)(i) is unnecessary.

Comment 78: One commenter stated while the EPA mentions the potential excess emissions reductions from flaring at 84 FR 69230-69232, December 17, 2019, it does not rely on these reductions in its evaluation.

Response: In the preamble passage cited by the commenter, we presented the emissions impacts both with and without the proposed flare requirements to give a more complete context of all HAP and VOC emission reductions that would likely result from this RTR. We note that the flare impacts are “off the books” impacts and should already have been realized by compliance with the underlying MACT standards, and the new flare requirements we are finalizing in this RTR will provide additional compliance assurance in ensuring the MACT standards are met at all times when flares are used as air pollution control devices (APCDs).

Comment 79: A commenter opposed using flare systems for routine problems in a plant because they are not good control technologies. The commenter contended that facilities could use a flare gas recovery system, even during storms and hurricanes, and a flare gas recovery system would be a much more efficient way of handling some of these chemicals and would not be as affected by wind as flares. The commenter added that routine maintenance and repair is not done on flares that are elevated, 300-400 feet in the air. The commenter added that if a flare is knocked out due to wind and EtO is being sent to the flare, then the flare will emit the EtO. The commenter noted that flares may be knocked out temporarily before they are reignited.

Response: Owners or operators of MCPUs can chose from a variety of APCDs to demonstrate compliance with the underlying MACT standards. Notably the commenter does not recommend similar actions to minimize or eliminate the use of scrubbers, thermal oxidizers, carbon absorbers, or other control devices that may be employed to control HAP emissions from the affected emission sources at an MCPU. Eliminating the routine use of flares as an acceptable APCD would only increase the use of these other types of APCD (at potentially significant cost) without any net emissions reductions from the MCPU (provided that the flare is meeting the required control efficiency). Finally, as discussed elsewhere in this document, we are clarifying in the final rule regulatory text that a flare (excluding pressure-assisted multi-point flares that cross-light) must have a continuous lit pilot flame or flare flame at all times when controlling regulated material to be consistent with the requirements of 40 CFR part 63, subpart SS that have always applied to flares used as APCDs in the Miscellaneous Organic Chemical Manufacturing source category. This requirement will ensure that an ignition source is always present to ignite and adequately combust the flare vent gases discharged to the flare and that the flare has flame present at all times. We also note that routine maintenance activities are done on flare systems, and that miscellaneous organic chemical manufacturing facilities do replace flare tips (including on elevated flares) at the end of their useful life.

7.2.2 Flares – Portable or Temporary Flares

Comment 80: Commenters requested the EPA allow the use of a temporary or portable flare for a short period (*e.g.,* during planned and unplanned outages) without requiring compliance with all the flare requirements that are required in 40 CFR 63.2450(e)(5). Some of the commenters recommended that portable flares that are used for less than 504 hours out of a 1,095-day rolling sum period (*i.e.,* 3 weeks in 3 years) should not be required to comply with all the detailed requirements in the regulation; and instead, owners and operators should just be required to make a good faith effort to comply with the requirements using engineering calculations and process knowledge. The commenters contended that this type of approach is consistent with some of the text that is contained in flare enforcement consent decrees. The commenter also provided an alternative approach and said that the EPA could adopt or include provisions like the Texas 30 TAC 115, Subchapter H, Division 1: HRVOC Vent Gas Control rule under 40 CFR 115.725(h) for flares other than emergency flares that temporarily receive HRVOC emissions during any operation that is not a scheduled or unscheduled maintenance, startup, or shutdown activity. The commenter said that these types of flares are limited to 336 hours for a single flare at the plant site in any 12 consecutive months and 672 hours in 12 consecutive months for the total number of hours for which a site may send HRVOCs temporarily to multiple flares.

Response: We disagree with the commenters. Consistent with *Sierra Club v. EPA*, 551 F.3d 1019, 1028 (D.C. Cir. 2008) ("Congress has required that there must be continuous section 112-compliant standards."), the MON MACT standards apply at times to the identified emission sources located at MCPUs and compliance with the work practice standards for flares (or other continuous parameters that must be maintained for other APCDs that may be used) must be met at all times. In other words, if a gas stream containing HAP is required to be controlled under the MON MACT standards, then the APCD used to meet the underlying MACT standards must be operated such that it meets the applicable control efficiency requirements at all times.

Comment 81: One commenter requested the EPA allow the owner/operator of a flare that is operated less than 720 hours on a rolling 8,760 hour basis as a back-up emission control device for another non-flare emission control device, to only meet 40 CFR 63.11(b) in lieu of the proposed requirements at 40 CFR 63.2450(e)(5). The commenter argued that it is too costly and complex to require back-up flares to fully instrument and operate in accordance with the EPA's Refinery MACT rule 40 CFR 63.670 and 40 CFR 63.671.

Response: We disagree with the commenter that we should provide such an allowance. While we agree that having back-up APCDs such as a flare is a good practice to implement in the event of a malfunction of a primary non-flare APCD, the new flare requirements being finalized in this action only apply to a subset of facilities in the Miscellaneous Organic Chemical Manufacturing source category that have the largest flare systems in the source category and that would primarily use flares as APCDs (*i.e.,* facilities that produce olefins and/or polyolefins) as well as MCPUs that are using EtO (*i.e.,* the cancer risk driving HAP for the Miscellaneous Organic Chemical Manufacturing source category). While flares used at other MCPUs may opt in to these new flare requirements, they still have the option to comply with the General Provisions requirements at 40 CFR 63.11, and we believe, that based on the commenter's control scheme of use of a thermal oxidizer as their primary APCD and flare as a back-up APCD, that their MCPU would fall into this bin (we note that the commenter failed to provide such information). In addition, thermal oxidizers typically are used to control vent gases with fairly consistent flow and composition, and allowances for performing grab sampling in lieu of fully instrumenting the flare are allowed at 40 CFR 63.670(j)(6). Further, the primary use of back-up flare systems should only occur during emergency release events, and if emergency events are minimized and short in duration, [*i.e.*, flaring events that last less than 15-minutes are exempt from needing to demonstrate compliance with the new net heating value in the combustion zone gas (NHVcz) requirements], no new instrumentation is required for these back-up flares. In other words, the owner or operator is not required to demonstrate compliance with the velocity and NHVcz requirements until the fifteenth minute of a flaring event (see section 7.2.6 of this document for further details). Given all of this information, no change is being made to the rule as a result of this comment.

7.2.3 Flares – Fuel Gas

Comment 82: We received comments against the proposed provision subjecting a flare to 40 CFR 63.2450(e)(5) only where 50% or more of the fuel gas in the fuel gas system is derived from an MCPU that has processes and/or equipment in EtO service, or produces olefins or polyolefins.

Some commenters suggested flares not be subject to the requirements in 40 CFR 63.670 and 63.671 of subpart CC if they use fuel gas only for flare supplemental gas, flare sweep gas, flare purge gas, or pilot gas. The commenters argued that the MON standards should encourage the use of fuel gas and energy integration throughout the site instead of creating regulatory uncertainty and encouraging flares in other source categories to refrain from using readily available fuel gas. The commenters contended that the proposed approach is not energy efficient and could result in flaring any excess fuel gas in the MON facility, and then flaring natural gas for the purpose supplemental fuel, or for sweep gas, purge gas, or pilot gas in flares outside of the source category.

A commenter also requested that the EPA clarify that the 50 percent criteria is based on multiple MCPUs. The commenter said the EPA's use of the phrase "an MCPU" implies that 50% of the fuel gas must originate from a single MCPU, which is not the apparent intent of the proposed standards.

Another commenter stated that some of their larger integrated production sites also use fuel gas (that could contain lesser amounts of gas originally generated from MON plants) in flares that are associated with other processes or areas; the fuel gas used in these other flares is used as supplemental fuel to meet flare regulatory requirements and/or for sweep or purge gas for the piping associated with the flare system. The commenter also said that the fuel gas is used instead of purchasing additional natural gas for these purposes, which also makes the best use of existing energy. The commenter stated that their flares that are associated with other processes or areas are subject to other regulatory requirements; and suggested that should the EPA determine that flares in other source categories need to meet the additional flare requirements for flares in the Refinery MACT rule (40 CFR part 63, subpart CC), those requirements should be proposed in separate rules.

The commenter said that if the EPA does not exempt flares that use fuel gas only for flare supplemental gas, flare sweep gas, flare purge gas, or pilot gas not be subject to the requirements in 40 CFR 63.670 and 63.671 of subpart CC, then: (1) the EPA should clarify that fuel gas or off-gas that is further processed to remove hydrogen from the stream and then returned to the plant fuel system (as primarily methane) is no longer considered to be a fuel gas stream; (2) the owner or operator should be able to use either a mass or a volumetric basis when evaluating against the 50 percent criteria, and the gas should include any additional streams added to the fuel gas system such as pipeline natural gas; (3) the 50 percent criteria should be determined on an annual average basis; (4) there should be a HAP concentration in the fuel gas, below which such requirements do not apply; and (5) there should be provisions in the rule for future changes that allow for a 3-year period to implement any new instrumentation projects for flares after a change is made and once the threshold increases over 50 percent. Other commenters requested the EPA clarify how the 50% criterion is determined and recommends that facilities calculate the percentage of fuel gas as an annual average on a volumetric basis at standard conditions. One commenter argued that there is strong precedent for determining applicability on an annual basis since several NESHAP and NSPS allow/require facilities to make applicability determinations annually.

Finally, one commenter requested that the EPA clarify in the final rule language that a source is considered in compliance with the MON standards if it routes fuel gas for which 50% of the fuel gas system volume is derived from MON processes in the identified subset to a flare meeting the requirements of 40 CFR 63.670. The commenter stated that this clarification is critical as the EPA proposes and promulgates similar standards for flares subject to ethylene production MACT standards and the OLD NESHAP.

Response: Our intention for the requirement (subjecting a flare to 40 CFR 63.2450(e)(5) only where 50% or more of the fuel gas in the fuel gas system is derived from an MCPU that has processes and/or equipment in EtO service, or produces olefins or polyolefins) is to ensure that a vent stream that would otherwise be required to be controlled under the MON is not allowed to be sent to fuel gas system and then to a flare such that the vent stream can effectively bypass the new flare requirements being finalized in this action. We provided this 50% criterion to relieve owners and operators of the MON flare compliance requirements to account for situations where MON sources were not the predominant source of flare gas. Therefore, we disagree with some commenters' request to exempt flares that use fuel gas only for flare supplemental gas, flare sweep gas, flare purge gas, or pilot gas. We also disagree with several of the commenter's suggestions to further clarify the 50 percent criteria. However, we do agree with commenters that the owner or operator should be able to use either a mass or a volumetric basis when evaluating against the 50 percent criteria; thus, we purposely do not make this distinction in the final rule. Finally, as requested by some commenters, we are clarifying in the final rule that the 50 percent criteria should be determined on an annual average basis.

7.2.4 Flares – Visible Emissions and Flare Tip Velocity Work Practice

Comment 83: A commenter requested that the EPA clarify in the preamble to the final rule amendments, or in the rule language at 40 CFR 63.2450(e)(5), that an initial demonstration for visible emissions at 40 CFR 63.670(h) is required during the first time regulated materials from an affected source in the Miscellaneous Organic Chemical Manufacturing source category are routed to a flare that has not received regulated materials from a MON affected source prior to the compliance date in 40 CFR 63.2445(g). The commenter said that as written, the requirement at 40 CFR 63.670(h) to conduct an "initial visible emissions demonstration…the first time regulated materials are routed to the flare," is ambiguous and could be interpreted to apply to flares currently in operation, for which facilities have already completed initial compliance demonstrations with the visible emissions requirements in 40 CFR 63.11.

Response: We agree with the commenter that an initial demonstration for visible emissions at 40 CFR 63.670(h) is only required the first time regulated materials from an affected source in the Miscellaneous Organic Chemical Manufacturing source category are routed to a flare. We confirm that the "initial visible emissions demonstration" is only for flares that have not completed this demonstration and that the "subsequent visible emissions observations" pertains to all subsequent daily evaluations. No change is being made to the final rule as a result of this comment.

Comment 84: Some commenters supported the proposal to limit the visible emission standard to periods below the smokeless capacity of the flare. However, a commenter said that the EPA should not set the allowable period for visible emissions from flares at less than 5 minutes in any 2-hour period. The commenter said that decreasing the time allowed for visible emissions would conflict with every other established standard for visible emission for flares including 40 CFR 60, subpart A and 40 CFR part 63, subpart A, which multiple NSPS and NESHAP reference for flare standards. The commenter said that the EPA correctly determined that the 5-minute historical allowance is reasonable and consistent with the best-performing flares. Another commenter suggested allowing 10 minutes of visible emissions in any 2-hour period as this would still prevent excessive fine particulate matter emissions and would limit any visibility impacts to very short periods.

Another commenter requested that the EPA consider excluding any periods of smoke emissions that occur for less than 30 seconds from the overall determination of whether a flare had smoke emissions for greater than 5 minutes in any 2-hour period. The commenter contended that such an exclusion would allow operating personnel to operate at the incipient smoke point (high efficiency) while having an opportunity to quickly address a small level of smoke emissions, should they occur. The commenter provided an example where a smoke emission occurring for 18 seconds, but the operator was able to eliminate it by adding more steam or air, would not be counted against the 5 minutes in a 2-hour period. The commenter recommended that this option only be allowed a maximum of 10 times per day to ensure it was not misused. The commenter said they welcomed a stakeholder process where regulated entities and other interested parties could provide input on this option.

Response: We agree with the commenters that any different allowed amount of time than proposed for visible emissions would conflict with other established visible emission standards for flares in other NSPS and NESHAP. We are not changing the allowable period for visible emissions in the final rule. We also disagree with the commenter that requested that the EPA consider excluding any periods of smoke emissions that occur for less than 30 seconds from the overall determination of whether a flare had smoke emissions for greater than 5 minutes in any 2-hour period because it would defeat the purpose of the standard and would pose a significant challenge to enforce. No change is being made to the final rule as a result of this comment.

Comment 85: A commenter recommended the EPA include additional rule language at 40 CFR 63.2450(e)(5) such that if the root cause analysis indicates the visible emissions and/or velocity limit exceedances are due to emissions sources not included in the MON affected source, then the “event” is not included in the counts described in 40 CFR 63.670(o)(6) for demonstrating compliance with the MON standards, and the exceedances are only evaluated against the requirements of any applicable rules to which the root cause emissions source is subject. The commenter argued that an emergency situation resulting in visible emissions and flare tip velocity exceedances may occur when regulated material from more than one affected source are routed to a common flare since flares are often used as common control devices for multiple source categories (*e.g.*, a flare shared by a refinery, ethylene facility, and MON facility).

Response: We agree with the commenter that if the root cause analysis indicates the visible emissions exceedances are due to emissions sources not included in the MON affected source, then the “event” is not included in the counts described in 40 CFR 63.670(o)(6). However, we are not revising the final rule text as requested by the commenter. A root cause analysis is still necessary to demonstrate whether each “event” should (or should not) be included in the counts described in 40 CFR 63.670(o)(6). The owner or operator is not required to include any event for which the result of the analysis conducted per 40 CFR 63.670(o)(3) indicates the root cause of the event was from a source that is not covered by the MON affected source, as defined in 40 CFR 63.2440(b). Note, in the final rule, you must comply with the maximum flare tip velocity operating limit at all times and there is no work practice standard for when the flare vent gas flow rate exceeds the smokeless capacity of the flare and the tip velocity exceeds the maximum flare tip velocity operating limit. See section IV.C.3 of the preamble to the final rule for further details on this change.

Comment 86: A commenter supported the use of a flare management plan as a work practice standard for periods of time in which emergency events result in the exceedance of the max flare tip velocity or when the flow to the flare exceeds the smokeless capacity of the flare. The commenter requested the EPA make the emergency flaring work practice standard at 40 CFR 63.670(o) for visible emissions and flare tip velocity optional for the following types of flares: 1) those flares that control processes that do not have the potential to release a volume of vent gas above the smokeless capacity of the flare or 2) flares that have the hydraulic capacity less than or equal to the smokeless capacity. The commenter argued that the need for a work practice for these types of flares does not exist; and pointed out that the EPA acknowledged this in their proposed rule for the OLD RTR (*i.e.*, with regard to the requirements proposed for dedicated flares controlling vent streams from emissions sources such as storage vessels and transfer racks).

Similarly, a commenter requested the EPA clarify that owners and operators should not be required to complete and implement the provisions in 40 CFR 63.670(o) if there is a low probability, excluding force majeure events, that there will be a smoking flare event or an exit velocity exceedance. The commenter suggested that the owner or operator could then decide whether to comply with the provisions in 40 CFR 63.670(o) regarding flare management plans; and if the owner/operator decides not to comply with 40 CFR 63.670(o), then they would not be afforded the protections provided in 40 CFR 63.670(o)(7). The commenter said that the text in the Refinery MACT rule seems to imply that this flexibility is present, but this should be made clearer in the final Ethylene MACT rule.

Response: No change to the final rule is being made as a result of this comment. First, it is important to point out that as a result of the final rule, you must comply with the maximum flare tip velocity operating limit at all times and there is no work practice standard for when the flare vent gas flow rate exceeds the smokeless capacity of the flare and the tip velocity exceeds the maximum flare tip velocity operating limit. See section IV.C.3 of the preamble to the final rule for further details on this change.

Second, 40 CFR 63.670(o), and 40 CFR 63.2450(e)(5) as finalized, do not require owners and operators to comply with the work practice requirements for visible emissions unless the flare "has the potential to operate above its smokeless capacity under any circumstance". In other words, if the flare does not have the potential to operate above its smokeless capacity, then the flare is not subject to and cannot take advantage of the requirements in 40 CFR 63.670(o).

Third, the work practice standards at 40 CFR 63.670(o) require owners or operators to develop flare management plans to identify the flare system smokeless capacity (in addition to several other things). Notably, the submission of the flare management plan is primarily a one-time event; and if the flare does not have a release volume of vent gas above its smokeless capacity, then the owner or operator is not required to perform root cause analysis and corrective action analysis nor is the owner or operator required to implement corrective actions and comply with the specified reporting requirements. Therefore, we do not consider this requirement overly burdensome.

Finally, with regard to the comment about the EPA not proposing emergency flaring requirements for flares at OLD facilities (84 FR 56288), we note that flares used to comply with the OLD standards often control vent gas that is much less variable than the flare vent gas at miscellaneous organic chemical manufacturing facilities. Flares at OLD facilities receive only limited amounts of vent gas from storage tanks and transfer racks and the range of organic liquids being distributed through OLD emissions sources are likely known and have consistent composition and flow; whereas, this is often not the case for MON emissions sources. Moreover, as stated in the OLD proposal preamble (84 FR 56288), we did not propose the work practice standards for emergency flaring that are currently allowed at 40 CFR 63.670(o) because we do not believe emergency shutdown situations that could occur at a petroleum refinery (or a MCPU) exist for the storage and transfer racks covered by the OLD regulations.

Comment 87: Some commenters requested that the EPA revise 40 CFR 63.670(o)(1)(ii)(B) and 40 CFR 63.670(o)(1)(vi), through cross-reference in 40 CFR 63.2450(e)(5), to only require, as part of the flare minimization assessment for the flare management plan, detailed descriptions and recording of prevention measures for those PRDs from which a discharge could reasonably be expected to cause the flare to exceed the visible emissions limit in 40 CFR 63.670(c) or the flare tip velocity limit in 40 CFR 63.670(d). A commenter stated that as proposed, 40 CFR 63.670(o) requires detailed descriptions for each and every PRD that can discharge to the flare without regard to the potential impact of a release from a PRD on the overall vent stream to the flare. The commenter said that the EPA has failed to provide any justification for this extensive requirement that places additional burden on those facilities that have made capital investments to reduce emissions from those PRD discharges that are amenable to control.

Response: Because PRDs are expected to be the primary source of a release that might cause a flaring event that could exceed the smokeless capacity of the flare, we determined that the identification of the PRDs that are vented to the flare is a critical component of the flare management plan. We also recognize that consideration of prevention measures for PRDs that can discharge to a flare will help to reduce the number of flaring events that exceed the smokeless capacity of the flare. Consequently, we include consideration of prevention measures for PRDs as one of three critical items, listed in 40 CFR 63.670(o)(1)(ii)(A) through (C), that each owner or operator of a flare must consider within the flare minimization assessment requirement of the flare management plan. While submission of the flare management plan is primarily a one-time event, we expect that these prevention measures for PRDs discharged to the flare will be an active and growing list as owners and operators implement corrective actions after a release event exceeding the smokeless capacity of the flare and exceeding the visible emissions limit. Note, in the final rule, you must comply with the maximum flare tip velocity operating limit at all times and there is no work practice standard for when the flare vent gas flow rate exceeds the smokeless capacity of the flare and the tip velocity exceeds the maximum flare tip velocity operating limit. See Section IV.C.3 of the preamble to the final rule for further details on this change.

Moreover, as noted in 40 CFR 63.670(o)(2)(ii), the plan must be updated periodically to account for changes in the operation of the flare, but we do not consider new prevention measures implemented for PRDs that discharge to the flare to constitute a change in the operation of the flare. Thus, this updated listing can be in an electronic database and it is not required to be updated in the flare management plan unless the flare management plan is otherwise required to be updated or re-submitted according to the provisions in 40 CFR 63.670(o)(2)(ii). We do not consider this effort to be a significant burden beyond what is already required for hazards analysis and the commenter did not provide any data to quantify or substantiate the claims that this effort is burdensome.

We considered the suggestion to limit this requirement to PRDs with high potential release rates. However, many flares may receive discharges from dozens of PRDs across multiple process units. In an emergency event, it is possible that several of these PRDs associated with different equipment can relieve at the same time. While any one PRD may not exceed the flare’s smokeless capacity, the combination of PRD releases may. Thus, we determined that it is appropriate to require all PRDs discharged to the flare to be identified and applicable prevention measures should be evaluated regardless of the release potential of an individual PRD.

Comment 88: A commenter requested that the EPA revise 40 CFR 63.2525(m)(2) to only require facilities to retain records of video surveillance images for a period of one year, in lieu of the proposed three years. The commenter said that although the Petroleum Refinery MACT rule requires video records for three years, some recent EPA Consent Decrees only require video records for one year. The commenter argued that a one-year recordkeeping requirement along with Title V semi-annual deviation reports and annual compliance certifications should be adequate to demonstrate compliance with the visible emission requirements.

Another commenter requested that the EPA include a requirement equivalent to 40 CFR 63.670(h) directly in the final rule because the phrase "video surveillance images required in 63.670(h) of Subpart CC" in 40 CFR 63.2525(m)(2) is ambiguous. The commenter said that 40 CFR 63.2525(m)(2) is the only place in the preamble or proposed rule that mentions the requirements for such video surveillance systems.

Response: We disagree with the commenter that we should allow recordkeeping of video surveillance images for flares for one year. Currently, the MON generally requires records to be kept for a period of five years per the requirements of the General Provisions at 40 CFR 63.10(b)(1), and given file size limitations unique to the video surveillance records, the EPA already relaxed this requirement by allowing records to be kept for three years instead of the five year period that otherwise would be required in this rule. In addition, given that the Petroleum Refinery NESHAP (40 CFR part 63, subpart CC) requires that facilities maintain these records for at least three years, we do not believe this requirement to be overly burdensome nor do we believe facilities would be unable to store these records for this timeframe, thus no change is being made to this requirement.

With respect to the phrase "video surveillance images required in 63.670(h) of Subpart CC," we note that we specify at 40 CFR 63.2450(e)(5) that owners and operators must meet requirements for flares as specified in 40 CFR 63.670 and 40 CFR 63.671; therefore, we disagree with the commenter that our proposed language at 40 CFR 63.2525(m)(2) is ambiguous. Nevertheless, in the final rule we removed the phrasing at 40 CFR 63.2525(m)(2) referring to "video surveillance images required in 63.670(h) of Subpart CC" and clarified 40 CFR 63.2525(m)(2)(iii).

Comment 89: Citing the proposed preamble, a commenter requested that the EPA should clarify the meaning of "the standard" where the EPA explained: "We are also proposing that a second event within a rolling 3-year period from the same root cause on the same equipment would be considered a deviation from the standard." The commenter said it is not clear whether "the standard" refers to the visible emission limit or the beyond smokeless capacity work practice standard (flare management plan). The commenter also agreed that a second instance should constitute a deviation only if the root cause is the same and the equipment causing the event is the same within the rolling 3-year period.

Response: Regarding the sentence mentioned by the commenter in the context of the preamble to the proposed rule (84 FR 69207, December 17, 2019), we mean a "deviation from the standard" to be a deviation from the visible emissions operating limit or a deviation from the maximum flare tip velocity operating limit. Specifically, a flow "event" means when the flare vent gas flow rate exceeds the smokeless capacity of the flare and either: (1) visible emissions are present from the flare for more than 5 minutes during any 2 consecutive hours during the release event; or (2) the tip velocity exceeds the maximum flare tip velocity operating limit. Thus, in the context of the proposal preamble and proposed rule, in order to be considered a deviation from the visible emissions operating limit, the owner or operator would need to have had two events within a rolling 3-year period where the flare vent gas flow rate exceeded the smokeless capacity of the flare and visible emissions were present from the flare for more than 5 minutes during any 2 consecutive hours during the release event. Similarly, in the context of the proposal preamble and proposed rule, in order to be considered a deviation from the maximum flare tip velocity operating limit, the owner or operator must have two events within a rolling 3-year period where the flare vent gas flow rate exceeded the smokeless capacity of the flare and the tip velocity exceeded the maximum flare tip velocity operating limit. However, in the final rule, you must comply with the maximum flare tip velocity operating limit at all times and there is no work practice standard for when the flare vent gas flow rate exceeds the smokeless capacity of the flare and the tip velocity exceeds the maximum flare tip velocity operating limit. See Section IV.C.3 of the preamble to the final rule for further details on this change.

7.2.5 Flares – Monitoring and Calibration Requirements

Comment 90: A commenter requested that that the EPA clarify that facilities may use any type of measurement technique such as Fourier Transform Infrared (FTIR) spectroscopy or other compositional analysis systems for determining compositional analysis for net heating value provided it is capable of continuously measuring, calculating, and recording individual concentrations present in flare vent gas to comply with 40 CFR 63.670(j)(1). The commenter pointed out that the only systems for compositional analysis directly addressed by the MON proposal are gas chromatographic and mass spectrographic. The commenter also pointed out that 40 CFR 63.671(b)(5) requires routine quality control and assurance procedures for compositional analysis systems be documented in a CPMS monitoring plan.

Response: We disagree that the language in 40 CFR 63.670(j)(1) allows for any type of measurement technique for compositional analysis. The EPA specifically outlined quality assurance and quality control procedures for calorimeters and gas chromatographs (GC) in 40 CFR part 63, subpart CC and mass spectrometers (MS) in 40 CFR part 63, subpart FFFF, because these are the techniques that are currently being used to monitor the heating value of flare gas. These measurement techniques will provide data of known quality and accuracy when the outlined procedures are followed. We do not believe that all types of measurement techniques are appropriate for measuring the heating value of these streams without prescriptive procedures; for example, FTIR may not be the best application for speciation of many straight chained alkanes. Owners and operators who would like to use a measurement technique other than a calorimeter, GC, or MS may apply to do so in accordance with the alternative test method provisions of 40 CFR 63.7(f).

Comment 91: A commenter requested that the EPA clarify, with an additional sub-paragraph in 40 CFR 63.2450(e)(5), that certification of compliance for flare vent gas flow meter accuracy requirements in Table 13 to 40 CFR part 63, subpart CC can be made based on the typical range of flare gas compositions expected for a given flare. The commenter pointed out that the EPA made this clarification in response to stakeholder input to the Petroleum Refinery NESHAP that indicated the accuracy requirements in Table 13 could not be met during periods (*e.g.*, power outages, compressor surges due to lighting strikes, compressor startup/shutdowns, hydrogen plant startup/shutdowns, flare header maintenance, and process upsets) where the flare received low molecular weight vent gas due primarily to high hydrogen content. The commenter said the same situations occur at MON facilities.

Response: We agree with the commenter. As in the refinery rule, we recognize that flares in the MON source category can receive wide ranges of process streams over a range of flowrates. We are clarifying that certification of compliance for these flare vent gas flow meter accuracy requirements can be made over the typical range of flows and compositions expected for a given flare. Thus, the vent gas flow rate accuracy requirement in Table 13 to 40 CFR part 63, subpart CC applies to normal flow and composition range.

Comment 92: Commenters recommended that the EPA be consistent with the TCEQ's calibration requirements for an on-line gas chromatograph that is used to measure the net heating value of the vent gas by adding the following additional exemption to 40 CFR 63.2450(e)(5): The owner or operator must use a calibration gas or multiple gases and include only as many compounds in 40 CFR 63.671(e) to determine the molecular weight and net heating value of the gas combusted in the flare to within 5.0%. The commenters stated that 30 TAC §115.725(d)(2) requires the owner to "install, calibrate, maintain, and operate an on-line analyzer system capable of determining HRVOC at least once every 15 minutes. The on-line analyzer system must also be capable of measuring, at least once every 15 minutes, other potential constituents (*e.g.*, hydrogen, methane, and CO_2, and VOCs other than HRVOC sufficient to determine the molecular weight and net heating value of the gas combusted in the flare to within 5.0%". The commenters contended that by including this practical type of provision in the MON or in the referenced Refinery MACT rule, the operator will not be required to implement the Performance Specification 9 (PS-9) requirements for compounds that may be present at very low concentrations.

Response: We are not revising the rule as a result of this comment. As stated in our response to comments to the Petroleum Refinery RTR (see Docket Item EPA-HQ-OAR-2010-0682-0802), we have already permitted variations from Performance Specification 9 by allowing for calibration using surrogate compounds instead of every compound expected to be in the stream. While we do not fully agree with the Texas HRVOC regulatory approach, we do agree that if a mid-level calibration check is performed daily, it would provide enough assurance of proper operation to allow for quarterly multi-point calibration checks in this application, and this is already reflected in Table 13 to 40 CFR part 63, subpart CC.

Comment 93: A commenter supported the EPA's proposed monitoring for flares in dedicated service. The commenter said that cost of a continuous monitoring system would clearly be outweighed by any minimal benefit that would be associated with requiring the type of CPMS required for non-dedicated flares.

Response: We are finalizing the proposed monitoring requirements for flares in dedicated service. These requirements are for any gas streams that have been demonstrated to have consistent composition (or a fixed minimum net heating value) at 40 CFR 63.2450(e)(5) and 40 CFR 63.670(j)(6).

7.2.6 Flares – Averaging Times

Comment 94: Commenters supported the proposed 15-minute block averaging period for each proposed flare operating parameter. A commenter also supports the EPA's proposal to require owners or operators of flares that elect to use grab sampling and engineering calculations to determine compliance to still assess compliance on a 15-minute block average. The commenter agreed that a short averaging time is the most appropriate for assessing proper flare performance because flare vent gas flow rates and composition can change significantly over short periods of time. The commenter noted that differences in daily emission rates reflect variations which would not be captured through infrequent grab sampling or emission factors that assume that the heat value of vent gas is static. Another commenter said that they support the use of 15 minute block averages for the NHVcz limitation and the option of use of the "feed forward" methodology; however, the commenter requested that the initial 15-minute block period for compliance purposes start only with the 15-minute block that includes a full 15 minutes of the flaring event, but should not include the first 15 minutes of a flaring event that starts exactly at the beginning of a block.

Commenters requested that the EPA provide additional clarifications for intermittent flaring such that a 15-minute block without a full 15 minutes of regulated material to the flare is not a 15-minute block considered for compliance (no 15-minute average is calculated). A commenter provided several scenarios and their suggested compliance methodologies as detailed below:

- Scenario one:
  - Flare for 3 minutes in quadrant one (Q1), stop flaring, flare for last 5 minutes of Q1.
  - Flare for first 12 minutes of Q2, stop flaring.
  - Suggested compliance methodology: No single quadrant had full 15 minutes of flaring, thus neither Q1 nor Q2 are considered compliance quadrants for Vmax or NHVcz and no 15-minute average is calculated.
- Scenario two:
  - Flare for 2 hours.
  - Last quadrant has 5 minutes of flaring.
  - Suggested compliance methodology: The last quadrant during this flaring event is not considered a compliance quadrant for Vmax and NHVcz because there is not at least 15 minutes of flaring in the quadrant. Some facilities subject to the refinery NESHAP have reported flaring natural gas for the remainder of the last 15-minute block of a flaring event when regulated material is not flared for the full 15 minutes. This practice creates unnecessary emissions and wastes natural gas. Additionally, the design and operation of some pressure assisted multi- point flares may prevent continued flaring of only natural gas once flow of regulated material through the flare header ceases.
- Scenario three:
  - Flare for 7 minutes in Q1.
  - Flare for 45 minutes in Q2 through Q4 (each quadrant has 15 full minutes of flaring).
  - Suggested compliance methodology: Q2, Q3, and Q4 are considered compliance quadrants for Vmax and NHVcz, but Q1 is not considered a compliance quadrant. This scenario is consistent with the language in the EPA letter to the American Petroleum Institute.
- Scenario four:

- Flare for 1 or 2 minutes per hour intermittently.
- Suggested compliance methodology: Maintain design data to document the flare was designed to meet the revised requirements. There is no 15-minute average to calculate if there is never an entire quadrant of flaring.

Another commenter pointed out that the rule text at proposed 40 CFR 63.2450(e)(5)(ii) is different from the guidance provided to the commenter by the EPA in a letter from Penny Lassiter, EPA, to Karin Ritter, the American Petroleum Institute, Regulatory Interpretation of Petroleum Refinery Regulations for Flaring Events, April 3, 2019. The commenter said that since the proposed text at 40 CFR 63.2450(e)(5)(ii) and the clarification in the letter deal with the same regulatory language (*i.e.*, 40 CFR 63.670(d) and (e)), it is important that the applicability of these paragraphs be clear. The commenter emphasized that the April 3, 2019 letter said: "…the requirement applies starting at the fifteenth minute that a flaring event occurs. The owner or operator is required to demonstrate compliance with the velocity and NHVcz requirements starting with the block that contains the fifteenth minute of the flaring event. The owner or operator is not required to demonstrate compliance for the previous 15-minute block during which the event started and contained only a fraction of flow." The commenter requested that the EPA clarify which 15-minute periods of a flaring event must comply with the NHVcz and velocity limits under the MON standards and under the recent Petroleum Refinery RTR.

Response: We are taking final action on the 15-minute block averaging period for each proposed flare operating parameter. We disagree with the assertion that the proposed text in 40 CFR 63.2450(e)(5)(ii) is different from the guidance provided to the commenter by the EPA in the April 3, 2019 letter from Penny Lassiter, EPA, to Karin Ritter, the American Petroleum Institute, Regulatory Interpretation of Petroleum Refinery Regulations for Flaring Events. The proposed rule text says the same thing as the guidance, only in fewer words. In fact, in the preamble to the proposed rule, we used the same verbiage as the letter. Our intent was to be consistent with the guidance provided to the commenter by the EPA in that letter. Therefore, to avoid any confusion, we are clarifying the final rule text at 40 CFR 63.2450(e)(5)(ii) to reflect the same verbiage as the letter.

Regarding other requests that the EPA provide additional clarifications for various intermittent flaring scenarios. We agree with the suggested compliance methodology for their described scenarios 3 and 4 as it coheres to the guidance provided to the commenter by April 3, 2019 EPA. However, we disagree with commenters' suggested compliance methodology for their described scenarios 1 and 2 as it is not consistent with how owners and operators of refinery flares are complying with the flare tip velocity and combustion zone operating limits specified in 40 CFR 63.670(d) and (e). We consider that the flare standards apply for any 15-minute block that the flare receives regulated material. In other words, for scenario 1, continuous flaring occurred for 17 minutes (*i.e.*, 5 minutes in quadrant 1 and an additional 12 minutes in quadrant 2); therefore, compliance must be shown for the flare tip velocity and combustion zone operating limits for quadrant 2. The owner or operator is not required to demonstrate compliance for the previous 15-minute block in which the event started and contained only a fraction of flow. Similarly, for scenario 2 there is no exemption for the last quadrant of flaring if it is less than 15 minutes. With regard to commenters' suggestion that this creates unnecessary emissions from flaring natural gas for the remainder of the last 15-minute block of a flaring event when regulated material is not flared for the full 15 minutes, we note that the flare tip velocity and combustion zone operating limits only apply when regulated material is being flared; therefore, the inference of having to use natural gas is not necessarily relevant in these instances.

7.2.7 Flares – Pilot Flames

Comment 95: A commenter objected to the EPA's proposal to maintain the existing provision that flares operate with a pilot flame at all times. The commenter stated it is not clear that flares necessarily must operate with a pilot flame running at all times, producing greenhouse gas and NOx emissions. The commenter suggested that flares can be operated with a spark ignition system that can be triggered by a flow sensor or monitor. The commenter pointed out that at least eight refineries reported that they operate a total of 15 separate flares in this manner.

Similarly, a commenter requested that the EPA add "or flare flame" after "pilot flame" in 40 CFR 63.2520(d)(3), 40 CFR 63.2520(e)(11)(i), 40 CFR 63.2525(m)(1), and at 40 CFR 63.2450(e). The commenter argued that loss of a pilot flame when flare flame is present does not result in decreased destruction efficiency and should not be an indicator of non-compliance. The commenter pointed out that the EPA recognized this situation (loss of pilot while flare flame is present) in the refinery NESHAP RTR rulemaking and determined that monitoring systems to distinguish between flare flame and pilot flame were not necessary.

Response: We are clarifying in the final rule regulatory text that a flare (excluding pressure-assisted multi-point flares that cross-light) must have a continuous lit pilot flame or flare flame at all times when controlling regulated material to be consistent with the requirements of 40 CFR part 63, subpart SS, that have always applied to flares used as APCDs in the Miscellaneous Organic Chemical Manufacturing source category. This requirement ensures that an ignition source is always present to ignite and adequately combust the flare vent gases discharged to the flare and that the flare has flame present at all times. We do not consider it necessary to provide additional specifications to owners or operators on how to operate their pilot flame system. We note that pilot flame system requirements for pressure-assisted multi-point flares that cross-light are discussed elsewhere in this document given the uniqueness of their design, and these requirements are intended to ensure that an ignition source is continuously present when these flares are used as APCDs so that any gas sent to them for control will ignite, cross-light additional burners in the stage that also have gas going to them, and effectively combust all the regulated material requiring control.

We want to further clarify that the requirement is to have at least one ("a") flare pilot flame present at all times when regulated material is sent to the flare and to report "each period when regulated material is routed to a flare and a pilot flame or flare flame is not present." If no "regulated material" is being discharged through the flare, there is no requirement to operate a pilot flame or flare flame. Thus, the rule would allow flares to operate with no pilots or no flare flames if no regulated material is routed to a flare; however, we note that owners and operators still have a general duty to minimize emissions as required in 40 CFR 63.2450(u). Also, we understand that some flares that are used on a discrete basis continually vent purge gas to the flare to prevent oxygen ingress into the flares. If fuel gas is used as the flare's purge gas (of which 50% or more of the fuel gas in the fuel gas system is derived from an MCPU that has processes and/or equipment in EtO service, or produces olefins or polyolefins), then it is possible that the flare will always be in regulated material service and the rule would require that these flares operate continually with a pilot flame or flare flame present. If the flare is purged using natural gas or nitrogen, these gas streams are not regulated HAP streams and the requirements in 40 CFR 63.670(b) would not apply during those times that only these streams without "regulated material" are used in the flare. Section 112 of the CAA directs the EPA to set standards for the control of HAP or a HAP surrogate; natural gas and nitrogen are not HAP or a surrogate for HAP in the MON so we are not required to regulate these vent gas streams when they are not mixed with a HAP-containing vent gas.

Regarding the comment that flares can be operated with a spark ignition system, use of these systems has never been allowed to demonstrate compliance with the requirement to have a continuously lit pilot flame or flare flame, however we note that use of these systems have been employed to automatically re-ignite pilot flames. Even with automatic re-ignition there will be at least some small gap when the pilot is not lit once it goes out. Pursuant to 40 CFR 63.670(b) and 40 CFR 63.2450(e), one minute in any 15-minute block where a pilot flame or flare flame is not present (when regulated material is routed to the flare) is a deviation of the standard and deviations in different 15-minute blocks from the same event are considered separate deviations. In other words, the failure to relight the pilot flame or flare flame prior to the next 15-minute block will be a separate deviation.

Comment 96: Commenters requested that the EPA should not finalize the requirement to retain the minute-by-minute records for the presence of a pilot flame or flare flame contained at 40 CFR 63.2525(m)(1), but instead allow facilities to reduce the collected data to a 15-minute block basis with an indication of whether there was at least one minute where no pilot flame was present. The commenters pointed out that without such change the requirement to retain minute-by-minute data would require storage of millions of data points, which would be an unreasonable cost. The commenters also pointed out that reducing the minute-by-minute data to a 15-minute basis would not compromise a facility's ability to demonstrate compliance with the requirements of the proposed rule.

Response: As previously discussed in this document, we are clarifying in the final rule regulatory text that a flare must have a continuous lit pilot flame or flare flame at all times when controlling regulated material to be consistent with the current requirements of 40 CFR part 63, subpart SS that have always applied to flares used as APCDs in the Miscellaneous Organic Chemical Manufacturing source category (we also note that similar, yet slightly different requirements apply to pressure-assisted multi-point flares that cross-light). We agree that reducing the minute-by-minute data to a 15-minute basis would not compromise a facility's ability to demonstrate compliance with the requirements of the rule so long as the owner or operator indicates whether there was at least one minute where no pilot flame or flare flame was present. Allowing facilities to reduce the collected data to a 15-minute block basis with an indication of whether there was at least one minute where no pilot flame or flare flame was present will decrease the burden on owners and operators by decreasing data storage and maintenance requirements. Therefore, we are revising 40 CFR 63.2525(m)(1) to allow facilities to reduce the collected minute-by-minute data to a 15-minute block basis with an indication of whether there was at least one minute where no pilot flame or flare flame was present. We note that pursuant to 40 CFR 63.670(b) and 40 CFR 63.2450(e)(5), one minute in any 15-minute block where a pilot flame or flare flame is not present (when regulated material is routed to the flare) is a deviation of the standard and deviations in different 15-minute blocks from the same event are considered separate deviations. In other words, that failure to relight the pilot flame or flare flame prior to the next 15-minute block will be a separate deviation.

Comment 97: A commenter requested that the EPA clarify that an infrared or video camera is appropriate for use in determining the presence of flare flame. The commenter requested that the EPA allow facilities to use video, IR, or other appropriate detection methodology for actual flare flame to demonstrate compliance with 40 CFR 63.670(g).

Response: As previously discussed in this document, we are clarifying in the final rule regulatory text that a flare must have a continuous lit pilot flame or flare flame at all times when controlling regulated material to be consistent with the current requirements of 40 CFR part 63, subpart SS that have always applied to flares used as APCDs in the Miscellaneous Organic Chemical Manufacturing source category (we also note that similar, yet slightly different requirements apply to pressure-assisted multi-point flares that cross-light). With respect to the monitoring methodology, we have included the phrasing "including, but not limited to" so owners and operators can use any device capable of detecting that the pilot flame or flare flame is present. Therefore, an infrared or video camera can be used to comply with 40 CFR 63.670(g) and 40 CFR 63.2450(e)(5) provided the infrared or video camera can detect that the pilot flame or flare flame is present. No change to the final rule is being made as a result of this comment. We note that pilot flame system requirements for pressure-assisted multi-point flares that cross-light have similar requirements for pilot flame monitoring. We also note that pressure-assisted multi-point flares, regardless of whether they cross-light or not, should have video surveillance systems to monitor for visible emissions since we believe this is the only effective way to determine compliance with the visible emissions standards for these unique flare designs, and additional information about pilot flames, flare flames, and cross-lighting may be gleaned from these video surveillance systems

7.2.8 Flares – Pressure-Assisted Multi-Point Flare

Comment 98: Commenters supported and agreed with the EPA's inclusion of the new requirements for pressure-assisted multi-point flares at proposed 40 CFR 63.2450(e)(5)(vii). The commenters agreed with the EPA's conclusion that the Agency's analysis of the test data related to multi-point ground flares (MPGF) that control olefin waste gas could also apply to multi-point elevated flares that combust olefin waste gas because each flare type uses pressure-assisted burners with staged arrays; the commenter also said that they support the EPA's proposal that the pressure-assisted multi-point flare requirements apply to both MPGF and multi-point elevated flares.

Response: We are taking final action on the proposed pressure-assisted multi-point flares requirements with clarifications discussed elsewhere in this document. See 40 CFR 63.2450(e)(5)(viii). The technology used in pressure-assisted flares is the same whether elevated or at ground level; therefore, there is no reason to exclude the use of this technology from the requirements finalized at 40 CFR 63.2450(e)(5)(viii) simply because the technology is elevated. Whether elevated or at ground level, these flares operate by taking advantage of the pressure upstream of the flare tip to create a condition whereby air is drawn into contact and mixed with high exit velocity flared gas, resulting in smokeless flare operation and emissions reductions at least as equivalent to those of traditional flares types, if properly designed and operated. We also note that ambient concentration at ground level is inversely proportional to the plume height (*i.e.*, ground-level concentration decreases with increasing plume height); and changes in plume height of just a few feet can result in significant changes in ambient concentrations and resulting risks.

Comment 99: Some commenters said they did not support superseding the currently approved MPGF alternative means of emission limitation (AMEL) requests at ethylene production facilities in replace of the new requirements for pressure-assisted multi-point flares proposed at 40 CFR 63.2450(e)(5)(vii). The commenters requested that if a pressure-assisted multi-point flare is operating under the requirements of an approved AMEL, the EPA allow the owner or operator to either continue to comply with the terms of the AMEL or comply with the provisions in proposed 40 CFR 63.2450(e)(5)(vii) for pressure-assisted multi-point flares. A commenter said superseding existing AMELs would undermine the flexibility provided by the existing AMELs with no additional environmental benefit. This commenter argued that in no instance has the EPA determined any provision in a previously approved AMEL as insufficient to demonstrate compliance with a 98% destruction efficiency requirement; therefore, there is no justification to further burden facilities that have previously undergone significant effort and investment to obtain an AMEL, to go through the updates to standard operating procedures, training, recordkeeping, reporting, and permitting that will result if the EPA decides to supersede currently approved AMELs. One commenter pointed out that: (1) the rule and AMEL use two different approaches for hydrogen and the calculation of net heating value; (2) the AMEL addresses compliance with several other EPA regulations in addition to the MON; and (3) all EPA rules and state rules have not transitioned over to the updated approach related to hydrogen.

Another commenter recommended that the EPA clarify that a MPGF complying with a 98% destruction efficiency AMEL is considered compliant with the MON flare requirements. The commenter said that it is possible for a MPGF located at a refinery to receive some gas regulated by the MON standards, particularly during an upset or emergency. The commenter pointed out that since there are no current requirements in 40 CFR part 63, subpart CC for refinery MPGFs, the MPGF is typically operating under an approved AMEL.

Response: We have considered the comments concerning whether the requirements for pressure-assisted multi-point flares should ultimately supersede the currently approved MPGF AMEL requests at MON facilities. We agree with those commenters that do not support superseding the currently approved MPGF AMEL requests at MON facilities with our proposed requirements for pressure-assisted multi-point flares. We acknowledge that some approved AMELs address compliance with other EPA regulations in addition to the MON standards. We also agree it would be less confusing for owners or operators to continue to comply with previously approved AMELs already in place. Therefore, given that some owners and operators of MCPUs are currently operating under an approved AMEL, and these owners and operators are likely to have already installed more sophisticated equipment (*e.g.*, a gas chromatograph) than what is required to comply with the requirements in the final rule for pressure-assisted multi-point flares, we are clarifying in the final rule that pressure-assisted multi-point flares subject to an approved AMEL may continue to comply with the approved AMEL in lieu of the requirements in the final rule for pressure-assisted multi-point flares.

Comment 100: Some commenters recommended that the EPA add provisions to 40 CFR 63.2450(e)(5) providing a lower flammability limit in the combustion zone gas (LFLcz) of less than or equal to 6.5 vol. % as an alternative to the 800 british thermal unit per standard cubic foot (Btu/scf) NHVcz limit proposed in 40 CFR 63.2450(e)(5)(vii)(B). One commenter pointed out that facilities with a pressure-assisted multi-point flare that do not currently have a monitor installed to measure hydrogen content should be allowed to use LFLcz as an alternative to the NHVcz based on the equivalency of the parameters previously established by the EPA in various AMEL. The commenters pointed out that some refinery AMEL allow for this alternative limit, and would ease the ability of existing refinery MPGFs to comply with the MON flare requirements. A commenter said use of a LFLcz alternate can be important to pressure-assisted multi-point flares where significant hydrogen is typically present.

Response: We disagree with this comment and are not including an option in the final rule for owners and operators to use a LFLcz operating limit approach. As noted in our response to comment 99 of this document, we are clarifying in the final rule that pressure-assisted multi-point flares subject to an approved AMEL may continue to comply with the approved AMEL in lieu of the requirements in the final rule for pressure-assisted multi-point flares. All of the approved AMELs published in Docket ID EPA-HQ-OAR-2014-0738 for which we relied on in this rulemaking allow the option for the owner or operator to use either a NHVcz or LFLcz operating limit. In these AMELs, the EPA explained that by using LFLcz, we eliminated the need to correct the hydrogen heat content or to select a lower Btu/scf limit for high hydrogen cases. Even still, at least one AMEL published in Docket ID EPA-HQ-OAR-2014-0734 uses the 1,212 Btu/scf hydrogen correction.

Moreover, as explained in the preamble to the proposed rule, we relied on certain technical reports and memoranda that the EPA developed for flares used as APCDs in the Petroleum Refinery sector and NSPS. Therefore, it is important to understand that although the Petroleum Refinery Sector proposed rule (79 FR 36880) did not include the hydrogen correction for NHVcz, the proposal allowed the owner or operator flexibility to select the form of the combustion zone operating limit (i.e., NHVcz, LFLcz, or Ccz), similar to many of the EPA-approved AMELs published in Docket ID EPA-HQ-OAR-2014-0738. The EPA only finalized (80 FR 75178) the 1,212 Btu/scf hydrogen adjustment to replace the LFLcz and Ccz proposed operating limits because we determined that when using the net heating value of 1,212 Btu/scf for hydrogen, the LFLcz and Ccz proposed operating limits no longer provided any improvement in the ability to predict good flare performance. Consequently, the EPA simplified the operating limits in the Petroleum Refinery Sector final rule (80 FR 75178) by requiring only the use of NHVcz with a 1,212 Btu/scf correction for hydrogen.

Comment 101: A commenter said that the EPA should allow the owner or operator to request a burner distance greater than 6 feet between burners in proposed 40 CFR 63.2450(e)(5)(vii)(E). The commenter said that while they agree with the required 6-foot distance based on the current design MPGFs, they also recommend that the EPA create a straightforward mechanism where an owner or operator could ask for a further distance if a cross-light test, demonstrating that a further distance will work, is provided to the EPA and the alternative distance is approved by the EPA.

Another commenter requested that the EPA allow cross-light performance testing as an alternative to meeting the 6-foot burner spacing requirement and clarify that previous testing may be used to satisfy this requirement. The commenter argued that allowing facilities to demonstrate the ability to cross-light through a performance demonstration will allow companies to take advantage of newer flare technology without the additional complexity and burden associated with an AMEL.

Commenters also suggested that the burner-to-burner distance be defined as the distance between the center of one burner to the center of the next burner.

Response: We are clarifying in the final rule that the burner-to-burner distance be defined as the distance when measured from the center of one burner to the next burner. Moreover, based on our review of site-specific AMEL standards for MPGF designs, we determined that all burners tested at or below 6 feet successfully demonstrated that they were able to cross-light. Therefore, we are not removing the provisions in the final rule that require owners and operators of pressure-assisted multi-point flares to maintain a distance of no greater than 6 feet between any two burners in series on a stage of burners that use cross-lighting. We believe this is a much simpler compliance approach compared to requiring all owners and operators of pressure-assisted multi-point flares to conduct a performance demonstration to show that their pressure-assisted multi-point flare will cross-light. Nevertheless, we are including an option in the final rule that allows owners and operators to use a distance greater than 6 feet between any two burners in series provided the owner or operator conducts a performance demonstration that confirms the pressure-assisted multi-point flare will cross-light a minimum of three burners and the spacing between the burners and location of the pilot flame must be representative of the projected installation. The compliance demonstration must be approved by the permitting authority and a copy of this approval must be maintained onsite. The compliance demonstration report must include: a protocol describing the test methodology used; associated test method QA/QC parameters; the waste gas composition and NHVcz of the gas tested; the velocity of the waste gas tested; the pressure-assisted multi-point flare burner tip pressure; the time, length, and duration of the test; records of whether a successful cross-light was observed over all of the burners and the length of time it took for the burners to cross-light; records of maintaining a stable flame after a successful cross-light and the duration for which this was observed; records of any smoking events during the cross-light; waste gas temperature; meteorological conditions (*e.g.*, ambient temperature, barometric pressure, wind speed and direction, and relative humidity); and whether there were any observed flare flameouts.

Comment 102: A commenter indicated that proposed 40 CFR 63.2450(e)(5)(vii)(D) is confusing regarding the number of pilots per burner stage required. Another commenter said that a stage of burners will cross-light properly if there is one pilot with a pilot flame present to ignite all the regulated material that is routed to a stage of burners. The commenter recommended that the EPA add the following text to proposed 40 CFR 63.2450(e)(vi)(D) in order to provide maximum flexibility for users of the multi-point pressure assisted flare technology: "Each stage of burners that cross-lights in the pressure-assisted multi-point flare must have at least one pilot with a continuously lit pilot flame capable of igniting all regulated material that is routed to that stage of burners." Other commenters said that they believe the EPA's intent is that each stage has at least two pilots installed, but it is only a deviation if all pilots for that stage are out for at least one minute in a 15-minute period. One of the commenters requested the EPA incorporate revisions to proposed 40 CFR 63. 2450(e)(5)(vii)(D), and the reporting and recordkeeping requirements in 40 CFR 63.2520 and 40 CFR 63.2525, that clarify the deviation condition applies on a stage basis.

Response: The MPGF designs that we reviewed (via their site-specific AMEL standards) are equipped with a minimum of at least two pilots per stage of burners and facilities have indicated that their pressure-assisted multi-point flares are designed, for safety purposes such that, a particular stage of burners will not operate if both pilot flames are not lit on that stage. Given that these site-specific AMEL standards formed the basis for our proposed requirements for pressure-assisted multi-point flares, we are not revising the final rule to allow pressure-assisted multi-point flare designs to be equipped with only one pilot per stage of burners. Based on the information provided in this comment, we acknowledge that it appears there may be pressure-assisted multi-point flare designs that operate with only one pilot per stage of burners, however this would seem to go against best practices and current designs known to the EPA. However, we are clarifying in the final rule that each stage of burners that cross-lights in the pressure-assisted multi-point flare must have at least two pilots with at least one continuously lit and capable of igniting all regulated material that is routed to that stage of burners; and each 15-minute block during which there is at least one minute where no pilot flame is present on a stage of burners when regulated material is routed to that stage is a deviation of the standard. We are also revising the recordkeeping and reporting requirements at 40 CFR 63.2525(m)(1) and 40 CFR 63.2520(e)(11)(i) to reflect this change.

Comment 103: Commenters requested the EPA confirmation in the final rule that multi-point flares that are not pressure-assisted are only required to have one pilot flame lit per stage of burners that are in service. The commenters said that these types of flare systems exist in the Miscellaneous Organic Chemical Manufacturing source category and can meet the existing regulatory requirements (40 CFR 60.18 and 63.11) regarding maximum exit velocity. The commenters said that these systems also operate with one or two pilots per stage, which then allows the individual tips to cross-light the other flare tips/burners. The commenters provided drawings and pictures of these types of systems. The commenters requested the EPA clarify that each stage of burners in these flare systems is considered a “flare” for purposes of complying with 40 CFR 63.670(b). One of the commenters said that the EPA could add, as an alternative, a requirement specifying that each stage of burners that cross-lights a multi-point flare must have at least one pilot with a continuously lit pilot flame capable of igniting all regulated materials that is routed to that stage of burners.

Response: No change is being made to the final rule as a result of this comment. Multi-point flares that are not pressure-assisted (*e.g.,* “low pressure” stages on a multi-point flare) are not subject to the requirements finalized for pressure-assisted multi-point flares at 40 CFR 63.2450(e)(5)(viii). Rather, we are finalizing, as proposed, that these flare stages are subject to the suite of requirements in 40 CFR part 63, subpart CC, as specified in 40 CFR 63.2450(e)(5). Given that, prior to this change, multi-point flares that are not pressure-assisted have always been regulated under the General Provisions (*i.e.,* 40 CFR 63.11(b) and cross-referenced in 40 CFR part 63, subpart SS for flares used to control emissions from MCPU affected sources), these flares have never been allowed to cross-light. In fact, some facilities who recently received AMELs indicated to the EPA that their low pressure stages on their multi-point flare designs would comply with the General Provisions requirements by having a pilot on each burner in a “low pressure” stage. While some information was provided by a commenter on cross lighting “low pressure” flare burners, the Agency has particular technical concerns with allowing this to occur for all designs in national rule given the fact that these stages typically are always receiving waste gases for control, are required to comply with a significantly lower NHVcz compared to the pressure-assisted flare stages (which means the gases they are controlling have significantly lower combustibility and velocity compared to the waste gases a pressure-assisted flare burner would control) and because they likely have steam-assist, which could decrease the ability of the "low pressure" stages to effectively cross light further. As previously explained, we have always required that a flare must have a continuously lit pilot flame or flare flame when controlling regulated material according to the requirements in subpart SS, and as such, each burner on a multi-point flare that is not pressure-assisted is considered a flare itself and each burner must operate with a pilot flame or flare flame.

Comment 104: Commenters requested the EPA clarify that one volumetric flowmeter may be used to measure the volumetric flowrate of vent gas to the flare system, thus meeting the requirements in 40 CFR 63.670(i), and that engineering calculations can be used to determine the flow of vent gas to each individual stage, if needed. A commenter said that the EPA should add the following language prior to proposed 40 CFR 63.2450(e)(5)(vii) for non-pressure assisted flare systems with multiple stages: "To satisfy §63.670(i), the owner or operator of a non-pressure assisted flare system is required to monitor the volumetric flow rate of vent gas to the flare system, and then may use appropriate engineering calculations to determine the volumetric flowrate of vent gas to each stage of burners."

The commenter contended that if a system has "x" burners on one stage and "y" burners on the second stage, and if the area of each burner is the same on each stage, then an engineering calculation could be used to determine the volumetric flowrate to each stage. One of the commenters said that this approach should be allowed since attempting to install an individual flow meter in the piping associated with each stage may not be feasible, and the accuracy may not be adequate, due to the short individual lengths of piping from the main header to each individual stage. The commenter also said that the majority of the piping may be contained inside of a fenced area if the multi-point flare system is a ground flare system (*i.e.*, the tips are located in a line or array system inside of a fenced area).

Response: No change is being made to the final rule as a result of this comment. The final rule, as was proposed, already addresses the commenters' request and we believe no further action is necessary. The regulation at 40 CFR 63.670(i) allows owners and operators to use different flow monitoring methods to measure different gaseous streams that make up the flare vent gas provided that the flow rates of all gas streams that contribute to the flare vent gas are determined. The commenter did not provide enough information to determine whether, in their specific case, they operate continuous pressure/temperature monitor systems; however, 40 CFR 63.670(i)(4) already allows owners and operators to use continuous pressure/temperature monitoring system(s) and appropriate engineering calculations to determine the volumetric flow rate in lieu of a continuous volumetric flow monitoring systems. If the commenters do not believe that these provisions are clear enough for their specific situation, then we recommend that they submit more detailed information regarding their specific situation to the EPA and request an alternative monitoring method pursuant to 40 CFR 63.8(f).

7.3 PRDs

Comment 105: Several commenters supported the requirements that the EPA proposed at 40 CFR 63.2480(e)(5) for PRDs.

One commenter supported the exclusion for PRDs designed with a set relief pressure of less than 2.5 psia from the pressure release management work practice standard, but also noted that the proposed "pressure relief device" definition in 40 CFR 63.2550 does not contain the same exclusion found in 40 CFR part 63, subpart H and subpart UU, and 40 CFR part 65, subpart A, for devices that are actuated either by a pressure of less than or equal to 2.5 pounds per square inch gauge (psig) or by a vacuum. The commenter added that without this exclusion for devices that are actuated either by a pressure of less than or equal to 2.5 psig or by a vacuum, these types of devices are pulled into the operating requirements to operate each PRD in organic HAP gas or vapor service with an instrument reading of < 500 ppmv under 40 CFR 63.2480(e)(1) and the pressure release requirements in 40 CFR 63.2480(e)(2). The commenter added that the EPA has specifically excluded spring-loaded conservation vents or similar type of device, which are often referred to as emergency relief valves, vacuum relief valves, or pressure vacuum relief valves, and are used to maintain tank internal operating pressure, in most equipment leak rules because they are not required to be monitored. The commenter stated that these type of PRDs would likely not meet the leak criteria of less than 500 ppmv leak definition in 40 CFR 63.2480(e)(2)(i)-(ii). The commenter added that by changing the historical PRD definition and then relocating the PRD operating requirements and pressure release requirements directly into the equipment leak provisions of Subpart FFFF, the EPA has inadvertently lost this historical PRD exclusion for devices that are actuated either by a pressure of less than or equal to 2.5 psig or by a vacuum. One commenter also stated that these PRDs should be exempt from the operating requirements in 40 CFR 63.2480(e)(1) and pressure release requirements in 40 CFR 63.2480(e)(2) as well as the proposed work practice standard in 40 CFR 63.1107(e)(6)-(e)(7) requiring a root cause analysis and corrective action analysis and corrective action implementation. The commenter concluded that the EPA should amend the proposed definition of "pressure relief device" in 40 CFR 63.2550 to add the exclusion for devices actuated by a pressure of < 2.5 psig or by a vacuum and then remove the exclusion from 40 CFR 63.2480(e)(5)(iii) so that these types of devices would then be exempt from all of the PRD requirements in 40 CFR 63.2480(e).

Commenters also requested additional exclusions for the final rule, including exempting PRDs on mobile equipment, PRDs that do not have the potential to emit 72 pounds per day or more of VOC, and PRDs in locations deemed "unsafe to monitor". A commenter stated that, while connected to the process unit and accumulating material, they do not object to compliance with the proposed PRD monitoring requirements for their small portable tanks (~750 gallons) or tank trailers; however, once the portable tank or container is disconnected from the process unit, the commenter argued that it would not be practical to comply with the proposed PRD requirements, and there is no motive that would cause a release.

One commenter referenced their comments and information provided on the Off-Site Waste and Recovery Operations NESHAP why an exemption for mobile equipment is necessary. One commenter explained that mobile equipment falls into two categories: portable tanks or containers used to store process materials and mobile tankage including trucks, railcars, and marine vessels. The commenter added that portable tanks or containers used to store process materials are often replaced with a full container when empty and are often owned by third party suppliers which makes monitoring for releases and applying redundant release prevention measures impracticable. The commenter also noted that these tank trailers or railcars are typically owned by third parties. Commenters added that PRDs on mobile equipment are regulated by the

Department of Transportation or the Coast Guard and implementing requirements such as those proposed in 40 CFR 63.2480(e) requires consultation with those agencies. A commenter noted that consultation with agencies did not appear to have been performed for the proposed rulemaking. The commenter also stated that PRDs on mobile equipment are also designed to release directly to atmosphere because that is the only option available during transport. The commenter noted that the EPA recognized the need for similar exemptions in the original MON rulemaking at 40 CFR 63.2550, which specifically excludes vessels permanently attached to motor vehicles such as trucks, railcars, barges, or ships from the definition of a storage tank. The commenters added that the EPA also added this exclusion in the refinery reconsideration and the Off-Site Waste and Recovery Operations NESHAP. A commenter suggested the following revision to 40 CFR 63.2480(e)(3): “Pressure release management. Except as specified in paragraphs (e)(4) and (5) of this section, you must comply with the requirements specified in paragraphs (e)(3)(i) through (v) of this section for all pressure relief devices in organic HAP service on equipment while connected to the MCPU by pipes or ducts.”

One commenter discussed the need to exempt PRDs that do not have the potential to emit 72 pounds per day or more of VOC based on the dimensions of the PRD, the set release pressure, and the equipment contents. The commenter stated that PRDs that do not have the potential to emit 72 pounds per day or more of VOC, by definition, have a very low potential to emit. The commenter added that setting the threshold at 72 pounds would make the exemption consistent with a similar exemption at 40 CFR 63.648(j)(5), which is important for streamlining compliance activities since many facilities also have refinery operations subject to 40 CFR part 63, subpart CC. The commenter continued that exempting these PRDs would alleviate the burden to install monitoring equipment and perform root cause and corrective action analyses on the smallest PRDs, for which little if any emissions reductions would result, and allow facilities to focus resources on larger PRDs with a higher potential for environmental impact.

One commenter discussed the need for the EPA to exempt PRDs in unsafe to monitor locations. The commenter explained that some PRDs are located in high- pressure processes where entry into the process area is not allowed during operation because of the safety risk. The commenter added that because entry is not allowed into these areas, operators cannot comply with the propose monitoring requirements in 40 CFR 63.2480(e)(1) and (2). The commenter noted that the EPA has previously addressed such scenarios using “unsafe-to-monitor” provisions in 40 CFR part 63, subpart H and subpart UU.

One commenter supported excluding force majeure events from the number of releases counted for deviation purposes, but requested that the EPA clarify that the start date for the initial three year period is the first full calendar year after the compliance date for the PRD work practice standard. The commenter also requested that the EPA include a provision that would not count the second event from the same equipment and same root cause within a 3-year period as a deviation where the root cause investigation from the first incident is not yet complete; and/or where the corrective action resulting from the root cause investigation requires a capital expenditure and such has been initiated and is being timely pursued. Other commenters stated that the EPA has proposed contradictory actions by removing SSM exemptions but has created multiple new malfunction exemptions. Many commenters contended that the EPA must remove the unlawful exception for emissions during SSM periods from the proposed rule. Specifically, one commenter contended that the proposed rule allows a facility to have one or two uncontrolled PRD releases every three years (or any number due to a force majeure event) without having this qualify as a deviation of the pressure release management work practice standards. The commenter added that the proposed rule allows a facility to, once or twice every three years, exceed and ignore the flare tip velocity and no-visible emissions flare requirements, such that a flare can smoke without repercussions and without limits (and this may occur repeatedly due to a force majeure event). The commenter concluded that the fact that there are prevention, reporting, or other requirements in place during a malfunction or force majeure event does not mean that the EPA may authorize a facility to evade other parts of the standard during such a period when the emission standards must apply, in full, to satisfy the CAA.

Another commenter contended that the list of exemptions should have clear justification for being exempt or exemption should not be granted. The commenter stated that frequency of use should factor into these exceptions as well as design alternatives that allow those points to be eliminated or vented to pollution control devices. As an example, the commenter stated that a relief valve that is opened daily is not an emergency release of pressure, but part of design that should be addressed.

Another commenter contended that Congress already set a threshold in CAA section 112(a)(1) at which the EPA must regulate major sources. The commenter added that for all sources that meet that threshold, the EPA may not exempt emission points within that source category from coverage by standards. The commenter contended that by attempting to create thresholds within major sources, the EPA has violated the CAA’s plain directive to regulate all HAPs emitted from major sources without exception. The commenter continued that the EPA cannot justify treating emission releases at MON facilities deemed to be small any differently from such releases in other industries, and its exemptions here are both unlawful and arbitrary and capricious.

A commenter contended that if the EPA determines it is technically infeasible to control an emission source, CAA section 112 requires the EPA to set a work practice instead of an emissions limit and not issue an exemption. The commenter added that the EPA must provide evidence to support its assertions. As an example, the commenter stated that in determining that that the back pressure in the flare header system generally exceeds 2.5 psig, the EPA fails to adequately explain and support the proposed source type exemption in the proposed rule. The commenter added that such unlawful gaps in regulation would leave PRDs that are designed solely to release due to liquid thermal expansion and certain balanced bellows PRDs completely exempted from compliance with emission standards in some circumstances. The commenter also noted that the EPA’s explanation for exempting pilot-operated PRDs is insufficient. The commenter explained that indicating that such PRDs are considered reasonable and necessary does not explain why they should not be subject to emissions standards. The commenter added that under the EPA’s proposal, such PRDs would be able to vent unlimited amounts of pollutants to the atmosphere without abatement. The commenter continued that the source-type exemptions for PRDs are unlawful because such devices link to equipment that have applicable standards, and it is unlawful for the EPA to create exemptions from the standards for the connected equipment by allowing unlimited releases from PRDs to which those pieces of equipment are routed. The commenter concluded that the EPA has not shown, based on substantial evidence in the record, that the PRD exemptions it has established will not allow large or dangerous releases of HAPs to occur from equipment routed to PRDs when they exceed their applicable emission standards.

Response: We agree with the commenter that PRDs with a design release pressure of less than 2.5 psig should be exempt from 40 CFR 63.2480(e)(1) and (2), as well as the proposed work practice standard in 40 CFR 63.2480(e)(6) and (7) that requires a root cause analysis and corrective action analysis and implementation. We note that the commenter inadvertently referenced citations from the ethylene production NESHAP [*i.e.*, 40 CFR 63.1107(e)(6)-(e)(7)] but we have assumed the commenter meant to refer to proposed 40 CFR 63.2480(e)(6) and (7). Our proposed definition for "pressure relief device" in 40 CFR 2550(i) meaningfully changed the definition of a PRD, as compared to the subpart UU definition, which was not our intent. In the final rule, we updated the definition of PRD in 40 CFR 63.2550(i) to exclude devices that are actuated either by a pressure of less than or equal to 2.5 psig or by a vacuum to be consistent with the requirements MCPUs have always complied with in 40 CFR part 63, subparts H and UU, and 40 CFR part 65, subpart A. In addition, because of this revision to the final rule, we removed the duplicative exclusion from 40 CFR 63.2480(e)(5)(iii) that was originally proposed and still applies because of the change in definition.

We agree with the commenter that PRDs on mobile equipment should not be subject to the PRD work practice standard. The requirements identified by the commenter, the definition of a storage tank at 40 CFR 63.2550(i), may account for most instances of these types of PRDs and thus provide the requested exclusion. Nevertheless, we are specifically adding a mobile equipment exclusion at 40 CFR 63.2480(e)(5), to be consistent with similar requirements in the Petroleum Refinery NESHAP.

We disagree with commenters that we should exempt PRD releases based on a mass emission level. Facilities cannot directly measure a mass emission rate of any PRD release, but rather would only demonstrate compliance with such a requirement via engineering calculations after a release occurs. In addition, PRD discharges have always been excluded from the definition of continuous process vent. While we are finalizing an additional mass-based emission standard for process vents that are periodically discharged primarily for maintenance activities, PRD discharges are not maintenance activities and occur as a result of a malfunction. The PRD work practice standards also contain certain applicability criteria, based on the South Coast Air Quality Management District (SCAQMD) rule, for certain types of PRDs that have low emissions potential. Thus, no change is being made as a result of this comment.

We disagree with the comment to exempt PRDs in unsafe-to-monitor locations from the PRD work practice standard and are not revising the rule. While 40 CFR part 63, subparts H and UU, and 40 CFR part 65, subpart F, do include unsafe-to-monitor provisions, these provisions do not apply to PRDs. For example, 40 CFR 63.1022(c) specifies unsafe-to-monitor criteria for valves, pumps, connectors, and agitators. Also, we note that we are not changing the existing unsafe-to-inspect closed vent system requirements in these rules (nor in 40 CFR part 63, subpart SS) that may apply to PRDs routed through a closed vent system.

With regard to the request that we clarify the start date for the work practice standards, the regulatory text at 40 CFR 63.2480(e)(3)(iv) and 40 CFR 63.2480(e)(3)(v)(B) and (C), states that the time period is based on a 3-calendar-year period. We consider 2020 to be 1 calendar year. A 3-calendar-year period in 2020 would include events that occurred in 2018, 2019, and 2020. It is a rolling average to the extent that, in 2021, one would consider events that occurred in 2019, 2020, and 2021. As indicated in 40 CFR 63.2520(e)(15)(iii), each pressure release to the atmosphere, including the duration of the release, the estimated quantity of each organic HAP released, and the results of the root cause analysis and corrective action analysis completed during the reporting period must be included as part of the reporting obligation. We disagree with the comment regarding meeting certain criteria and not counting the second event from the same equipment and same root cause as a deviation. At proposal, we explained that two release events with the same root cause from a single PRD in a 3-year period is a deviation from the MACT standard. 84 FR 69208. The commenter requested that if a corrective action has not been implemented to resolve an issue, then related PRD releases should not be counted towards the deviation; however, this result is exactly what the EPA wants to prevent by having a lower release threshold for violations when a PRD release results from the same root cause. We note that further comments on the concept of “force majeure” and our responses to these comments can be found in section 8.2 of this document.

We disagree with the commenter that frequency of use should be considered for the PRD exemptions. For example, while batch operations may operate infrequently, they could still release significant quantities of emissions through a one-time PRD release event. Conversely, if a PRD that is subject to the PRD requirements does release emissions regularly, it would be a violation of the PRD work practice standard or may potentially be subject to the batch process vent standards.

Finally, we disagree with the comments regarding the exemptions being unlawful, and arbitrary and capricious. We modeled the applicability of the PRD provisions after the SCAQMD rule, based on a MACT floor analysis and considering the appropriate requirements for these types of PRDs. It is likely that the SCAQMD rule did not apply the PRD-specific requirements to certain PRDs due to their low emissions release potential. We note that, if the PRD is in gas or vapor service, owners and operators are still required to monitor the PRD after the release to verify the device is operating with an instrument reading of less than 500 ppm. Liquid PRDs are still subject to repair if a leak is found during visual inspection. However, as explained earlier in our response to this comment, we updated the definition of PRD in 40 CFR 63.2550(i) to exclude devices that are actuated either by a pressure of less than or equal to 2.5 psig or by a vacuum to be consistent with the requirements MCPUs have always complied with in 40 CFR part 63, subparts H and UU, and 40 CFR part 65, subpart A.

Comment 106: A commenter recommended clarifying the requirement at proposed 40 CFR 63.2480(e)(3)(i)(C) to notify operators “immediately” that a pressure release is occurring. The commenter requested that the EPA define “immediately” (regarding notify of operators that a pressure release is occurring) to mean at least once every 30 seconds. The commenter stated that PRDs typically would not relieve for less than 30 seconds. The commenter also stated that they utilize wireless transmitters to comply with similar PRD requirements under the Polymers and Resins IV Rule, and that these systems typically have a range of frequencies for polling the transmitters. The commenter contended that if you assume that “immediately” means a few seconds, which was the limit of the technology, the cost of the system would increase as the gateway stations can only handle a certain volume of data.

Response: We do not agree it is necessary to define "immediately" at 40 CFR 63.2480(e)(3)(i)(C) (regarding the notification to operators that a pressure release is occurring). This language can be reasonably interpreted and implemented by each facility, based on their monitoring equipment, and specifying a time component would not meaningfully change the requirements that an owner/operator know when a PRD release is occurring at a facility.

Comment 107: Commenters requested the EPA revise the proposed requirements at 40 CFR 63.2480(e) to clarify that facilities must comply with (e)(3), (6), (7), and (8) for all PRDs, if they are in organic HAP service. One commenter noted that the first sentence in 40 CFR 63.2480(e) indicates (e)(1) and (2) apply to PRDs in organic HAP gas or vapor service. The commenter added that the second sentence of 40 CFR 63.2480(e) references the pressure relief management requirements but specifies that facilities must comply with these requirements for all PRDs, not just those in organic HAP gas or vapor service. The commenter contended that this appears to be an oversight because if the language in the second sentence were finalized as proposed, the pressure relief management requirements would then apply to PRDs located on equipment that do not contain HAP and are outside the scope of the standards.

Response: It was our intent that the requirements in 40 CFR 63.2480(e)(3), (6), (7), and (8) apply to only PRDs in organic HAP service; therefore, we are revising the final rule as requested by the commenter.

Comment 108: One commenter requested that the EPA delete the second sentence in 40 CFR 63.2480(e)(2)(ii). The commenter argued that instrument monitoring is already covered by 40 CFR 63.2480(e)(2)(i) and should only be required if the rupture disk is not replaced within 5 days. The commenter said rupture disks are used upstream of a pressure relief valve to prevent leakage from the pressure relief valve under normal operating conditions. The commenter pointed out that the EPA acknowledged this in the 2015 Petroleum Refinery RTR, where the EPA said: "In the final rule, we are revising 40 CFR 63.648(j)(2)(ii) to allow the owner/operator to either replace the rupture disk or demonstrate a leak rate of less than 500 ppm must[sic] no later than 5 calendar days after the PRD returns to organic HAP service." However, the commenter further noted this revision was not actually implemented in the final refinery rule requirements.

The commenter also requested the EPA revise the proposed language in 40 CFR 63.2480(e)(2)(iii) to address situations where a facility can stop atmospheric emissions after a pressure release event without replacing the rupture disk within 5 calendar days, for example, by valving out the rupture disk. In addition, the commenter said that if facilities initiate shutdown procedures shortly after a pressure release event or are in the process of shutting down when a pressure release event occurs, then the requirement to replace the rupture disk within 5 calendar days should not apply. The commenter argued that if a pressure release event occurs shortly before shutdown, then facilities should be allowed to determine when to replace the rupture disk and not be constrained by a 5-calendar day requirement because the process is not in operation to generate emissions.

Another commenter contended that pressure relief valves that are equipped with an upstream rupture disk should be recognized as having adequate monitoring because usually there is pressure monitoring of the space between the rupture disk and the pressure relief valve. The commenter added that the rule should also recognize situations where the pressure monitor may indicate a leak between the rupture disk and the relief valve without a release to the atmosphere, and the owner/operator should not be required to treat these scenarios as a PRD release. The commenter added that typically, pressure relief valves are equipped with an upstream rupture disk in order to prevent process materials from corroding or otherwise impacting the pressure relief valve.

One commenter requested clarification whether it would be an acceptable means of determining a disk break when vessel(s) cannot hold pressure or pull vacuum.

One commenter noted that many batch chemical manufacturing operations occur at atmospheric pressures, with only transfers being greater than 2.5 psig. The commenter asked whether rupture disks are subject to continuous monitoring at all times or only when exceeding 2.5 psig. The commenter also requested clarification if there be a monitoring exemption when exceeding 2.5 psig and in service less than 300 hours per year. The commenter also asked whether rupture disk monitoring is exempt when operating under vacuum. In addition, the commenter noted that batch chemical reactors may operate with two rupture disks in series; and requested clarification whether monitoring be required on both disks. The commenter contended that in batch chemical manufacturing many pieces of process equipment may not be used on a daily, weekly, or even monthly basis; and requested the EPA consider a continuous monitoring exemption for rupture disks in Group 1 HAP service less than 300 hours per year.

Response: We agree with the commenter and have revised the final rule text at 40 CFR 63.2480(e)(2)(ii) and (iii) to remove the requirement to conduct monitoring if rupture disks are replaced. The proposed language diverged from what 40 CFR part 63, subpart UU required for PRDs, which was not our intent. The final language is consistent with the PRD pressure release monitoring requirements in 40 CFR part 63, subpart UU.

Also, we agree with the commenter that it is not necessary to replace the rupture disk within 5 calendar days if the rupture disk is isolated from the process or the process is shutting down. However, we are not revising rule language to include these specific situations because the current requirements already allow for them. If a rupture disk is valved-out or isolated from the process, the requirement to replace the rupture disk within 5 calendar days is no longer applicable. In this situation, the rupture disk would no longer be contacting organic HAP and would thus not meet the definition of "equipment" that is subject to the requirements in 40 CFR 63.2480(e). The EPA also interprets the language at 40 CFR 63.2480(e)(2)(iii) to not require replacing the rupture disk within 5 calendar days if the facility is shutting down the process. In this situation, the rupture disk would need to be replaced before startup of the equipment.

Each facility must determine an appropriate approach to comply with the PRD monitoring requirements at 40 CFR 63.2480(e)(3)(i). These requirements include being able to identify a pressure release to the atmosphere, recording the time and duration of a release, and notifying operators there is a pressure release to the atmosphere. As such, facilities have flexibility to determine an appropriate monitoring system, including determining whether monitoring pressure is sufficient. Based on the scenarios outlined by the commenters, a rupture disk leak upstream of a relief valve or another rupture disk would not be a PRD release if there is not a release to the atmosphere; however, the facility must have appropriate monitoring in place to determine when there is a release to the atmosphere.

We updated the definition of PRD, as noted elsewhere in this document to exclude PRDs that are actuated either by a pressure of less than or equal to 2.5 psig or by a vacuum. Per this language, the rupture disks on batch operations discussed by the commenter would likely fall under the PRD definition and must be monitored accordingly, assuming the PRD would be actuated at a pressure exceeding 2.5 psig.

We are not revising the rule language to include exemptions for PRDs on equipment that operate infrequently (*e.g.,* less than 300 hours per year). While batch operations may operate infrequently, they could still release significant quantities of emissions through a PRD release.

Comment 109: One commenter requested clarification whether continuous PRD monitoring is required for Group 2 operations since emissions are already quantified for Group 2 operations. The commenter also asked that if it is required, whether compliance could be attained by incident investigation and reporting uncontrolled emissions.

Response: The PRD requirements apply to all PRDs in organic HAP service at a MON facility, and we are not including different requirements for PRDs associated with Group 2 operations.

Comment 110: Commenters requested that the EPA define “thermal expansion relief valve” similar to how it is defined in 40 CFR 63.641; however, contended that the definition in 40 CFR 63.641 contradicts itself and should be modified prior to incorporation into the MON standards. The commenters explained that the first sentence states that thermal expansion relief valve means a pressure relief valve designed to protect equipment from excess pressure due to thermal expansion of blocked liquid-filled equipment or piping due to ambient heating or heat from a heat tracing system. The commenters continued that the second sentence states that valves designed to protect against excess pressure due to fire contingency are not thermal expansion relief valves, which conflicts with the first sentence of the definition because fire is clearly ambient heating. Commenters requested that the EPA adopt the following definition of thermal expansion valve “Thermal expansion relief valve means a pressure relief valve designed to protect equipment from excess pressure due to thermal expansion of blocked liquid-filled equipment or piping due to ambient heating or heat from a heat tracing system.”

Response: We agree with the comment to include the definition of “thermal expansion relief valve” from 40 CFR 63.641 in the final rule; however, for consistency with the Petroleum Refinery NESHAP, we are not removing the second sentence as requested by the commenter. We note that the thermal expansion relief valve exemption that we are finalizing at 40 CFR 63.2480(e)(5)(ii) is not intended to be used for a PRD release event that results from a fire. Specifically, ambient heating, in the context of this definition, refers to heating that occurs as a result of changes in outdoor weather (*e.g.,* expansion due to exposure to heat from sunlight).

Comment 111: Commenters requested clarification that “replacing” in the context of 40 CFR 63.2480(e)(8) means installing a new pilot-operated valve, not reinstalling the same valve after inspection or maintenance. The commenter stated that facilities routinely remove and replace PRDs for inspection to assure their reliability, typically annually. The commenter added that given the infrequency of releases from a PRD, it is not justified to require replacement of all flow type pilot-operated PRDs within a year of the compliance date. The commenter noted that because the EPA does not appear to have addressed such a burden in the rulemaking docket, they believe that it is not the EPA's intent to require replacement of pilot-operated valves when conducting routine inspection or maintenance.

Commenters requested revising 40 CFR 63.2480(e)(2)(i) to include an additional compliance option that allows facilities, as an alternative to conducting monitoring, to replace a PRD following a release with a PRD that has been bench tested for leaks. The commenter noted that some facilities practice replacement of PRDs after they release with a new or refurbished valve. The commenter added that such valves are submitted to maintenance shops that have earned the National Board of Boiler and Pressure Vessel Inspectors' VR Stamp Certificate of Authorization to repair relief valves. The commenter added that the certified shop repairs, cleans, and conducts hydrostatic or pneumatic leak tests on PRDs prior to being placed in service and thus, such replacement PRDs should not be required to conduct duplicative monitoring once placed into service.

Response: We are not revising the flowing pilot-operated PRD requirements at 40 CFR 63.2480(e)(8). As stated in the proposal preamble, the requirement to prohibit the future installation of flowing pilot-operated PRDs was added specifically to prevent the continuous release of emissions that occurs when they are actuated. Adding the clarification sought by the commenters could provide a loophole to the requirements, such that a facility might choose to only replace flowing pilot-operated PRDs during their routine inspection and maintenance program and could thus continue to operate flowing pilot-operated PRDs indefinitely.

In addition, we are not revising 40 CFR 63.2480(e)(2)(i) to include an additional compliance option after a pressure release. While we fully support facilities implementing best practices to ensure PRDs are operating properly, 40 CFR 63.2480(e)(2)(i) is an existing requirement that owners and operators have always had to comply with.

Comment 112: Commenters requested that the EPA remove the phrase "(maintenance programs and operator training may count as only one redundant prevention measure)" from proposed 40 CFR 63.2480(e)(3)(ii)(B). One commenter explained that maintenance programs and operator training address two separate fundamental potential causes of pressure release events and should be treated as separate prevention measures. The commenter stated that maintenance programs address the integrity of equipment by ensuring mechanical, electrical, and pneumatic systems and structure are as designed and functioning properly. The commenter continued that although an operator may execute a startup, shutdown, or normal operating procedure exactly as intended, the process equipment can only function as well as it is maintained. The commenter added that operator training, by contrast, addresses the proper operation of equipment and process systems. The commenter stated that even with equipment in perfect working order, deviation from standard operating procedure, or lack of process knowledge in an emergency, may lead an operator to open an incorrect valve or operate equipment in the wrong sequence, resulting in a pressure release event. The commenter concluded that because operator training and maintenance programs are independent, non-duplicative, and address separate causes of pressure release events, the EPA should consider them as such and remove the phrase "(maintenance programs and operator training may count as only one redundant prevention measure)" from proposed 40 CFR 63.2480(e)(3)(ii)(B).

Response: While maintenance programs and operator training can be independent programs, we disagree with commenters that we should not count these activities combined as one redundant prevention measure given the linkages that exist between the two and the prevalence of such programs already in existence at MON facilities. We purposefully provided a variety of the prevention measures and the EPA's intention is for facilities to incorporate this variety, including continuous monitoring or controls, as part of the prevention measures and not just continue solely with the status quo of continued operator training and maintenance prevention. Thus, no change is made being made as a result of this comment

Comment 113: A commenter requested that, in order to avoid confusion as to whether a deviation has occurred, the EPA should clarify the data availability requirements and deviation reporting requirements for the proposed PRD monitoring requirements under 40 CFR 63.2480(e)(3) if there is an instrument malfunction and or loss of data for short durations in time. The commenter pointed out that the PRD monitoring language in 40 CFR 63.2480(e)(3)(i) and associated recordkeeping in 40 CFR 63.2525(q) and reporting in 40 CFR 63.2520(e)(15) do not include any requirements for recordkeeping and reporting for the proposed parameter monitoring requirements for PRDs relative to data availability and loss of data.

Response: We disagree with the commenter that instrument malfunction or downtime provisions are necessary for the PRD monitor required at 40 CFR 63.2480(e)(3)(i). Owners or operators must always be able to determine when a PRD releases. The commenter suggests that if the PRD monitor is down that this in and of itself could lead to a deviation of the work practice standard. However, the work practice standard focuses on PRD releases, which are infrequent events. If the PRD monitor is down for any reason, it would be incumbent upon the owner or operator to still be able to monitor for and determine whether a PRD releases during this time period.

Comment 114: A commenter requested that the EPA amend the language in 40 CFR 63.2480(e)(5)(i) to exclude PRDs in liquid service (*i.e.*, both heavy liquid and light liquid service), as defined by 40 CFR 63.1020 of Subpart UU or 40 CFR 65.103(f) of Subpart F. The commenter said PRDs in liquid service (both heavy liquid and light liquid) are currently regulated under the existing work practice standard in 40 CFR 63.169 of Subpart H, 40 CFR 63.1029 of Subpart UU, and 40 CFR 65.110 of Subpart F of the Consolidated Air Rule (CAR) which still apply for purposes of complying with the equipment leak provisions in 40 CFR 63.2480; therefore, PRDs in light liquid service subject to 40 CFR 63.169 of Subpart H, 40 CFR 63.1029 of Subpart UU, and 40 CFR 65.110 of Subpart F of the CAR should also not also be regulated by the proposed pressure release management requirements in 40 CFR 63.2480(e)(3).

Response: We disagree with the comment. In proposing not to subject PRDs to the work practice standards, we explained at proposal that releases from a PRD in heavy liquid service would have a visual indication of a leak and any repairs to the valve would have to be further inspected and, if necessary, repaired under the existing equipment leak provisions. This reasoning would not extend to PRDs in liquid service. Additionally, we modeled the applicability of the PRD provisions after the SCAQMD rule, based on a MACT floor analysis and considering the appropriate requirements for these types of PRDs. Heavy liquid PRDs are excluded in the SCAQMD rule, but light liquid PRDs are not. No change is being made to the final rule as a result of this comment.

Comment 115: One commenter objected to the EPA not estimating reductions of HAP and VOC emissions from the proposed PRD standards. The commenter contended that the EPA is able to quantify emissions as they were able to discount the operating costs for the PRD provisions due to "recovery credits" in a supporting document.

Response: The commenter misinterpreted the information from a supporting memorandum, and the EPA does not have sufficient information to estimate emissions reductions or any potential recovery credits for the PRD work practice standard given the nature of a PRD release being sudden and infrequent in nature.[125]

Comment 116: One commenter identified several incorrect cross-references. The commenter listed proposed 40 CFR 63.2520(e)(15)(i) should apply to the operating requirement in 40 CFR 63.2480(e)(1), proposed 40 CFR 63.2520(e)(15)(ii) should be revised to apply to 40 CFR 63.2480(e)(2) as a whole, and 40 CFR 63.2520(e)(15)(iii) appears to apply to 40 CFR 63.2480(e)(3), not 40 CFR 63.2480(e)(2)(iii).

Response: We agree with the commenter's suggested edits to correct cross-referencing edits in 40 CFR 63.2520(e)(15) and are revising the final rule as requested.

7.4 Closed Vent Systems Containing Bypass Lines

Comment 117: Commenters support the proposed requirements at 40 CFR 63.2450(e)(6) for closed vent systems containing bypass lines.

Response: We are taking final action on the closed vent system bypass line requirements at 40 CFR 63.2450(e)(6).

Comment 118: A commenter requested that the EPA clarify that a violation only occurs if a vent stream that otherwise requires control is diverted. The commenter said that as proposed, the diversion of any vent stream appears to be a violation. Similarly, another commenter said that a bypass not exceeding emission limitations should not be a deviation. The commenter provided an example where it may be possible to temporarily use an alternative control device, such as a carbon adsorption system, in the event of a malfunction or other issue that prevents routing the vent to the primary control device.

Also, some commenters said the EPA should clarify in the preamble to the final rule why analyzer vents are not exempt from the bypass line requirements in 40 CFR 63.2450(e)(6). The commenters argued that if an analyzer vent is not a continuous process vent under both the HON and the MON, then it should not be considered a bypass either and thus should be included in the list of exemptions at 40 CFR 63.2450(e)(6). The commenters said that the HON, which the proposed MON standards reference regarding the definition of a continuous process vent, specifically exempts analyzer vents in 40 CFR 63.107(h)(9).

Finally, a commenter requested the EPA clarify why the reference to "high point bleeds" is no longer specifically included in the bypass exclusions in proposed 40 CFR 63.2450(e)(6).

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[125] The commenter cited the memorandum, *Economic Impact and Small Business Screening Assessments for the Proposed Amendments to the National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing*, available at EPA-HQ-OAR-2018-0746-0029.

Response: We did not intend that the use of the bypass line is always an emissions standards violation; rather, only when that use specifically diverts emissions subject to the requirements in Tables 1 through 7 of 40 CFR part 63, subpart FFFF. We have clarified 40 CFR 63.2450(e)(6) as a result of this comment.

In addition, we are retaining the revisions to not exempt analyzer vents and high point bleeds from the bypass requirements at 40 CFR 63.2450(e)(6). Given that we proposed to not exempt analyzer vents and high point bleeds from the bypass requirements, it was also our intent to remove the analyzer vent exclusion from the definition of continuous process vent at 40 CFR 2550(i). Therefore, in the final rule, we are removing the 40 CFR 63.107(h)(9) exemption for "a gas stream exiting an analyzer" from the definition of continuous process vent at 40 CFR 2550(i) and we are requiring that these kinds of vents meet the standards applicable to process vents at all times. As previously mentioned, we are revising the final rule such that the provisions in 40 CFR 63.2450(e)(6) are specific to bypasses of emissions subject to the requirements in Tables 1 through 7 of 40 CFR part 63, subpart FFFF. Analyzer vents, or "onstream analyzers," generally refer to sampling systems that directly feed to an analyzer located at a process unit and venting is expected to be routine (continuous or daily intermittent venting). We also note that sampling connection systems have always been required to be part of a closed loop, closed purge, or closed vent system under our equipment leak standards (*e.g.,* 40 CFR 63.1032(b)). High point bleeds are expected to be used primarily on liquid transport lines to collect and remove gases that might enter the system. In these applications, we agree that the analyzer vent or high point bleed would not be a bypass of emissions subject to the requirements in Tables 1 through 7 of 40 CFR part 63, subpart FFFF, rather the analyzer vent or high point bleed would be a process vent itself, thus engineering calculations would be used to determine if this vent is a process vent requiring control as specified in Tables 1 through 3 of 40 CFR part 63, subpart FFFF. In rare instances, the owner or operator may classify a release point on a gaseous vent system associated with an MCPU as an "analyzer vent" or a "high point bleed." In this case, the analyzer vent or high point bleed when open acts as a bypass line (allowing direct atmospheric release) of a process vent stream. These examples demonstrate that depending on the circumstance, an analyzer vent or a high point bleed could be construed as a process vent or a bypass line. Thus, we see no reason to categorically allow use of analyzer vents or high point bleeds to bypass controls required for emissions subject to the requirements in Tables 1 through 7 of 40 CFR part 63, subpart FFFF.

Comment 119: Some commenters requested that the EPA add the corresponding citations for open-ended lines and valves in 40 CFR 60.482-6a(a)(2), (b), and (c); 40 CFR 63.167(a), (b) and (c); 40 CFR 63.1033(b); and 40 CFR 65.114(b), similar to the 40 CFR part 60, subpart VV citations, 40 CFR 60.482-6(a)(2), (b) and (c). The commenters said adding these additional citations will help clarify for facilities and regulators that open-ended valves or lines for which the facilities follow the requirements in any of the aforementioned provisions are not subject to the proposed bypass requirements.

A commenter also requested the EPA add specific language to 40 CFR 63.2450(e)(6) regarding the exclusion for the open-ended valves and line that use a cap, blind flange, plug or second valve and following the open-ended valve and line requirements in the other subparts referenced by the equipment leak provisions in the MON, specifically: 40 CFR part 63, subpart H (40 CFR 63.167(a), (b) and (c)); 40 CFR part 63, subpart UU (40 CFR 63.1033(b); and 40 CFR 65, subpart F (40 CFR 65.114(b)). The commenter stated that although this is what the EPA probably intends to do with the more general exclusion of "equipment subject to §63.2480", adding these other specific subparts to the NSPS VV exclusion sentence would help clarify the EPA's intent. Finally, the commenter requested that the EPA clarify that the phrase "follow the requirements" in 40 CFR 63.2450(e)(6) does not necessarily mean that that facility must be subject to that regulation. The commenter argued that as long as they meet the requirements for open-ended valves or lines that use a cap, blind flange, plug or second valve, then that equipment is not subject to the bypass provision in 40 CFR 63.2450(e).

Response: We agree with the commenter that open-ended lines and valves that follow the requirements specified in 40 CFR 60.482-6a(a)(2), (b), and (c); 40 CFR 63.167(a), (b) and (c); 40 CFR 63.1033(b); and 40 CFR 65.114(b) are not subject to 40 CFR 63.2450(e)(6). The intent of the proposed text was to exempt any open-ended lines and valves that follow requirements that are exactly like 40 CFR 60.482-6a(a)(2), (b), and (c) even if the requirements are in another regulation. We have revised 40 CFR 63.2450(e)(6) as a result of this comment.

Comment 120: A commenter requested the EPA clarify that the use of a potential bypass vent as a maintenance vent, per the proposed requirements in 40 CFR 63.2455(d), does not constitute a bypass under 40 CFR 63.2450(e)(6). The commenter said that by meeting the requirements in proposed 40 CFR 63.2455(d), facilities are controlling emissions during maintenance periods and thus those emissions should not be considered a bypass, even though during non-maintenance periods the same emission point (*e.g.*, a valve) could be considered a bypass.

Response: No change is being made to the final rule as a result of this comment. Releases from a maintenance vent are not considered bypasses if they comply with the maintenance vent requirements and the vent is only used as a result of startup, shutdown, maintenance, or inspection of equipment where equipment is emptied, depressurized, degassed, or placed into service. We note that maintenance vents may appear to be a bypass line if opened during normal operations; however, as long as the vent line is opened only for startup, shutdown, maintenance, or inspection, these vents can be classified as a maintenance vent. This does not eliminate the need to monitor the vent line for flow if the vent line "could" act as a bypass line for a Group 1 process stream; however, special provisions apply to these vents when they are only used for startup, shutdown, or maintenance. If the bypass line may be used for other purposes, including routine venting or emergency venting due to equipment or control device malfunctions, then the maintenance provisions are not applicable, and the bypass provisions apply and it is a violation of the emissions standards to divert a Group 1 process vent stream to the atmosphere or a control system that does not comply with the requirements in Tables 1 through 3 of 40 CFR part 63, subpart FFFF.

Comment 121: A commenter said that contrary to the EPA's statement in the preamble that "…the MON requires the owner or operator to either (1) install, maintain, and operate a continuous parametric monitoring system for flow on the bypass line…" the MON does not require a continuous parameter monitoring system, rather, only a flow indicator is required. Another commenter requested the EPA allow monitoring valve position as an option in lieu of flow indicators to determine time and duration of possible bypasses.

These commenters requested that the EPA remove the requirement to record and report the volume of gas, the concentration of organic HAP in the gas, and the resulting emissions of organic HAP that bypassed the control device from the recordkeeping and reporting requirements in 40 CFR 63.2520(e)(12) and 40 CFR 63.2525(n). A commenter said that without flow measurements or other indicators such as pressure and temperature, upon finding a closed valve with a missing car-seal or lock in the non-locked position, facilities have no way to estimate emissions, much less an indication that emissions actually occurred. The commenter said car-seals can sometimes be accidently knocked from a valve during maintenance on other near-by equipment; and after performing maintenance and before returning equipment to service, facility personnel may close a maintenance vent, but fail to return the lock to the locked position. The commenter argued that in these cases, no bypass emissions would have occurred, but as proposed, the recordkeeping and reporting requirements would require estimates of HAP emissions. The commenters said that the EPA has failed to provide any justification for requiring these emissions estimates considering they are duplicative with those required under CERCLA, EPCRA, and state-level emission event or upset emission reporting, and state emissions inventory reporting; and the EPA has also failed to account for the additional recordkeeping and reporting burden in their supporting statement for the proposed rule. A commenter contended that for every record required, even duplicative records, there is a cost associated with each individual rule for certifying compliance with the requirements in that specific rule.

Response: We proposed that use of a bypass line at any time on a closed vent system to divert a vent stream to the atmosphere or to a control device not meeting the requirements specified in Tables 1, 2, 4 or 5 to 40 CFR part 63, subpart FFFF is an emissions standards violation. Our proposal was for the purpose of ensuring, through monitoring, that the applicable emissions standards are continuous and are not circumvented by a bypass of the control device. These requirements are necessary to show compliance with the MON MACT standards, regardless whether, in some instances, they may be duplicative to the EPCRA and/or CERCLA. Furthermore, owners and operators have always had a general duty to minimize emissions, and bypassing a control device is generally not reflective of this general duty.

We have determined that the use of a flow indicator along with engineering estimates and process knowledge are sufficient for the purpose of estimating the magnitude of the release without having to install new quantitative flow monitoring systems. Therefore, we did not propose to install flow CPMS, and instead, retained the existing requirement in 40 CFR part 63, subparts G, H, and SS, and 40 CFR part 65, subpart F to have flow indicator monitoring systems. Although the option to secure the bypass line valve in the non-diverting position with a car-seal or a lock-and-key type configuration does not specifically require a flow indicator, the owner or operator can certainly install one at their discretion. The onus is on the owner and operator to determine if a bypass line valve with a broken car-seal or an opened lock-and-key diverted regulated flow to the atmosphere. Nonetheless, the requirement at 40 CFR 63.2525(n) already clarifies that the owner or operator can estimate the volume of gas, the concentration of organic HAP in the gas, and the resulting emissions of organic HAP that bypassed the control device using engineering calculations and process knowledge. Given bypass events should be infrequent, we consider the reporting requirements to be infrequent and minimal.

7.5 Maintenance Activities

Comment 122: Commenters said that they supported the EPA's conclusion that emissions from maintenance activities should be subcategorized based on class. The commenter said that they generally agree that the proposed requirements and options in 40 CFR 63.2455(d) represent the emissions reductions achievable by the best performing sources. A commenter stated support for the maintenance vent provisions, but recommended subcategorizing the emissions as maintenance vents based on class, similar to PRDs, and include a work practice to regulate these emissions in the final rule.

Response: We are taking final action on the proposed work practice standards for when process equipment is opened to the atmosphere during "maintenance events". We consider maintenance activities on process equipment to be a separate class of startup and shutdown emissions because the rule must allow for a point in time when the equipment can be opened for maintenance and any residual HAP vapors in the equipment vented to the atmosphere. With the removal of SSM requirements, as proposed, a standard specific to equipment openings did not exist. As such, we reviewed available permitting data to determine how the best performers are controlling equipment opening emissions. We determined that the best performers meet certain conditions before opening equipment to the atmosphere. Residual emissions from equipment openings are a form of fugitive emissions for which it is not practicable to collect in a conveyance suitable for measuring emissions. Therefore, we concluded that it is not practicable to specify a numerical emission limit, and we proposed a work practice standard consistent with CAA section 112(h). During a maintenance shutdown, the work practice requires that operators continue to vent emissions to a control device in compliance with the NESHAP until certain conditions are met. These conditions are not alternative standards, but are applicability provisions to specify, consistent with safety and good operating practice, when the equipment can be opened to the atmosphere.

Comment 123: Commenters requested the EPA relocate the maintenance vent provisions from 40 CFR 63.2455(d) to a new paragraph under 40 CFR 63.2450. The commenters argued that by the EPA including maintenance vents under the requirements for continuous process vents in proposed 40 CFR 63.2455(d), the vent must first meet the definition of continuous process vent in 40 CFR 63.2550, but a maintenance vent may not meet all the criteria to be a continuous process vent. The commenters said that most maintenance vents are more intermittent in nature and not originate as a continuous flow from a continuous operation. Commenters also requested that the EPA add a definition for maintenance vent under 40 CFR 63.2550. The commenters also argued that determining which requirements a maintenance vent must meet becomes confusing if the EPA regulates maintenance vents under the continuous process vent provisions in 40 CFR 63.2455(d), and asked several rhetorical questions:

- If a maintenance vent is released through the same point as a continuous process vent or batch process vent, then does the HAP associated with that maintenance vent somehow need to be factored into total resource effectiveness index value calculation for continuous process vents or the uncontrolled organic HAP determination for batch process vents?
- If a maintenance vent could potentially include hydrogen halide / halogen HAP, then does the EPA expect the owner or operator to estimate how much hydrogen halide / halogen HAP might be vented over a year's timeframe to determine whether the control requirements for hydrogen halide / halogen HAP in 40 CFR 63.2465 might apply?

- Does the EPA expect the owner or operator to control hydrogen halide / halogen HAP in maintenance vents if the MCPU has total uncontrolled hydrogen halide / halogen HAP emissions greater than 1,000 pounds per year as required by Table 3 to 40 CFR part 63, subpart FFFF?
- Are releases that meet the definition of a maintenance vent from batch processes subject to the maintenance vent provisions in 40 CFR 63.2455?

The commenters said that if the EPA decides to keep the maintenance vent provisions in 40 CFR 63.2455(d), then maintenance vent could potentially become subject to the requirements for process vents in EtO service if the EtO is greater than or equal 1 ppmv anywhere in the process (based on the proposed definition of "in ethylene oxide service"). The commenter argued that an owner or operator could have a difficult time trying to immediately comply with the requirements for process vents in EtO service in 40 CFR 63.2492 and 40 CFR 63.2493 for maintenance type vents that are intermittent in nature and only generated as a result of startup, shutdown, maintenance, or inspection of equipment.

The commenters also questioned whether a vent can be designated as a maintenance vent and comply with the maintenance vent provisions even if the vent could be at a physical location that would be considered a closed vent system bypass for a Group 1 emission point if vented during normal operations. The commenters cited a memorandum from the EPA to the American Petroleum Institute dated April 7, 2017 where the EPA says that releases from a maintenance vent are not considered bypass if they comply with the maintenance vent requirements and the vent is only used as a result of a startup, shutdown, maintenance, or inspection of equipment where equipment is emptied, degassed, or placed into service.

Finally, commenters urged that if the EPA moves the maintenance vent provisions from proposed 40 CFR 63.2455(d) to a new 40 CFR 63.2450(v), then the EPA should amend the cross-references to 40 CFR 63.2455(d) within 40 CFR 63.2525(p) and 40 CFR 63.2520(e)(14). The commenters added that some language would also need to be amended in the recordkeeping / reporting sections in order to be consistent. A commenter specifically requested the EPA clarify that a vent designated as a maintenance vent is only subject to the maintenance vent provisions, including the associated maintenance vent recordkeeping and reporting requirements in 40 CFR 63.2525(p) and 40 CFR 63.2520(e)(14).

Response: We agree with the commenters that a maintenance vent would be unlikely to meet the criteria to be a continuous process vent because a maintenance vent is more likely to be intermittent in nature and/or periodically discharged during operation of MCPU. Therefore, we agree with the commenters that the maintenance vent requirements proposed at 40 CFR 63.2455(d) should be located elsewhere in the final rule. As requested by the commenters, we have moved the maintenance vent requirements in the final rule from 40 CFR 63.2455(d) to 40 CFR 63.2450(v). We also revised the associated recordkeeping and reporting requirements in the final rule to reflect this change.

We also agree with commenters that releases from a maintenance vent are not considered bypass if they comply with the maintenance vent requirements and the vent is only used as a result of startup, shutdown, maintenance, or inspection of equipment where equipment is emptied, depressurized, degassed, or placed into service. We note that maintenance vents may appear to be a bypass line if opened during normal operations; however, as long as the vent line is opened only for startup, shutdown, maintenance, or inspection, these vents can be classified as a maintenance vent. This does not eliminate the need to monitor the vent line for flow if the vent line "could" act as a bypass line for a Group 1 process stream; however, special provisions apply to these vents when they are only used for startup, shutdown, or maintenance. If the bypass line may be used for other purposes, including routine venting or emergency venting due to equipment or control device malfunctions, then the maintenance provisions are not applicable, and the bypass provisions apply and it is a violation of the emissions standards to divert a Group 1 process vent stream to the atmosphere or a control system that does not comply with the requirements in Tables 1 through 3 of 40 CFR part 63, subpart FFFF.

Comment 124: Commenters requested the EPA retain flexibility in the rule by leaving the maintenance vent provision as an alternative to complying with the emission limitations for Group 1 emission points or the Group 2 emission point requirements because MON facilities may prefer to identify maintenance type vents that recur routinely as a Group 2 emission point (*i.e.*, a storage tank vent, a continuous or batch process vent, a transfer rack vent, or possibly an exempt continuous or batch process vent) if the Group 2 criteria or the exemption cut-offs are met instead of complying with the maintenance vent provisions. Commenters also stated that other companies may have already included or prefer to classify a maintenance type vent as a Group 1 emission point if the maintenance vent stream is routed through the same manifolded header that is already controlled to meet Group 1 emission limitations. A commenter pointed out that this flexibility is included in the Petroleum Refinery NESHAP at 40 CFR 63.643(c).

Another commenter also recommended that the EPA retain flexibility in the rule by allowing the owner/operator the choice to follow either the maintenance vent provisions or to include maintenance activities in the process vent group determinations, noting that some companies may prefer determining group status to following the maintenance vent provisions.

A commenter requested that the EPA clarify that information on maintenance vents is not required for the Notification of Compliance Status (NOCS) report, similar to the Refinery Sector Rule. The commenter stated that it is unclear whether maintenance vents should be included in the NOCS, noting that a facility can have a multitude of potential maintenance vents. The commenter contended that identification of each and every vent, in addition to "emissions profiles…engineering analyses, design evaluations…and calculations used to demonstrate initial compliance" is overly burdensome. The commenter said the EPA could clarify this point by adding an extra sentence to the maintenance vent provisions such as: "Any vent designated as a maintenance vent is only subject to the maintenance vent provisions in this paragraph and the associated recordkeeping and reporting requirements in 40 CFR 63.2525(p) and 40 CFR 63.2520(e)(14), respectively. Maintenance vents are not required to be identified in a Notification of Compliance Status report."

Response: At proposal it was our intent to be consistent with the Petroleum Refinery NESHAP and clarify that a maintenance vent is only subject to the maintenance vent provisions (and the associated recordkeeping and reporting requirements), and the owner or operator is not required to identify maintenance vents in a NOCS report. Therefore, we are revising the final rule at 40 CFR 63.2450(v) to reflect this. Note, for reasons discussed elsewhere in this document, we have moved the maintenance vent requirements in the final rule from 40 CFR 63.2455(d) to 40 CFR 63.2450(v).

Comment 125: Commenters requested the EPA amend 40 CFR 63.2450(d)(1) to provide more flexibility for facilities that currently are not equipped with a control device. The commenters recommended amending paragraph (d)(1) to add flexibility, such washing and/or purging the equipment as much as practical or allowing the equipment to be depressurized to a process or fuel gas system, or alternatively, to clarify that no additional control is required if one of the conditions provided in (d)(1)(i) through (iii) is/are met without venting to a flare or non-flare control device. The commenters also said that as an alternative to their request, the EPA could clarify that no control device is needed if one of the conditions in 40 CFR 63.2450(d)(1)(i) through (iii) is met without control.

The commenters argued that for processes without control devices, complying with the maintenance vent provisions would not be an option based on the current language in 40 CFR 63.2455(d)(1) because it requires depressurizing the equipment to either a flare or non-flare control device until one of the conditions is met prior to venting to atmosphere; and installing control, parameter monitoring, conducting a performance test/design evaluation, etc. would be very costly and impractical to comply with the maintenance vent provisions. A commenter noted that although most facilities do have procedures in place to thoroughly clean equipment prior to opening, some facilities do not depressurize or degass equipment to a control device, but to atmosphere. The commenter added that the EPA did not assess the cost effectiveness of adding control for maintenance venting and assumed that control already exists for purging of equipment.

A commenter added that there should be flexibility to vent to a process or fuel gas system in addition to a control device, and recommended rewording of paragraph (d) so that depressurizing or degassing to a control device is not required for processes that do not have a control device and can meet the proposed maintenance vent standards without venting to control. Similarly, commenters stated that the EPA should also allow the option of removing process liquids and depressurizing equipment to a process or to a fuel gas system prior to venting. Commenters argued that this option would provide additional flexibility on where to purge process liquid. The commenter said it is a common practice to drain process liquids back to a process vessel or to a tank before taking piping or vessels out of service. A commenter argued that depressurizing back to the process avoids unnecessary emissions from incomplete combustion in a flare or other control device, avoids secondary emissions from any supplemental fuel required by the control device, and results in a cost savings for facilities because material from the equipment is recovered. The commenter also said that depressurizing to a fuel gas system reduces emissions because the material offsets supplemental fuel that would otherwise be required.

Response: The final maintenance vent work practice standards, as was proposed, allow for no additional control if one of the required conditions is met without venting to a flare or non-flare control device. The final rule text, as was proposed, purposely uses the phrasing "…until one of the following conditions, as applicable, is met." In other words, if one of the required conditions is already met, then the owner or operator is not required to use control and can vent to the atmosphere. Therefore, we disagree with the commenters' request for additional flexibility and no change is being made to the final rule as a result of this comment. Importantly, we point out that with the removal of SSM requirements, as proposed, a standard specific to equipment openings would not exist if we do not establish one in this final action. We consider these activities a separate class of startup and shutdown emissions because there must be a point in time when the equipment can be opened, and any emissions are vented to the atmosphere. As such, we reviewed available data to determine how the best performers are controlling equipment opening emissions. See the technical memorandum, *Review of Regulatory Alternatives for Certain Vent Streams in the Miscellaneous Organic Chemical Manufacturing Source Category*, which is available in the docket for this rulemaking (Docket ID No. EPA-HQ-OAR-2018-0746-0010) for additional details and discussion. Note, for reasons discussed elsewhere in this document, we have moved the maintenance vent requirements in the final rule from 40 CFR 63.2455(d) to 40 CFR 63.2450(v).

Comment 126: Commenters stated that the options for maintenance venting provided in 40 CFR 63.2455(d)(1)(i) through (iii) do not consider maintenance venting from emission points containing only hydrogen halide / halogen HAP and no VOC. Commenters urged that the lower explosive limit (LEL) option provided in (d)(1)(i) likely will not work on a maintenance vent containing only hydrogen halide and / or halogen HAP, and the 50 pound limit provided in (d)(1)(iii) is limited to VOC. The commenters noted that prior to opening equipment for maintenance purposes, equipment in hydrogen halide / halogen HAP service is typically purged free of materials and then washed with water and in some cases then purged with air to another tank or vessel or depressurized to a control device. Commenters recommended that the EPA either amend (1) the 10 percent LEL option provided in 40 CFR 63.2455(d)(1)(i) to include an outlet concentration limit of ≤20 ppmv hydrogen halide / halogen HAP option, consistent with the ≤ 20 ppmv emission limit in Table 3 of Subpart FFFF for hydrogen halides/halogen HAP, or (2) the 50 pound VOC option to include a ≤ 20 pound hydrogen halide / halogen HAP option (two percent of the 1,000 pound per year cut-off that triggers control).

Response: We agree that the proposed requirements for maintenance vents did not consider maintenance venting from emission points containing only hydrogen halide / halogen HAP and no VOC (or maintenance vents that contain mixtures of organic HAP and hydrogen halide/halogen HAP). We also agree with the commenters' recommendation to include, in the final rule, an outlet concentration limit of ≤20 ppmv hydrogen halide / halogen HAP as part of the 10 percent LEL option such that organic HAP would be controlled by complying with a 10 percent LEL limit while hydrogen halide/halogen HAP would be controlled by complying with the concentration limit. An outlet concentration limit of ≤20 ppmv hydrogen halide / halogen HAP is consistent with the current level of control for hydrogen halides/halogen HAP in Table 3 of Subpart FFFF. Therefore, we are revising the final rule to reflect this. However, we are not revising the final rule to include a mass limit for maintenance venting emission points that contain only hydrogen halide / halogen HAP and no VOC. The commenters' recommendation to include a 20-pound hydrogen halides/halogen HAP limit with the 50 pounds of total VOC option is not rooted to any MACT floor analysis. In addition, the commenters did not provide enough information for us to develop a mass limit standard for maintenance venting emission points that contain only hydrogen halide / halogen HAP and no VOC. Note, for reasons discussed elsewhere in this document, we have moved the maintenance vent requirements in the final rule from 40 CFR 63.2455(d) to 40 CFR 63.2450(v).

Comment 127: A commenter requested that the EPA exempt, at proposed 40 CFR 63.2455(d)(1)(iii), maintenance vents that do not have the potential to emit 72 pounds per day or more of VOC in lieu of 50 pounds per day or more of VOC. The commenter pointed out that this would be consistent with the refinery NESHAP. The commenter argued that some companies operate MON facilities that are co-located with refinery operations subject to 40 CFR part 63, subpart CC; and consistency in classification of process vents across rules is important to simplify compliance requirements and reduce regulatory burden for operations and maintenance staff.

Response: No change is being made to the final rule as a result of this comment. The proposed threshold of 50 pounds per day or more of VOC comes from TCEQ special permit conditions that focus explicitly on equipment openings (see https://www.tceq.texas.gov/assets/public/permitting/air/Guidance/NewSourceReview/mss/chem-mssdraftconditions.pdf). Of the 201 MON facilities, 34 are located in TX and we are not aware of more stringent programs that address maintenance activities such as equipment openings from MON facilities. Therefore, these permit conditions reflect what the best performers have implemented for equipment openings and we considered this information when establishing the MACT standard for both new and existing sources.

Comment 128: Commenters requested that the EPA simplify the recordkeeping requirements at 40 CFR 63.2525(p)(1) by removing the requirement to retain previous versions of the standard procedures for five years after equipment is purged/cleared prior to opening it to the atmosphere. A commenter said that 40 CFR 63.2525(p)(1) is unnecessary and duplicative in light of the proposed requirements in 40 CFR 63.2525(p)(4) to retain records when the de-inventory procedures were not followed; facilities essentially have to prove the de-inventory procedures were effective by measuring pressure or the LEL. A commenter stated maintaining copies of these procedure for five years is not important and creates a potential compliance issue if older copies are not filed and available. The commenter added that the current procedure will likely be similar to older versions if a review of the procedure is needed.

Response: We are not removing the last sentence in 40 CFR 63.2525(p)(1) that requires previous versions of the de-inventory procedures be maintained for five years because without the record, work practice standards for maintenance vents would be a significant challenge to enforce. No change is being made to the final rule as a result of this comment.

Comment 129: A commenter requested that the EPA provide additional clarification at 40 CFR 63.2525(p)(4) to specify that only records of the estimating procedures are required, and not individual records used to estimate the total quantity of VOC in the equipment each time the option is used under 40 CFR 63.2455(d)(1)(iii). The commenter pointed out that the EPA responded to commenters concerns regarding the intent of "records used to estimate the total quantity of VOC in the equipment" in the final Petroleum Refinery NESHAP RTR, stating that: "…the Agency expects these records will be of a general nature in many cases and it is not necessary to identify each maintenance vent location or activity that might be covered under this general record."

In addition, the commenter requested the EPA clarify that the recordkeeping requirements only apply to maintenance vent openings of equipment that contain greater than 50 or more pounds of VOC. The commenters said as written, the proposed recordkeeping requirement suggests the recordkeeping requirement as written suggests that exceeding the type and size limits, or not following the de-inventory procedures is a violation, even if there was less than 50 pounds of VOC in the equipment at the time of opening.

Response: We agree with the commenter that the requirement at 40 CFR 63.2525(p)(4) to maintain "records used to estimate the total quantity of VOC in the equipment" is expected to be of a general nature and it is not necessary to identify each maintenance vent location or activity that might be covered. Also, we are revising 40 CFR 63.2525(p)(4) to clarify that the records for each maintenance vent opening for which the deinventory procedures are not followed or for which the equipment opened exceeds the type and size limits, apply to each maintenance vent opening of equipment that contains greater than 50 pounds of VOC. Exceeding the type and size limits, or not following the de-inventory procedures is not a violation if there was less than 50 pounds of VOC in the equipment at the time of opening.

Comment 130: A commenter said the requirement for "records documenting actions taken to comply with other applicable alternatives and why utilization of this alternative is required" is unnecessary; and instead the EPA should only require a statement that none of the criteria could be met. In addition, commenters said the proposed requirement to maintain a record of the LEL in the equipment at the time of discharge is unnecessary. A commenter stated that by using this option, facilities have necessarily already determined the LEL is greater than 10%; and an additional record of the specific LEL value provides no additional benefit to the facility or the administrator. The commenter also requested that the EPA remove the requirement to record the duration of the blinding activity from 40 CFR 63.2525(p)(5). The commenter said the proposed requirement to record the duration of the blinding activity provides no additional value. The commenter stated that for safety reasons, blinding is completed as quickly as possible, but the time required can vary based on the size and location of the blind. The commenter contended that the EPA has not provided any reasonable justification for requiring this record as the information does nothing to demonstrate compliance with the applicable requirement. A commenter urged that these recordkeeping requirements were overly burdensome.

Response: No change is being made to the final rule as a result of this comment. We are requiring, in the final rule as proposed, that owners or operators document each circumstance under which proposed 40 CFR 63.2455(d)(1)(iv) is used, providing an explanation why the other criteria could not be met prior to equipment blinding and an estimate of the emissions that occurred during the equipment blinding process. Records documenting actions taken to comply with other applicable alternatives provides support for why the other criteria could not be met prior to equipment blinding. Maintaining a record of the LEL of the vapors in the equipment at the time of discharge provides additional proof that the LEL was indeed measured. Maintaining a record of the duration that the maintenance vent was open during of the blind installation or removal process provides additional support to estimating the total quantity of VOC in the equipment. Note, for reasons discussed elsewhere in this document, we have moved the maintenance vent requirements in the final rule from 40 CFR 63.2455(d) to 40 CFR 63.2450(v).

Comment 131: A commenter urged the EPA to add a definition of "maintenance vents" to provide clarity. The commenter stated that maintenance venting is generally intermittent, and that the EPA should consider including the batch process vent exemption threshold of 50 ppmv

HAP in the definition. The commenter argued that a 0.005 weight percent cutoff should be included for continuous maintenance vents based on the definition in MON for continuous process vents. The commenter suggested the following definition: "*Maintenance vent* means a venting activity that is only used as a result of startup, shutdown, maintenance, or inspection of equipment where equipment is emptied, depressurized, degassed, or placed into service. A maintenance vent having less than a total HAP concentration of 50 ppmv or 0.005 weight percent HAP per maintenance activity is exempt from the maintenance venting work practice standards."

Response: We disagree with the comment. The final rule text, as was proposed, already clarifies what we mean by a maintenance vent. An owner or operator may designate any process vent as a maintenance vent if the vent is only used as a result of startup, shutdown, maintenance, or inspection of equipment where equipment is emptied, depressurized, degassed, or placed into service. In this context, "any process vent" could mean a batch process vent or continuous process vent as defined by 40 CFR 63.2550(i). We acknowledge, as stated elsewhere in this document, that a maintenance vent would not meet the criteria to be a continuous process vent because a maintenance vent is more likely to be intermittent in nature and/or periodically discharged as a result of startup, shutdown, maintenance or inspection activities during operation of MCPU. As such, we have moved the maintenance vent requirements in the final rule from 40 CFR 63.2455(d) to 40 CFR 63.2450(v).

8.0 SSM Provisions

8.1 General Comments

Comment 132: Many commenters supported the EPA's proposal to remove exemptions for periods of SSM. One of these commenters said the SSM exemption is contrary to the CAA and the EPA must remove the SSM exemption to satisfy CAA sections 112(d)(6) and 112(f)(2). Another of these commenters said that releases from malfunction events should not be allowed to be exempt due to the fact that they are having negative health and quality of life impacts on community members. The commenter stated that in one community in Louisiana, where six MON facilities are located, 25 malfunctions occurred in a year and as many as six malfunctions occurred in one month. The commenter asserted that the MON facilities in Louisiana experience frequent excess air emissions from startup and shutdown events of various chemicals associated with units at the MON facilities. The commenter described startup and shutdown events in association with turnaround industrial activities as the most severe, in some cases including the uncontrolled venting of the entire contents of vessels.

Response: We acknowledge the commenter's support for the EPA's removal of the SSM exemptions in the MON final rule.

Comment 133: One commenter asked the EPA to clarify whether penalties for not complying with the MON standards during SSM is based on the severity of the emissions or on number of occurrences.

Response: In the event a source fails to comply with the standards during SSM, assessment of any penalties would be a matter for the administrative exercise of case-by-case enforcement discretion. As noted in the preamble to the proposed rule, we expect that facilities will be able to comply with the standards during periods of startup and shutdown. In the event that a source fails to comply with the applicable CAA section 112(d) standards as a result of a malfunction event, the EPA would determine an appropriate response based on, among other things, the good faith efforts of the source to minimize emissions during malfunction periods, including preventative and corrective actions, as well as root cause analyses to ascertain and rectify excess emissions.

Comment 134: Some commenters requested the EPA recognize emissions averaging as a method for demonstrating compliance when malfunctions occur, as long as the calculation framework is established in the emissions averaging implementation plan. In addition, the commenters requested the EPA recognize that the batch process vent compliance provisions can be used to demonstrate compliance when malfunctions occur. The commenters said that their requests are consistent with *Sierra Club v. EPA*, 551 F.3d 1019, 1028 (D.C. Cir. 2008) because they said that they acknowledge that the emissions from any bypass would be included in the evaluation of whether excess emissions resulted from such an event.

The commenters said that some MON facilities have areas of their plants where they control above the level of the standard and these situations could be used to demonstrate compliance when a malfunction occurs that results in short periods of control below the required standard (*e.g.*, a facility has a batch process with vents being controlled by a series of control devices, such that emissions are controlled at 99.9% versus the required 98%). The commenters pointed out that the existing MON standard already has several provisions that use averaging to demonstrate compliance that could also be used to assess malfunction events and determine if the standard has been exceeded. The commenters identified the following existing provisions:

- Operating day or operating block average used for monitoring parameters and TOC measurements from CEMS. The commenters said that a daily or block average of the HAP concentration or of the percent reduction on a day when a malfunction occurs could be used to demonstrate that the applicable emission standard was not violated. The commenters said that the proposed bypass records and reporting could be used to establish the necessary data to perform this calculation and demonstrate compliance.
- For batch process vents, the standard applies to the collection of all batch vents, allowing some vents to be controlled while others are not controlled or are controlled at a lower level if, collectively, the total emissions reduction meets the standard. The commenters said that the existing batch provisions for demonstrating compliance could be used over a period of time to determine the overall emissions reduction taking into account periods when a malfunction has increased emissions or reduced control efficiency.
- The MON emissions averaging provisions provide established procedures to demonstrate compliance when emissions are under controlled and other emissions are over controlled. The commenter said that the emissions averaging provisions require that the credits and debits be balanced on a quarterly basis. The commenters said that an emissions averaging implementation plan could be used to establish how the credits and debits will be calculated and balanced for situations, including malfunction events, as specified in the emissions averaging provisions

The commenters said for the operating day or block average options, the EPA may want to add additional records and reporting provisions to require the data elements used for this calculation be recorded and reported, although the proposed bypass records and reports in paragraphs 40 CFR 63.2525(n) and 40 CFR 63.2520(e)(12) provide for most of the necessary data elements. The commenters recommended that other data elements should include information on emissions during the complete operating day or block when the malfunction event occurs and the level of emissions that would be allowable by the standard in order to determine over and under control values. The commenters said that for any or all of these options, it would be necessary for the EPA to modify the bypass provisions in paragraph 40 CFR 63.2450(e)(6) to clarify that a bypass that has been demonstrated to meet the standard would not be a deviation of the emissions standard.

Response: We disagree that emissions averaging is an appropriate methodology for demonstrating compliance with periods of malfunction. As noted by the commenter, the rule already includes emissions averaging in the areas of the rule where it is appropriate (*e.g.*, for CEMS block averaging), and averaging is inherently included in the batch process vent provisions. For these cases, owners and operators use averaging to demonstrate compliance based on data collected during known or planned periods; in the case of batch process vents, this includes periods where the owner or operator may predictably manage a group of vents, including some individual vents that are controlled at a lower level, provided emissions are sufficiently directed to closed vent systems and control devices to meet the standards. In contrast, malfunctions are, by definition, sudden, infrequent, and not reasonably preventable failures of emissions control, process, or monitoring equipment (40 CFR 63.2) (Definition of malfunction). In such cases, we do not believe that owners and operators would be able to sufficiently demonstrate compliance for such sudden, infrequent, and unpreventable events using data gathered from planned, routine periods. Further, the commenters are effectively asking to demonstrate compliance after the fact for malfunctions that "result in short periods of control below the required standard", including bypass events (*i.e.*, the standard has not been met). We note that, in the event that a source fails to comply with the applicable standards as a result of a malfunction event, the EPA would determine an appropriate response based on, among other things, the good faith efforts of the source to minimize emissions during malfunction periods, including preventative and corrective actions, as well as root cause analyses to ascertain and rectify excess emissions.

Comment 135: A commenter stated that the EPA must require that facilities make available online all information that they must keep records on and report to the EPA or a state permitting agency in order to increase transparency, assist community members, states, and local governments in evaluating the compliance and safety threats from MON facilities, and deter violations. The commenter stated that the ability to keep electronic records and to report data electronically to the EPA illustrates that sources can and should directly report this same information to the public, either through creating their own online method of displaying the same information they keep and report, or through the EPA releasing such information online in an easily accessible format for public review and use.

The commenter insisted that the EPA must promulgate the requirement that when such notification is made, the facility must also provide for community notification of the malfunction or emission standard exceedance within 24 hours, through an appropriate public forum that is designed to reach residents who live near the facility, including but not limited to a notice on the facility's own website (if it has one), a written notice to the local municipality and local school district, and a press release to the local newspaper, radio, and TV news station. The commenter stated that (1) the EPA must require e-mail and telephone reporting by the facility to the EPA (not just a state regulator) no later than 24 hours after the any excess emissions or exceedance; (2) the EPA must require that when a facility provides the EPA with telephone notification of a malfunction or emission exceedance under the regulations, this notice will be made publicly available on the EPA's website and through enforcement and compliance history online (ECHO) within 24 hours, (3) the EPA should require that the EPA Administrator provide this information to its Regional office within 24 hours of receiving notification, and direct the Regional office to notify the local community on the Internet, by direct communication, and through all available means.

The commenter stated the EPA should also require a written report to be submitted within 7 days, including publication on ECHO, the EPA's Regional website, and distribution to active local community members who are interested (such as through setting up an email list, a local listserv, Twitter, and other media). The commenter recommended the EPA should require the facility to provide the following in the written report: (1) the nature of the event; (2) the duration of the event; (3) emissions released during the event; and (4) a description and timing of corrective actions that were taken and any planned to be taken. The commenter stated that the EPA should also require a follow-up report within one week providing information on whether the problem was ended or corrected, including monitoring data showing that the problem no longer exists. If the problem was not ended or corrected, the commenter requested the report must explain what additional steps are planned and the EPA must provide these reports on-line in a format that the public can access.

Furthermore, the commenter stated that the EPA must promulgate additional requirements that apply in the event of a malfunction or violation of the emission standards. The commenter urged the EPA to also require the following when an exceedance, malfunction, or accidental release occurs: (1) automatic shut-off of the malfunctioning equipment or process for the time needed to take corrective action whenever an exceedance or malfunction occurs, (2) keep on-site spare parts to pollution controls (like electrostatic precipitator wires or bags in fabric filters), so that they can more quickly put controls back online if they malfunction, (3) assign responsibility and liability to the plant manager or a high-up staff member which allows only that person to restart the equipment or process, (4) specific corrective measures must be taken immediately to remedy and prevent recurrence of the malfunction or violation, (5) for a facility that has had one or more malfunction, exceedance, or other violation incident in the prior month, written authorization by the EPA to restart equipment or processes, (6) if a facility has more than four exceedances or malfunctions during the same quarter, automatic shutdown of the operation for a period of time needed to conduct and publish a full investigation and ensure systematic correction of the problem/s, and (7) the EPA should create a community complaint mechanism in the standards that ensures that citizen complaints of clouds, plumes, exceedances, odors, other air pollution incidents or health concerns receive an immediate response, in which the EPA commits to initiate an investigation and provide a publicly available report of the result of the investigation, including whether it leads to an enforcement outcome from the EPA's enforcement division within seven days.

Response: While this final rule establishes standards for certain emergency releases such as PRDs and emergency flaring, we have also removed a number of provisions related to exemptions during periods of SSM such that there are continuous CAA section 112 standards that always apply, and, facilities have a general duty to minimize emissions and maintain their operation in a manner consistent with safety and good air pollution control practices. Under a separate program, the EPA implements the mandates of CAA section 112(r) through its RMP. Among other things, this program requires facilities to develop and follow risk management plans so that there are plans in place setting out how a facility will respond to and mitigate emergency releases and how they will contact their local and state authorities so that in turn, the communities can be notified in a timely manner, if necessary, in order to take further actions and precautions. Other programs also exist that address many of the commenters concerns, including the EPCRA. Considering all this information, the EPA believes the rule contains sufficient requirements to address SSM periods and the Agency is not making changes to the NESHAP as requested by the commenter.

8.2 Force Majeure

Comment 136: A commenter opposed importing the concept of force majeure into any part of the CAA. The commenter stated that the concept of force majeure comes from contract law, but the CAA is not a contract. The commenter added that the CAA is a binding legal requirement that facilities have no choice but to meet if they seek to emit HAP. The commenter added that there is no force majeure exception allowed for non-compliance with the CAA or its requirements, and the EPA may not create such an exemption, and cited *U.S. v. Wheeling-Pittsburgh Steel Corporation*. The commenter declared there is no authority for the EPA to allow any type of force majeure event exception under the CAA. The commenter added that neither CAA section 112(d)(2) and (3) nor section 112(f)(2) requires the EPA to set a standard exempting emissions during "force majeure" events. The commenter quoted the *D.C. Circuit*, "Once excursion provisions are promulgated, an enforcement case no longer turns on the sharply defined issue of whether the plant discharged more pollutant than it was allowed to, but instead depends on murky determinations concerning the sequence of events in the plant, whether those events would have been avoidable if other equipment had been installed, and whether the discharge was within the intent of the excursion provision."

The commenter also stated the EPA may not promulgate an exemption that allows the EPA to decide what is a violation, or not, at some future time. The commenter stated that the proposed rule would allow the EPA to determine that a force majeure event has occurred, such that the exemption applies, rather than require a party to prove to a court that such an event has occurred in an enforcement citizen suit. The commenter stated this conflicts with the citizen suit and civil penalty provisions which grant the authority to a court, not the EPA, to decide whether a violation has occurred warranting a penalty. Moreover, the commenter stated that by placing the burden on the governmental or private citizen enforcer to prove not only that excess emissions have occurred, but that they have not occurred during a force majeure event, the rule makes these exemptions "a virtual firewall to a successful enforcement suit".

The commenter stated that the EPA's creation of the force majeure exemption runs directly contrary to its own recognition in prior administrative practice, pointing to the Boiler MACT. As summarized by the commenter, the EPA explained in its brief defending that rule:

Hurricanes, strikes, and malfeasance can also occur at well-maintained and well-managed sources, but this does not warrant factoring such unpredictable events into emission standards. The commenter said, even if malfunctions were inevitable for all sources, including the best-performing sources, that does not make it possible to take them into account when establishing MACT emission standards, because they are still unknown in frequency, length, magnitude and, most importantly, effect on emission levels.[126]

Response: We disagree that force majeure cannot or should not be used in the context of regulations establishing standards under the CAA because it is a term typically used in contract law. We determined that a force majeure provision was part of the requirements applicable to the best performing sources that regulated PRDs and flares; as such, we included it as part of the MACT standard. The definition of force majeure event in the December 17, 2019, proposed rule (84 FR 69201) is based specifically on a clause included in the SCAQMD rule, which served as the basis for the PRD MACT standard. Rather than repeating this clause at each instance, we determined that is was preferential to use and define the term force majeure event. Further, the concept of force majeure has been implemented since May 2007 within the CAA requirements through the performance test extensions provided in 40 CFR 63.7(a)(4) and 60.8(a)(1), and is consistent with the PRD and flare requirements in other recently amended Part 63 NESHAP rules, such as the Refinery MACT and ethylene production MACT.

We find that the proposed rule's definition of force majeure event has adequate specificity to allow determination of whether a PRD release event or an event when the flare vent gas flow rate exceeds the smokeless capacity of the flare and visible emissions are present from the flare for more than 5 minutes during any 2 consecutive hours during the release event, was caused by a force majeure event.[127] The definition specifies events that are beyond the control of the operator, including natural disasters, acts of war or terrorism, external power curtailments (excluding curtailments due to interruptible service agreements), and fire or explosions originating at near or adjoining facilities outside of the owner or operator's control that impact the facility's ability to operate. By definition, force majeure events are not something that a facility is able to control, and thus there is likely no way for the facility to prevent it from happening. The commenters suggest that criteria are needed for determining whether a force majeure event has occurred. We disagree; the examples provided in the definition provide sufficient specificity to help guide a decisionmaker in deciding whether to pursue an enforcement action because they believe a violation has occurred that was not caused by a force majeure event and for a court or other arbiter to rule on any claim. We also note that even though these events are not included in the event count towards the work practice standard, they continue to be subject to the root cause analysis so the agency will have sufficient information to evaluate the legitimacy of any such claim.

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[126] Commenter provided the following reference: Brief for Respondent EPA at 43 (filed Feb. 11, 2015), *U.S. Sugar Co. v. EPA*, No. 11-1108 (D.C. Cir.), Document #1537028.

[127] Note, in the final rule, you must comply with the maximum flare tip velocity operating limit at all times and there is no work practice standard for when the flare vent gas flow rate exceeds the smokeless capacity of the flare and the tip velocity exceeds the maximum flare tip velocity operating limit. See Section IV.C.3 of the preamble to the final rule for further details on this change.

Finally, we note that the regulations do not specify that the Administrator would make a binding determination of whether a force majeure event has occurred, and the issue could be argued and resolved by the Court in the context of a citizen suit or enforcement action.

Comment 137: One commenter argued that the proposed force majeure provisions violate CAA sections 304 and 113 because they attempt to give the EPA the authority that Congress actually granted to federal courts to determine liability and order penalties. Citing *NRDC vs EPA*, 749 F.3d 1064 (D.C. Cir. 2013) and *City of Arlington v. FCC*, 133 S. Ct. 1863, 1871 n.3 (2013), the commenter said CAA section 304 "creates a private right of action, and as the Supreme Court has explained, 'the Judiciary, not any executive agency, determines "the scope"—including the available remedies—'of judicial power vested by' statutes establishing private rights of action.'" The commenter said that the EPA has illegally claimed authority to determine the scope of judicial power for force majeure events despite the CAA's grant of exclusive jurisdiction to the judiciary.[128] The commenter pointed out that the proposed definition of force majeure event includes the phrasing "…that is demonstrated to the satisfaction of the Administrator…".

The commenter also argued that CAA section 113(b) is just like CAA section 304(a) because it also is a jurisdictional grant to federal district courts. The commenter said that CAA section 113(b) gives the EPA authority to file civil suit against those who violate NESHAP requirements and gives federal district courts jurisdiction to provide injunctive relief and civil penalties, which courts must assess after considering the factors listed in CAA section 113(e)(1). The commenter cited *TRW Inc. vs. Andrews*, 534 U.S. 19, 28 (2001) and said the CAA also prohibits the EPA from approving a force majeure provision that limits a court from applying an Act-authorized remedy in an enforcement action the EPA brings. The commenter argued that in proposing to now add the force majeure exemptions to its MON regulations, the EPA's proposed action conflicts with its proposed Title V rule and its final SSM state implementation plan call, which concluded that such provisions are unlawful. The commenter said that the EPA proposing to remove the affirmative defense provisions for emergencies found in the EPA's Title V regulations is an example of how the EPA has previously recognized that provisions like the ones it proposes for force majeure events are unlawful. The commenter stated that the EPA reasoned that the Title V affirmative defenses for emergencies were unlawful because they were inconsistent with CAA sections 304 and 113.

Response: We do not agree that the force majeure provisions usurp the authority that the CAA granted to the courts to determine liability and order penalties. The regulations do not specify that the Administrator would make a binding determination of whether a force majeure event has occurred, and the issue could be argued and resolved by the Court in the context of a citizen suit or other enforcement action.

Although no CAA language compels the EPA to set standards for malfunctions that are caused by force majeure events, the EPA has the discretion to do so where feasible. The force majeure provisions to which the commenter objects pertain to the control requirements for PRDs and flares. The force majeure provisions do not remove any judicial power vested in the courts. Rather, these provisions merely specify the conditions under which different requirements apply.

[128] *Michigan v. EPA*, 268 F.3d 1075, 1081 (D.C. Cir. 2001)]

We note that the proposed force majeure provisions differ from the affirmative defense to civil penalties for malfunctions the D.C. Circuit vacated as beyond the EPA's authority under the CAA in *NRDC v. EPA*, 749 F.3d 1055 (D.C. Cir. 2014). Unlike the affirmative defense addressed in *NRDC*, the force majeure provisions do not address penalty liability for noncompliance with emission standards, but merely addresses, under a very narrow set of circumstances outside the control of the facilities, whether the events caused by force majeure should be excluded from the count of events that constitute a deviation from the work practice standards that we have determined is "achievable" for the average of the best performing sources. Further, as the D.C. Circuit recognized, in an EPA or citizen enforcement action, the court has the discretion to consider any defense raised and determine whether penalties are appropriate. *Cf. NRDC*, *at 1064* (arguments that violations were caused by unavoidable technology failure can be made to the courts in future civil cases when the issue arises).

Despite the force majeure provisions, the rule has requirements that apply at all times. Flares are required to comply with the requirements for a continuously lit pilot flame and combustion efficiency standards (*i.e.*, limits on the NHVcz) at all times, including during periods of emergency flaring caused by a force majeure event. Also, facilities are required to initiate a root cause analysis to assess the cause of a PRD release, including releases determined to be caused by a force majeure event. These requirements apply at all times; thus, the final work practice standards have requirements that apply to PRDs and flares at all times, and they are not contrary to the CAA requirements in CAA section 112.

Comment 138: One commenter argued that the phrase "such as" in the proposed definition of force majeure event does not limit the force majeure exemption even to the broad list enumerated because the phrase could be exploited to include any number of other events that would undermine the effectiveness of the CAA and the NESHAP. The commenter said that the only definitional limit in the proposed definition of force majeure event is the phrasing "the satisfaction of the Administrator."

Response: We disagree with the commenter that the phrase "such as" in the definition of force majeure would be "exploited to include any number of other events". The definition specifies events that are beyond the control of the operator, including natural disasters, acts of war or terrorism, external power curtailments (excluding curtailments due to interruptible service agreements), and fire or explosions originating at near or adjoining facilities outside of the owner or operator's control that impact the facility's ability to operate. By definition, force majeure events are not something that a facility is able to control, and thus there is likely no way for the facility to prevent it from happening. We believe the examples provided in the definition provide sufficient specificity to help guide a decisionmaker in deciding whether to pursue an enforcement action because they believe a violation has occurred that was not caused by a force majeure event and for a court or other arbiter to rule on any claim. Further, the owner of operator must conduct a root cause analysis to indicate whether the exceedance is caused by operator error or poor maintenance or a force majeure event. If the root cause analysis does not sufficiently demonstrate to the Administrator that the exceedance is caused by a force majeure event or indicates the exceedance is caused by operator error or poor maintenance, then the exceedance would be considered a deviation from the work practice standard. However, as noted previously in this section, the regulations do not specify that the Administrator would make a binding determination of whether a force majeure event has occurred, and the issue could be argued and resolved by the Court in the context of a citizen suit or other enforcement action.

Comment 139: One commenter contended that the malfunction exemptions are not "work practice standards" because they do not apply continuously and are inconsistent with CAA section 112(d)(2) and (3). The commenter added that because the proposed rule contains no limits on emissions from periodic malfunction and force majeure events resulting in such emissions being uncontrolled, there is no control that applies continuously. The commenter stated that post-hoc measures to understand why a release happened are not controls or limits on the pollution that was released. Many commenters contended that the EPA cannot exempt force majeure events that occur above the smokeless capacity of a flare or from PRDs. Some commenters said facilities can prevent problems through safer design, regular preventive maintenance and equipment upgrades, effective storm shutdown and startup planning, and the EPA must require this. Some commenters stated that the EPA needs to strengthen fenceline monitoring and air quality data collection and health protection during and after storms.

Commenters said that extreme weather events are a frequent occurrence in some states, such as Louisiana, where multiple MON sources are located. A commenter noted that such events result in negative impacts to industrial facilities with excessive flaring events, interruption of electrical systems and malfunctions of emission control technologies at the MON industrial facilities. The commenter also stated operations at MON industrial facilities are frequently negatively impacted for days to weeks and result in excessive flaring events, venting, and storage tanks releasing air emissions and contents. The commenter explained that when operations are being brought online after tropical storms and hurricanes, startup and shutdown events occur on a frequent basis and emit large quantities of air emissions. The commenter requested that, due to the frequency and extent of severe weather events and river flooding events, the pollution from these events must not be dismissed as "force majeure events." Another commenter said that MON and other chemical plants can emit extraordinarily high amounts of HAPs during malfunctions and cited a major release from Shell Deer Park during Hurricane Harvey.[129] Some commenters stated that the EPA should require appropriate and adequate preparation by the industries to protect community members living in the areas of the MON facilities and eliminate community members being negatively impacted by toxic emissions from facility units during severe weather events. One commenter said facilities located in geographic areas where events such as strong storms and floods are either historically common or recently increasing in frequency areas should not be permitted to make relatively frequent "accidental" or "emergency" releases that cause harm to surrounding communities because it was their choice to locate to these areas. Some commenters requested that the EPA implement recommendations put forth by the Chemical Safety and Hazard Investigation Board and other experts for such events.

Response: At proposal, the EPA explained that "[a]lthough no statutory language compels the EPA to set standards for malfunctions, the EPA has the discretion to do so where

[129] The commenter provided the following references: May 25, 2018 comments and attachments, https://www.regulations.gov/document?D=EPA-HQ-OAR-2010-0682-0953 (citing Harvey- related releases and impacts); Dec. 2016 Reconsideration Comments, https://www.regulations.gov/document?D=EPA-HQ-OAR-2010-0682-0889 (citing Shell Deer Park release and more); August 23, 2018 comments and attachments on EPA's Proposed Rollback of the Chemical Disaster Rule or 2017 RMP Amendments (providing case study summarizing severe impacts of air toxics releases at facilities including chemical plants during after Harvey in 2017).

feasible.” (84 FR 69225). We further explained that, “[t]he EPA will consider whether circumstances warrant setting work practice standards for a particular type of malfunction in the Miscellaneous Organic Chemical Manufacturing source category and, if so, whether the EPA has sufficient information to identify the relevant best performing sources and establish a standard for such malfunctions.” (84 FR 69225.) It is very difficult to guard perfectly against acts of God and acts of terrorism. The EPA does not believe it can develop measures that would effectively limit emissions during all such acts.

Regardless, we disagree with the assertion that force majeure events are exempt from regulation. Several of the work practice standards being promulgated in this final rule apply during these events. Specifically, the PRD work practice standard requires redundant prevention measures, which are designed to limit the duration and quantity of releases from all atmospheric PRDs regardless of the cause. Flares are required to comply with the requirements for a continuously lit pilot flame and combustion efficiency standards (*i.e.,* limits on the NHVcz) at all times, including during periods of emergency flaring caused by a force majeure event. These requirements apply at all times; thus, the final work practice standards do have requirements that apply to PRDs and flares at all times and they are not contrary to the CAA requirements in CAA section 112. In addition, the work practice standard for PRDs requires installation and operation of continuous monitoring device(s) to identify when a PRD release has occurred. We also note that facilities are required to initiate a root cause analysis to assess the cause of the release, including releases determined to be caused by a force majeure event, and if the analysis identifies ways to avoid similar malfunctions in the future the source may not be able to justify future similar events as being beyond their control to address such that they qualify as force majeure events.

As the EPA has consistently explained, in the event that a source fails to comply with the applicable CAA section 112 standards as a result of a malfunction event, the EPA would determine an appropriate response based on, among other things, the good faith efforts of the source to minimize emissions during malfunction periods, including preventative and corrective actions, as well as root cause analyses to ascertain and rectify excess emissions. 84 FR 69225. The EPA would also consider whether the source’s failure to comply with the CAA section 112 standard was, in fact, ‘‘sudden, infrequent, not reasonably preventable’’ and was not instead ‘‘caused in part by poor maintenance or careless operation.’’ 40 CFR 63.2 (definition of malfunction). If the EPA determines in a particular case that enforcement action against a source for violation of an emission standard is warranted, the source can raise any and all defenses in that enforcement action and the federal district court will determine what, if any, relief is appropriate. The same is true for citizen enforcement actions. Similarly, the presiding officer in an administrative proceeding can consider any defense raised and determine whether administrative penalties are appropriate.

Further, as described in more detail in the proposed rule (84 FR 69207, December 17, 2019), MON facilities are already subject to the EPA’s Chemical Accident Prevention Provisions in 40 CFR part 68, which require prevention provisions and a hazard analysis. In light of this, and in light of the statutory structure of CAA section 112, we view the request to enact chemical accident prevention provisions in this rule to be unnecessary.

Comment 140: A commenter requested the EPA clarify how a violation is determined for the proposed PRD and emergency flares work practice standards if there is both an operator error/poor maintenance event and a force majeure event.

Response: We have excluded events caused by force majeure from the count of determinations of whether there has been a deviation of the standards. Although these events are not included in the event count, they will continue to be subject to the root cause analysis in order to confirm whether the release was indeed caused by the force majeure event. Under the final rule, the owner or operator must conduct a root cause analysis to indicate whether the exceedance is caused by operator error or poor maintenance or a force majeure event. When a PRD or flare event occurs, if the root cause analysis conducted by a facility does not sufficiently demonstrate to the Administrator that the exceedance is caused by a force majeure event, or indicates the exceedance is caused by operator error or poor maintenance, then the exceedance would be considered a deviation from the work practice standard. Assessment of any exceedance of the standards or other noncompliance with the final rule would be a matter for the administrative exercise of case-by-case enforcement discretion. However, as noted previously in this section, the final rule does not specify that the Administrator would make a binding determination of whether a force majeure event has occurred, and the issue could be argued and resolved by the Court in the context of a citizen suit or other enforcement action.

8.3 References to SSM Rule Text

Comment 141: A commenter suggested several additions and/or clarifications to Table 12 to Subpart FFFF. A commenter provided the following table that lists issues that they identified regarding Table 12 to Subpart FFFF.

Citation	Subject	Explanation	Comment
63.6(e)(3)(i), (ii), and (v) through (viii)	Startup, Shutdown, Malfunction Plan (SSMP)	Yes, before [date 3 years after date of publication of final rule in the Federal Register], except information regarding Group 2 emission points and equipment leaks is not required in the SSMP, as specified in §63.2525(j). No, beginning on and after [date 3 years after date of publication of final rule in the Federal Register].	63.6(e)(3)(ii) is [Reserved]. Remove from this list of applicable citations.
63.6(i)(15)	*[Reserved.]*	*[Reserved.]*	40 CFR 63.6(i)(15) is missing from the table. Suggest adding for completeness.
63.6(i)(16)	*Compliance Extension*	*Yes.*	40 CFR 63.6(i)(16) is missing from the table. Suggest adding for completeness.
63.7(a)(4)	*Force Majeure*	*Yes.*	40 CFR 63.7(a)(4) is missing from the table. Suggest adding for completeness.
63.7(g)	Performance Test Data Analysis	Yes, except this subpart specifies how and when the performance	Suggest citing the actual applicable references in

Citation	Subject	Explanation	Comment
		test and performance evaluation results are reported.	Subpart FFFF in the explanation rather than stating “yes, except…”. The requirements are currently unclear as written.
63.8(c)(1)(ii)	SSM not in SSMP	Yes, before [date 3 years after date of publication of final rule in the Federal Register]. No, beginning on and after [date 3 years after date of publication of final rule in the Federal Register].	§63.8(c)(1)(ii) requires the owner or operator to keep the necessary parts for routine repairs of the affected CMS equipment readily available. This would remain applicable after the publication of the final rule. Suggest revising the explanation to just state “Yes.”
63.8(e)	CMS Performance Evaluation	Only for CEMS, except this subpart specifies how and when the performance evaluation results are reported. Section 63.8(e)(5)(ii) does not apply because subpart FFFF does not require continuous opacity monitoring systems.	Suggest citing the actual applicable references in Subpart FFFF in the explanation rather than stating “Only for CEMS, except…”. The requirements are currently unclear as written.
63.10(b)(2)(i)	Records related to SS	No, see §§63.2450(e) and 63.2525 for recordkeeping requirements.	“SS” is not a defined acronym. Suggest spelling out “startup and shutdown” in the subject.
63.10(b)(2)(iv) and 63.10(b)(2)(v)	Recordkeeping relevant to SSM periods and CMS	Yes, before [date 3 years after date of publication of final rule in the Federal Register]. No, beginning on and after [date 3 years after date of publication of final rule in the Federal Register].	40 CFR §63.10(b)(2)(iv) and (v) do not refer to CMS; suggest revising the subject to only state “Recordkeeping relevant to SSM period”. In addition, suggest combining into one line for 63.10(b)(2)(iv)-(v) rather than listing 63.10(b)(2)(iv)and 63.10(b)(2)(v)separately since both have the same subject and explanation.
63.10(b)(2)(vii) -(ix)	Records	Yes.	40 CFR §63.10(b)(2)(viii) requires all results of performance tests, CMS performance evaluations, and opacity and visible emission observations. For consistency, suggest adding note to explanation that the “CMS” portion pertains to CEMS only.

Response: We agree with the significant majority of commenter's suggested edits to Table 12 of 40 CFR part 63, subpart FFFF for all items and are revising the final rule as requested. We are not incorporating edits to the table entries for 40 CFR 63.6(i)(15), 40 CFR 63.7(g), and 40 CFR 63.8(e), because we disagree that such edits are required for clarification of the rule. Also, we are not incorporating edits to the table entry for 40 CFR 63.10(b)(2)(viii) because as noted elsewhere in this document, we revised Table 12 of 40 CFR part 63, subpart FFFF to reflect that 40 CFR 63.10(b)(2)(vi) applies to CPMS for flares subject to 40 CFR 63.2450(e)(5). Similarly, 40 CFR 63.10(b)(2)(viii) and (ix) also apply to CPMS for these flares.

Comment 142: Some commenters said they reviewed the EPA's proposed revisions in 40 CFR 63.2450(e)(4), 40 CFR 63.2480(f), and 40 CFR 63.2485(p) and (q) that are intended to address the 2008 Court decision in *Sierra Club v. EPA*, 551 F.3d 1019 (D.C. Cir. 2008). The commenters provided tables that list issues that they identified regarding these proposed revisions, which are combined and identified in the table below.

Provision	Reference Location and Context	Reference Language (and Provisions No Longer Applicable)	Comment
40 CFR 63.2450(e)(4)(i) 40 CFR 63.983(a)(3) of subpart SS	Subpart SS: Closed Vent System	§63.983(a)(3): (3) Bypass monitoring. Except for equipment needed for safety purposes such as pressure relief devices, low leg drains, high point bleeds, analyzer vents, and open-ended valves or lines, the owner or operator shall comply with the provisions of either paragraphs (a)(3)(i) or (ii) of this section for each closed vent system that contains bypass lines that could divert a vent stream to the atmosphere.	The EPA should add a cross reference to the new bypass language in §63.2450(e)(6).
40 CFR 63.2450(e)(4)(ii) 40 CFR 63.983(a)(5) of subpart SS	Subpart SS: Closed Vent System	(5) *Pressure relief devices in a transfer rack's closed vent system.* The owner or operator of a transfer rack subject to the provisions of this subpart shall ensure that no pressure relief device in the transfer rack's closed vent system shall open to the atmosphere during loading. Pressure relief devices needed for safety purposes are not subject to this paragraph.	The EPA has referenced the entire paragraph (5) as not applicable. We believe EPA's intent was to only reference the second sentence (*i.e.*, "Pressure relief devices needed for safety purposes are not subject to this paragraph.") Also, the EPA should cross reference the newly proposed safety device language in §63.2450(t) as follows: "(1) §63.983(a)(5) of Subpart SS. <u>Instead see §63.2450(t) concerning opening of safety devices.</u>"
§63.2450(e)(4)(vii) §63.997(e)(1)(i) of Subpart SS	Subpart SS: Performance test and compliance	§63.997(e)(1)(i): (e) … (1) …	The EPA should add a cross-reference to the new language in §63.2450(g)(6)

Provision	Reference Location and Context	Reference Language (and Provisions No Longer Applicable)	Comment
	assessment requirements for control devices	(i) Continuous unit operations. For continuous unit operations, performance tests shall be conducted at maximum representative operating conditions for the process, unless the Administrator specifies or approves alternate operating conditions. During the performance test, an owner or operator may operate the control or halogen reduction device at maximum or minimum representative operating conditions for monitored control or halogen reduction device parameters, whichever results in lower emission reduction. Operations during periods of start-up, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test.	concerning performance test conditions. (vii) §63.997(e)(1)(i) of Subpart SS Instead see §63.2450(g)(6) for performance test conditions.”
40 CFR 63.2450(e)(4)(viii) The term ‘‘breakdowns’’ from 40 CFR 63.998(b)(2)(i) of subpart SS.	Subpart SS: Recordkeeping requirements	(b) Continuous records and monitoring system data handling- (2) *Excluded data.* Monitoring data recorded during periods identified in paragraphs (b)(2)(i) through (iii) of this section shall not be included in any average computed to determine compliance with an emission limit in a referencing subpart. Monitoring system breakdowns, repairs, preventive maintenance, calibration checks, and zero (low-level) and high-level adjustments;	This proposed change is unnecessary and could result in inaccurate calculation of parameter values. Data collected during a breakdown of a monitoring system would likely not reflect the true process parameter and could skew compliance calculations. When monitoring equipment is offline as a result of breakdown, the recorded value is often a negative number which clearly shouldn’t be included in any type of averaging.
The EPA should also add a line item to §63.2450(e)(4) prior to (xi) as follows:	Subpart SS: Recordkeeping requirements	§63.998(b)(5)(i)(B)(3): (b) Continuous records and monitoring system data handling	The EPA should also add a line item to §63.2450(e)(4) prior to (xi) as follows: (XX) The

Provision	Reference Location and Context	Reference Language (and Provisions No Longer Applicable)	Comment
(XX) The phrase “other than a start-up, shutdown, or malfunction” from §63.998(b)(5)(i)(B)(3) of Subpart SS.		(5) … (i) … (B) The monitoring system generates a running average of the monitoring values, updated at least hourly throughout each operating day, that have been obtained during that operating day, and the capability to observe this average is readily available to the Administrator on-site during the operating day. The owner or operator shall record the occurrence of any period meeting the criteria in paragraphs (b)(5)(i)(B)(1) through (3) of this section. All instances in an operating day constitute a single occurrence. …. (3) The running average reflects a period of operation other than a start-up, shutdown, or malfunction.	phrase “other than a start-up, shutdown, or malfunction” from §63.998(b)(5)(i)(B)(3) of Subpart SS.
The EPA should also add a line item to §63.2450(e)(4) prior to (e)(4)(xii) as follows: (XX) The phrase “other than a start-up, shutdown, or malfunction.” From §63.998(b)(5)(ii)(C) of Subpart SS.”	Subpart SS: Recordkeeping requirements	§63.998(b)(5)(ii)(C): (b) Continuous records and monitoring system data handling (5) … (ii) … (C) The owner or operator shall retain the records specified in paragraphs (b)(5)(i)(A) through (F) of this section for the duration specified in a referencing subpart. For any week, if compliance with paragraphs (b)(5)(i)(A) through (D) of this section does not result in retention of a record of at least one occurrence or measured parameter value, the owner or operator shall record and retain at least one parameter value during a period of operation other	The EPA should also add a line item to §63.2450(e)(4) prior to (xii) as follows: (XX) The phrase “other than a start-up, shutdown, or malfunction.” From §63.998(b)(5)(ii)(C) of Subpart SS.”

Provision	Reference Location and Context	Reference Language (and Provisions No Longer Applicable)	Comment
		than a start-up, shutdown, or malfunction.	
40 CFR 63.2450(e)(4)(xv) 40 CFR 63.998(d)(1)(ii) of subpart SS.	Subpart SS: Recordkeeping requirements	(d) Other records- (1) Closed vent system records. For closed vent systems the owner or operator shall record the information specified in paragraphs (d)(1)(i) through (iv) of this section, as applicable. (ii) For each closed vent system that contains bypass lines that could divert a vent stream away from the control device and to the atmosphere, the owner or operator shall keep a record of the information specified in either paragraph (d)(1)(ii)(A) or (B) of this section, as applicable. (A) Hourly records of whether the flow indicator specified under §63.983(a)(3)(i) was operating and whether a diversion was detected at any time during the hour, as well as records of the times of all periods when the vent stream is diverted from the control device or the flow indicator is not operating. (B) Where a seal mechanism is used to comply with §63.983(a)(3)(ii), hourly records of flow are not required. In such cases, the owner or operator shall record that the monthly visual inspection of the seals or closure mechanisms has been done, and shall record the occurrence of all periods when the seal mechanism is broken, the bypass line valve position has changed, or the key for a lock-and-key type lock has been	These records are used to demonstrate compliance with the bypass provisions and don't apply to SSM. In fact, at §63.2450(e)(6)(iii), the EPA proposes language that specifically states sources subject to §63.983(a)(3) must still comply with §63.998(d)(1)(ii). We recommend removing subparagraph (xv) from the list at §63.2450(e)(3) and (4).

Provision	Reference Location and Context	Reference Language (and Provisions No Longer Applicable)	Comment
		checked out, and records of any car-seal that has been broken.	
40 CFR 63.2450(e)(4)(xvi) 40 CFR 63.998(d)(3)(i) and (ii) of subpart SS.	Subpart SS: Recordkeeping requirements	§63.998(d)(3)(i) and (ii): (d) Other records- (3) Regulated source and control equipment start-up, shutdown and malfunction records. (i) Records of the occurrence and duration of each start-up, shutdown, and malfunction of operation of process equipment or of air pollution control equipment used to comply with this part during which excess emissions (as defined in a referencing subpart) occur. (ii) For each start-up, shutdown, and malfunction during which excess emissions occur, records that the procedures specified in the source's start-up, shutdown, and malfunction plan were followed, and documentation of actions taken that are not consistent with the plan. For example, if a start-up, shutdown, and malfunction plan includes procedures for routing control device emissions to a backup control device (*e.g.*, the incinerator for a halogenated stream could be routed to a flare during periods when the primary control device is out of service), records must be kept of whether the plan was followed. These records may take the form of a “checklist,” or other form of recordkeeping that confirms conformance with the start-up, shutdown, and malfunction plan for the event.	Subparagraphs (i) and (ii) are the only paragraphs under (d)(3). We recommend the EPA revise this reference to “40 CFR 63.998(d)(3)” to avoid confusion.
The EPA should add a line item prior to §63.2480(f)(2) referencing the bypass exclusion language in §63.172(j)(3)	Subpart H: Closed-vent systems and control devices	§63.172(j)(3): 63.172 Standards: Closed-vent systems and control devices. (j) For each closed-vent system that contains bypass	63.2480(f)(xx) “<u>63.172(j)(3) of Subpart H. Instead see the bypass exclusions in §63.2450(e)(6) of Subpart</u>

Provision	Reference Location and Context	Reference Language (and Provisions No Longer Applicable)	Comment
	(bypass provisions).	lines that could divert a vent stream away from the control device and to the atmosphere, the owner or operator shall comply with the provisions of either paragraph (j)(1) or (j)(2) of this section, except as provided in paragraph (j)(3) of this section. … (3) Equipment such as low leg drains, high point bleeds, analyzer vents, open-ended valves or lines, and pressure relief valves needed for safety purposes are not subject to this paragraph. Note: See similar exclusion in §63.2480(f)(14) for the CAR, §65.143(a)(3) and specifically the bypass exclusion phrase.	FFFF.”
The EPA should add a line item prior to §63.2480(f)(3) as follows: “(xx) The phrase “may be included as part of the startup, shutdown, and malfunction plan, as required by the referencing subpart for the source, or” from §63.1024(f)(4)(i) of Subpart UU.”	Subpart UU: Leak Repair provisions	§63.1024(f)(4)(i): §63.1024 Leak repair. (f) Leak repair records. For each leak detected, the information specified in paragraphs (f)(1) through (f)(5) of this section shall be recorded and maintained pursuant to the referencing subpart. … (4) “Repair delayed” and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak as specified in paragraphs (f)(4)(i) and (f)(4)(ii) of this section. (i) The owner or operator may develop a written procedure that identifies the conditions that justify a delay of repair. The written procedures may be included as part of the startup, shutdown, and malfunction plan, as required by the referencing subpart for the source, or may be part of a separate document that is maintained at the plant site. In such cases, reasons for delay	The EPA should add a line item prior to §63.2480(f)(3) as follows: “(xx) The phrase “may be included as part of the startup, shutdown, and malfunction plan, as required by the referencing subpart for the source, or” from §63.1024(f)(4)(i) of Subpart UU.”

Provision	Reference Location and Context	Reference Language (and Provisions No Longer Applicable)	Comment
		of repair may be documented by citing the relevant sections of the written procedure.	
40 CFR 63.2485(q)(1) §63.105(d) and (e).	Subpart F, maintenance wastewater requirements	§63.105(d)-(e): §63.105 Maintenance wastewater requirements. …. (d) The owner or operator shall incorporate the procedures described in paragraphs (b) and (c) of this section as part of the startup, shutdown, and malfunction plan required under §63.6(e)(3). (e) The owner or operator shall maintain a record of the information required by paragraphs (b) and (c) of this section as part of the start- up, shutdown, and malfunction plan required under §63.6(e)(3) of subpart A of this part.	Eliminating paragraph §63.105(e) appears to eliminate the recordkeeping requirement for the procedures altogether. The EPA has referenced the entire paragraph (e) as not applicable. We believe EPA's intent was to only reference the phrase "as part of the start-up, shutdown, and malfunction plan required under §63.6(e)(3) of subpart A of this part" The EPA should probably retain the requirement to maintain a record of the information required by paragraphs (b) and (c).
40 CFR 63.2485(q)(5)(ii) §63.139(d)(2)(vii)(3)	Subpart G, process wastewater provisions – control devices	(d) Except as provided in paragraph (d)(4) of this section, an owner or operator shall demonstrate that each control device or combination of control devices achieves the appropriate conditions specified in paragraph (c) of this section by using one or more of the methods specified in paragraphs (d)(1), (d)(2), or (d)(3) of this section. (3) For flares, the compliance determination specified in §63.11(b) of subpart A of this part and §63.145(j) of this subpart.	The reference should be corrected to §63.139(d)(3)
§63.2485(q)(2) §63.132(b)(3)(i)(B)	Subpart G, process wastewater provisions – general.	§63.132(b)(3)(i)(B): §63.132 Process wastewater provisions - general. (b) New sources. This paragraph specifies the requirements applicable to process wastewater streams located at new sources. The owner or operator shall	A commenter agrees that the compliance date proposed by the EPA for this provision is appropriate. However, the commenter recommends that §63.2485(q)(2) cross-reference the new PRD

Provision	Reference Location and Context	Reference Language (and Provisions No Longer Applicable)	Comment
		comply with the requirements in paragraphs (b)(1) through (b)(4) of this section, no later than the applicable dates specified in §63.100 of subpart F of this part. …. (3) Requirements for Group 1 wastewater streams. For wastewater streams that are Group 1 for Table 8 compounds and/or Table 9 compounds, comply with paragraphs (b)(3)(i) through (b)(3)(iv) of this section. (i) Comply with the applicable requirements for wastewater tanks, surface impoundments, containers, individual drain systems, and oil/water separators specified in the requirements of §63.133 through §63.137 of this subpart, except as provided in paragraphs (b)(3)(i)(A) and (b)(3)(i)(B) of this section and §63.138(a)(3) of this subpart. … (B) The pressure relief device remains in a closed position at all times except when it is necessary for the pressure relief device to open for the purpose of preventing physical damage or permanent deformation of the waste management unit in accordance with good engineering and safety practices.	requirements in §63.2480(e) and §63.2450(t) as follows: §63.2485(q)(2) (2) §63.132(b)(3)(i)(B) no longer applies. Instead see §§63.2450(t) and 63.2480(e).
§63.2485(q)(3): §63.132(f)(2)	Process wastewater provisions - general.	§63.132(f)(2): §63.132 Process wastewater provisions—general. (f) Owners or operators of sources subject to this subpart shall not discard liquid or solid organic materials with a concentration of greater than 10,000 parts per million of Table 9 compounds (as determined by analysis of the stream composition, engineering calculations, or process knowledge, according to the provisions of §63.144(b) of this subpart) from a chemical manufacturing process unit to	The language in §63.132(f)(2) is not clear regarding the reference to "activities included in maintenance or startup/shutdown/malfunction plans". If the EPA was referring to the maintenance wastewater plan required by the maintenance wastewater provisions of §63.105, then only the reference to "or startup/shutdown/malfunction" should not apply after the compliance dates in §63.2445(g).

Provision	Reference Location and Context	Reference Language (and Provisions No Longer Applicable)	Comment
		water or wastewater, unless the receiving stream is managed and treated as a Group 1 wastewater stream. This prohibition does not apply to materials from the activities listed in paragraphs (f)(1) through (f)(4) of this section. (1) Equipment leaks; (2) Activities included in maintenance or startup/shutdown/malfunction plans; (3) Spills; or (4) Samples of a size not greater than reasonably necessary for the method of analysis that is used.	A commenter recommends revising §63.2485(q)(3) as follows: §63.2485(q)(3): (3) The phrase "or startup/shutdown/malfunction" in §63.132(f)(2)
§63.2485(q)(4): §63.148(f)(3)	Leak inspection provisions	§63.148(f)(3) §63.148 Leak inspection provisions. (f) For each vapor collection system or closed vent system that contains bypass lines that could divert a vent stream away from the control device and to the atmosphere, the owner or operator shall comply with the provisions of either paragraph (f)(1) or (f)(2) of this section, except as provided in paragraph (f)(3) of this section. … (3) Equipment such as low leg drains, high point bleeds, analyzer vents, open-ended valves or lines, and pressure relief valves needed for safety purposes are not subject to this paragraph.	A commenter recommends cross-referencing the bypass exclusions in §63.2450(e)(6). §63.2485(q)(4): (4) §63.148(f)(3); <u>Instead see the bypass exclusions in §63.2450(e)(6) of Subpart FFFF</u>."
§63.2485(q)(5)(ii): (5) For flares complying with §63.2450(e)(5), the following provisions do not apply: (ii) §63.139(d)(2)(vii)(3)	Process wastewater provisions—control devices.	§63.139(d)~~(2)(vii)~~(3): §63.139 Process wastewater provisions—control devices. (d) Except as provided in paragraph (d)(4) of this section, an owner or operator shall demonstrate that each control device or combination of control devices achieves the appropriate conditions specified in paragraph (c) of this section by using one	Typo – §63.2485(q)(5)(ii) should state: (ii) §63.139(d)~~(2)(vii)~~(3)

Provision	Reference Location and Context	Reference Language (and Provisions No Longer Applicable)	Comment
		or more of the methods specified in paragraphs (d)(1), (d)(2), or (d)(3) of this section. (3) For flares, the compliance determination specified in §63.11(b) of subpart A of this part and §63.145(j) of this subpart.	
§63.2485(q)(5)(vi): (5) For flares complying with §63.2450(e)(5), the following provisions do not apply: (vi) §63.1034(b)(2)(iii)	Subpart UU: §63.1034 Closed vent systems and control devices; or emissions routed to a fuel gas system or process standards.	§63.1034(b)(2)(iii): §63.1034 Closed vent systems and control devices; or emissions routed to a fuel gas system or process standards. … (b) Compliance standard. … (2) Owners or operators of closed vent systems and control devices used to comply with the provisions of this subpart shall comply with the provisions of subpart SS of this part and (b)(2)(i) through (b)(2)(iii) of this section, except as provided in §63.1002(b). … (iii) Flares used to comply with the provisions of this subpart shall comply with the requirements of subpart SS of this part.	This reference is not needed because it is in the equipment leak provisions of Subpart UU and is already covered by the language in §63.2480(f)(15)(v) in the equipment leaks section of MON.

Response: We agree with the commenters' the significant majority of the suggested edits to 40 CFR 63.2450(e)(4), 40 CFR 63.2480(f), and 40 CFR 63.2485(p) and (q) and we are revising the final rule as requested. Conversely, we intended for 40 CFR 63.998(d)(1)(ii) to apply as these records are used to demonstrate compliance with the bypass provisions and do not apply to SSM; therefore, we are not making changes in response to comments related to that. Also, we disagree with all suggestions that request the EPA cross reference other paragraphs elsewhere in the rule for the sole reason to create crosswalks to those requirements because the intent of 40 CFR 63.2450(e)(4), 40 CFR 63.2480(f), and 40 CFR 63.2485(p) and (q) is to exclude SSM provisions from subparts referenced by the MON standards and not to create crosswalks which may create more confusion rather than clarification.

9.0 Rule and Compliance Requirements

9.1 Applicability

Comment 143: Commenters stated that many manufacturers of EtO using batch reactions are classified as conditional major sources, and may take a limit on legal maximum HAP emissions in exchange for relief from Title V requirements and the MACT standards. Commenters expressed concern that the proposed amendments could shift these conditional facilities to requiring Title V permits and place a significant financial burden. A commenter recommended that conditional major area sources remain exempted from Title V requirements.

Response: The rule applies only to facilities that own or operate MCPUs that are located at, or are part of, a major source of HAP emissions (40 CFR 63.2435). There are no proposed requirements that reference applicability to the NESHAP being related to VOCs. We are making no changes to applicability under the MON that limit a major source's ability to take an enforceable limit on HAP emissions. In addition, sources subject to the MON are required to obtain a Title V permit, and a source that is not subject to the MON because of an enforceable limit on HAP emissions may still be subject to Title V for other reasons (*e.g.*, applicability of a NSPS or a different NESHAP), so each source must determine applicability of Title V based on consideration of all applicable CAA requirements.

9.2 Definitions

Comment 144: Commenters argued that the EPA should revise the definition of "leakless pump" to include pumps equipped with a dual mechanical seal and barrier fluid at a pressure less than the process, where emissions from the barrier system are controlled. Another commenter said if the EPA finalizes Control Option 2, then the EPA should remove the definition of "leakless pump" and revise 40 CFR 63.2493(d) to allow for additional flexibility. Commenters argued that there are process safety and product quality concerns if the only acceptable design is for the barrier fluid to be at a higher pressure. A commenter stated that these concerns result from of the additional heat generated by magnetically driven and canned motor pumps that are currently used for certain applications in processes that contain EO, and the tendency of EtO to polymerize. The commenter stated that, although the proposal (to allow pumps with dual mechanical seals only if the barrier fluid is at a higher pressure than the process) is effective at preventing leaks, if there is a leak, the process fluid becomes contaminated with the barrier fluid, not only affecting the final quality of the product, but also presenting "serious" safety and/or operating risk due to polymerization or other reactions. The commenter further stated that, where dual mechanical seals and barrier fluids are used for pumps in EtO service, and the barrier fluid is at a pressure less than the process, although this can result in small amounts of EtO leaking from the process equipment into the barrier fluid, these emissions are typically controlled.

A commenter pointed out that the EPA has already promulgated control requirements for these instances, in the exemptions for pumps with dual mechanical seals under 40 CFR part 63, subpart H and subpart UU, which contains the MON LDAR requirements, under which pumps with dual mechanical seals and a barrier fluid that is at a pressure less than the process are exempt from monthly instrument monitoring if equipped with a barrier fluid degassing reservoir that is routed to a process, fuel gas system, or control device (and additionally, the barrier fluid system must be equipped with an alarm to detect failure of the seal or barrier system, and the pump must be inspected regularly for indications of liquids dripping from the seal). Commenters urged the EPA to expand the definition of "leakless pump" to include all of the options contained in other Part 63 MACT rules specific to pumps equipped with a dual mechanical seal system, including designs in which the dual mechanical seal system is: (1) equipped with a barrier fluid degassing reservoir that is routed to a process or fuel gas system or connected by a closed vent system to a control device that complies with the requirements of 40 CFR 63.172 of this subpart; or (2) equipped with a closed-loop system that purges the barrier fluid into a process stream. The commenters urged the EPA to reference the seal criteria in 40 CFR 63.163(e) of 40 CFR part 63, subpart H, 40 CFR 63.1026(e)(1) of 40 CFR part 63, subpart UU, or 65.107(e)(1) of 40 CFR 65, subpart F, as follows, except that a commenter requested that the EPA exclude the language about "operating with the barrier fluid at a pressure that is at all times greater than the pump stuffing box pressure":

> ***"Leakless pump*** means a pump that has no externally actuated shaft penetrating the pump housing, and as such, is designed to operate with no instrument readings above the background concentration level, as demonstrated using Method 21 of 40 CFR part 60, appendix A–7. Examples of leakless pumps include diaphragm pumps, magnetically driven pumps, and canned motor pumps. A pump equipped with a dual mechanical seal system that meets the dual mechanical seal criteria in §63.163(e) of 40 CFR 63 Subpart H, §63.1026(e)(1) of 40 CFR 63 Subpart UU, or 65.107(e)(1) of 40 CFR 65 Subpart F includes a barrier fluid system with a higher pressure than the process is also considered a leakless pump."

A commenter encouraged the EPA to revise 40 CFR 63.2493(d)(3)(i) to address pumps only; move the requirements for connectors to a new paragraph 40 CFR 63.2493(d)(3)(v) and move the proposed requirements in 40 CFR 63.2493(d)(3)(i)(D) and (E) to new paragraphs 40 CFR 63.2493(d)(3)(iii) and (iv), respectively; replace the proposed paragraph 40 CFR 63.2493(d)(3)(ii) with the requirements for valves in proposed 40 CFR 63.2493(d)(3)(i)(B); and substitute their recommended regulatory language for pumps in 40 CFR 63.2493(d)(3)(i).

Response: We are not finalizing a definition for "leakless pump" because we are not finalizing Option 2 for equipment leaks. We are finalizing Option 1 for equipment leaks. Refer to the final preamble for a discussion of the EPA's final decision to select Option 1 for equipment leaks.

Comment 145: A commenter urged the EPA to adopt the following definition in § 63.2550 to reduce the burden of needlessly applying the rule to equipment involving trace or otherwise nominal amounts of HAP: *"Miscellaneous organic chemical manufacturing process* means all equipment containing organic HAP that is present at 0.1 percent by mass or more for the HAP, and at 1.0 percent by mass or more for other compounds."

Response: We disagree that there is a need to add the definition of "miscellaneous organic chemical manufacturing process" as suggested by the commenter in order to avoid applying the rule to equipment involving trace or nominal amounts of HAP. The MON already includes applicability thresholds that are specific enough to exclude these types of equipment. These thresholds are specified separately for each type of emission point in 40 CFR 63.2550 in the definitions for “Group 1 batch process vent,” “Group 1 continuous process vent,” “Group 1 storage tank,” “Group 1 transfer rack,” and “Group 1 wastewater stream.” For example, the definition of “Group 1 storage tank” specifies a minimum tank size threshold of 10,000 gallons and a minimum storage material maximum true vapor pressure of total HAP threshold of 6.9 kilopascals for an existing source and 0.69 kilopascals for a new source.

Comment 146: A commenter urged the EPA to remove the proposed definition of “breakthrough” from 40 CFR 63.2550(i) and instead describe this term within the 40 CFR 63.2550(e)(7) language, as follows: “*Breakthrough* means the level of the specie being monitored on the outlet of a single adsorber, or the outlet of the first bed for dual bed adsorbers, that has been established to indicate that the adsorber bed should be replaced.” The commenter argued that there are two problems with including a definition of “breakthrough” which previously resulted in neither the Benzene Waste Operations NESHAP nor the Off-Site Waste and Recovery Operations defining the term:

- The “highest concentration allowed to be discharged” is the concentration that would meet the emission limitation. The commenter argued that at this point, it would generally be too late to avoid exceeding the emission limit. The commenter explained that breakthrough is normally established as the concentration of the monitored specie that assures compliance with the emission limitation with an ample margin of assurance, considering the characteristics of the system and the time needed to replace the adsorbent.
- The proposed definition could be read not to allow use of individual HAPs. The commenter argued that this is particularly critical for situations where the bulk of the stream is not adsorbed, so total TOC is not a good indicator of HAP removal. The commenter suggested that an individual specie or species may be monitored; the commenter expressed that in many cases there is one dominant HAP (*e.g.,* benzene) that can serve as a surrogate for all HAPs in the stream (*e.g.,* benzene, toluene and xylenes).

Response: We disagree that the proposed definition of “breakthrough” as the “highest concentration allowed to be discharged,” does not assure compliance with an “ample margin of assurance,” considering that we are finalizing our proposal to require a system of dual adsorber units in series (see 84 FR 69227). The monitoring measurement for breakthrough will be taken at the outlet of the first bed in series, and the emission limit applies at the outlet of the second bed. Breakthrough is the HAP concentration that signals that the first carbon bed is starting to no longer absorb appropriately. Because there will be a second bed, and facilities will be conducting daily monitoring, detecting this measurement at the first bed (which takes the bulk of the flow/pollutant stream) would not indicate an exceedance of the emission limit.

The commenter is correct that the proposed definition of “breakthrough” does not allow use of individual HAPs to determine breakthrough, and we have revised the definition to clarify this. The MON emission limits are based on total HAP or TOC, so breakthrough must be determined based on total HAPs. We are revising the final definition of “breakthrough” to: “Breakthrough means the time when the level of total HAP or TOC, measured at the outlet of the first bed, has been detected at the highest concentration allowed to be discharged from the adsorber system and indicates that the adsorber bed should be replaced.

9.3 Compliance Dates

Comment 147: Commenters agreed with the EPA's proposed compliance dates and stated that the EPA is correct that regulated entities will need a significant period of time to comply with the proposed revisions. A commenter explained that the proposed MON contains a number of significant monitoring equipment upgrades which are as complex to implement as the original rule, and the commenter agreed with the EPA that regulated entities will need a significant period of time to: (1) read and understand the final rule changes, (2) revise internal guidance and compliance programs, (3) evaluate facility operations to ensure they can meet the standards during periods of startup and shutdown, and (4) update operation, maintenance and monitoring plans to reflect the revised provisions. The commenter further explained that additional time might be needed to: (1) upgrade to emission capture and control systems based on proposed changes to the bypass provisions, and (2) coordinate plant shutdown activities to install new flare monitoring equipment or process control systems. The commenter provided several examples to demonstrate that the new monitoring requirements for flares require significant engineering evaluations, solicitation and review of vendor quotes, contracting and installation of the equipment, and operator training**.** The commenter strongly supported the proposed 3-year compliance schedule for the proposed PRD work practice standard to allow time for facilities to establish the PRD monitoring requirements and the selection, design and implementation of the required prevention measures.

Other commenters objected to the compliance delays for existing sources. A commenter argued that the proposed 2-year compliance delay for the proposed section 112(f)(2) emission standards for process vents and storage tanks in EtO service, as well as the control options for equipment leaks, is unlawful because the EPA's rationale for the compliance schedule does not demonstrate that any additional time is "necessary for the installation of controls," or that "steps will be taken... to assure that the health of persons will be protected from imminent endangerment," which is required by CAA section 112(f)(4) if the EPA implements a compliance schedule of more than the 90 days after the effective date for 112(f) standards. The commenter also argued that the proposed 1-year compliance deadline for equipment leaks is unlawful because the EPA's rationale for the compliance schedule does not demonstrate that the proposed compliance delays are "as expeditious[] as practicable," especially given that the EPA recognized that no additional equipment would be required. For the same reasons, the commenter also objected to the proposed 3-year compliance deadline for the proposed removal of the SSM exemption and the 3-year compliance deadline for existing sources. Regarding SSM, the commenter said that the EPA must do the same as was done in the Refinery Sector Rule where the EPA appropriately required compliance immediately at all times. The commenter argued that, for all of the proposed changes, the EPA must require compliance by no later than 90 days after the effective date in order to comply with CAA section 112(f)(4), because the EPA has failed to eliminate the unacceptable health risks as required by section 112(f)(2). A commenter argued that the compliance schedule associated with any changes made following the proposal must also satisfy section 112(f)(2). The commenter recommended that the EPA should not conclude all facilities in the source category must be reviewed under section 112(f), since only one or two facilities do not meet the risk criteria of 100-in-1 million or less. This commenter suggested that the EPA should establish the compliance date under section 112(f)(2) only for the one or two facilities in question and establish the compliance date for the remainder of the sources in the source category under section 112(i).

Response: Except for the compliance schedule for the SSM exemptions contained in 40 CFR 63.6(f)(1) and 40 CFR 63.6(h)(1) (see section III.F of the preamble to the final rule for details), we are maintaining the compliance timeline as proposed. We are requiring existing storage tanks, process vents, and equipment in EtO service to be in compliance with the standards being promulgated in response to the risk review within 2 years after the effective date of the final rule. In addition, we are also requiring existing pumps in light liquid service in an MCPU that has no continuous process vents and is part of an existing source processes to be in compliance with the standards within 1 year after the effective date. For standards issued pursuant to CAA sections 112(d)(2), (3) and (6) applicable to existing sources, the final rule requires compliance within 3 years after the effective date of the final rule. See section III.F of the preamble to the final rule for additional details.

We disagree with commenters that the requirements are unlawful. As explained in the December 17, 2019, proposed rule (84 FR 69182), amendments to MON standards for equipment leaks and other emission sources under CAA section 112(d)(2) and (3) and 112(d)(6) are subject to the compliance deadlines outlined in the CAA under section 112(i). ((“Section 112(i)(3)'s three-year maximum compliance period applies generally to any emissions standard... promulgated under CAA [section 112].” *Ass'n of Battery Recyclers v. EPA*, 716 F.3d 667, 672 (D.C. Cir. 2013)). For existing sources, CAA section 112(i) provides that the compliance date shall be as expeditiously as practicable, but no later than 3 years after the effective date of the standard. Amendments to MON standards for emission sources under CAA section 112(f) are subject to the compliance deadlines outlined in the CAA under section 112(f)(4) (“Section 112(f)(4)'s two-year maximum applies more specifically to standards “under this subsection,” *i.e.*, section 112(f) *Ass'n of Battery Recyclers v. EPA*, 716 F.3d 667, 672 (D.C. Cir. 2013). For existing sources, the compliance date of emission standards is to be no sooner than 90 days and no later than two years after promulgation. For amendments to MON standards for EtO emitting sources under CAA section 112(f), we maintain that the EtO provisions will require additional time to plan, purchase, and install equipment for EtO control. For example, for process vents, if the affected source cannot demonstrate 99.9-percent control of EtO emissions, or reduce EtO emissions to less than 1 ppmv (from each process vent) or 5 pounds per year (for all combined process vents), then a new control system, such as a scrubber with piping, ductwork, feed tanks, etc., will need to be installed. Sufficient time will be needed to properly engineer the project, obtain capital authorization and funding, procure the equipment, and construct and start-up the equipment. Therefore, we are finalizing a compliance date of 2 years after the effective date of the final rule for all existing affected sources to meet the EtO requirements. Regarding the comment that the EPA consider separate compliance timelines for facilities under CAA section 112(f)(2), we disagree. The statute does contemplate requiring different compliance dates for different facilities as the commenter suggests. CAA section 112 (f)(2) requires us to promulgate standards under this subsection for the source category. The commenter's recommendation, which suggests that the EPA set categorical standards on a facility-specific basis, would subvert the EPA's category-by-category approach, which is in keeping with CAA section 112(d) and standing precedent. Therefore, we are finalizing the EtO standards for all facilities in the Miscellaneous Organic Chemical Manufacturing source category. In the final rule, we are amending the risk controls under CAA section 112(f), including Control Option 1 for equipment leaks, for all Miscellaneous Organic Chemical Manufacturing facilities with equipment in EtO service. Therefore, all facilities are required to meet the same compliance date.

For pumps in light liquid service in an MCPU that has no continuous process vents and is part of an existing source, we determined that sources will require up to 1 year after the effective date of the final rule because the change to lower the leak definition, while it can be implemented relatively quickly as it requires no additional equipment, will still require changes to a facilities monitoring program and coordination in monitoring schedules, changes to recordkeeping activities and electronic databases, and changes to reporting forms.

For the SSM requirements, as explained in the December 17, 2019, proposed rule, facilities will need some time to successfully accomplish the SSM revisions, including time to read and understand the amended rule requirements, to evaluate their operations to ensure that they can meet the standards during periods of startup and shutdown, as defined in the rule, and make any necessary adjustments, including making adjustments to standard operating procedures, and to convert reporting mechanisms to install necessary hardware and software. We recognize the confusion that multiple different compliance dates for individual requirements would create and the additional burden such an assortment of dates would impose. From our assessment of the timeframe needed for compliance with the entirety of the proposed revisions to SSM requirements, compliance reports, and performance evaluation reports, we consider a period of 3 years after the effective date of the final rule to be the most expeditious compliance period practicable and, thus, are finalizing that all existing affected sources be in compliance with these revised requirements within 3 years of the effective date of the final rule. New sources must be in compliance upon promulgation of the final rule or initial startup, whichever is later.

Comment 148: A commenter recommended that the EPA revise the compliance period to a 3-year calendar period for the emergency flaring provisions in order to be consistent with the compliance period for PRD requirements. The commenter pointed out that the compliance period for PRD requirements is a 3-year calendar period, whereas, the compliance period for the emergency flaring provisions is a rolling 3-year period. The commenter supported the EPA allowing the full 3-year period from the effective date of the proposed amendments before a flare management plan is required for existing facilities to meet the requirements of the flare monitoring plan, and the commenter requested that the EPA clarify that the start date for the rolling 3-year period is the first year after the flare management plan is required to be in place. The commenter requested that in the meantime, the EPA allow an existing facility to comply with its SSM plan

Response: No change is being made to the final rule as a result of this comment. We disagree with the commenter's request to make the compliance period for the emergency flaring provisions a 3-year calendar period because it would improperly extend the compliance date beyond the statutory maximum compliance period authorized under CAA section 112(i)(3)(A). Instead, we are finalizing 40 CFR 63.2445(g), as proposed, that for miscellaneous organic chemical production affected sources that commenced construction or reconstruction on or before the date of publication of final rule in the **Federal Register**, the start date for existing sources for the rolling 3-year period for the emergency flaring provisions is 3 years after date of publication of the final rule in the **Federal Register**. Also, for miscellaneous organic chemical production affected sources that commenced construction or reconstruction after the date of publication of the final rule in the **Federal Register**, the start date for the rolling 3-year period for the emergency flaring provisions is, upon initial startup or the date of publication of final rule in the **Federal Register**, whichever is later.

Comment 149: A commenter requested that the EPA clarify at 40 CFR 63.2495(b)(1), 40 CFR 63.2505(b)(1) and (b)(6)(i) that 40 CFR 63.2450(e)(4) does not apply until the compliance dates specified in 40 CFR 63.2445(g).

Response: We believe that commenter's request is already apparent in the rule. 40 CFR 63.2495(b)(1), 40 CFR 63.2505(b)(1) and (b)(6)(i) each currently explicitly reference compliance with 40 CFR 63.2450(e)(4), which lists the removed exemptions to SSM language from 40 CFR part 63, subpart SS. Further, the regulation at 40 CFR 63.2450(e)(4) states that the revisions apply "Beginning no later than the compliance dates specified in §63.2445(g)". We proposed a 3-year compliance timeline for this change, which is consistent with the language in 40 CFR 63.2445(g). We disagree that the EPA needs to add additional cross references to other paragraphs elsewhere in the rule for the sole reason to create crosswalks to those requirements.

Comment 150: A commenter stated that the proposal does not provide a compliance deadline if an existing affected source has a process change resulting in equipment or a process vent or storage tank that was not previously in EtO service to now be considered "in ethylene oxide service". The commenter argued that, without an averaging basis to be considered "in ethylene oxide service", an owner/operator could suddenly trigger the EtO requirements for equipment leaks, process vents, or storage tanks based on an instantaneous change to the process fluid composition under a normal scenario or a startup, shutdown, malfunction type of event or a nonstandard batch. A commenter stated that the EPA has previously allowed in other regulations, such as the OLD MACT under 40 CFR part 63, subpart EEEE, a way to request for a compliance extension if an addition or change other than reconstruction is made to an existing affected facility that causes the control criteria in the rule to be triggered. The commenter contended that the EPA should take two actions in the final rule: (1) amend the definition of "in ethylene oxide service" for process vents and storage tanks so that the cut-off is on an annual average basis (similar to the equipment leak part of the definition); and (2) amend the language in 40 CFR 63.2445(i) to provide a means to request an extension should an owner/operator suddenly trigger the new EtO requirements if an addition or change other than reconstruction is made to an existing affected facility. The commenter recommended the EPA reference the OLD MACT, 40 CFR 63.2342(b)(3)(ii), which provides a framework for the request and approval process. The commenter provided suggested regulatory text to support their recommendation.

Response: We are not aware of a situation where facilities would not have the process knowledge to identify whether planned process changes would increase the EtO content such that process vents, storage tanks, or equipment would come into EtO service. In fact, because being "in ethylene oxide service" will require additional controls and changes to permits, we expect that facilities will be even more cognizant of the effects of planned changes and the Agency is providing 3 years for facilities to develop a plan to ensure they have the flexibility they need to operate in compliance with these final requirements. For these reasons, we are not making any changes to the final rule based on this comment.

9.4 Testing

Comment 151: A commenter requested that the EPA continue to allow for the option to use of a design evaluation in lieu of performance testing to demonstrate compliance for both process vents and storage tanks in EtO service, particularly for manufacturers operating batch reactions. The commenter stated that batch operations cannot be reasonably run based on continuous monitoring, due to the inherent dynamic nature of the processes over time.

Response: No change is being made to the final rule as a result of this comment. The commenter did not provide enough information for the EPA to evaluate their request. In the final rule, as was proposed, we removed the option to allow use of a design evaluation in lieu of performance testing to demonstrate compliance for both process vents and storage tanks in EtO service in order to ensure that the required level of control is achieved. We are also finalizing, as proposed, that after promulgation of the rule, owners or operators that choose to control emissions with a non-flare control device conduct an initial performance test (as well as periodic performance testing every 5 years thereafter) according to 40 CFR 63.997 and 40 CFR 63.2450(g) on each existing control device in EtO service and on each newly installed control device in EtO service to verify performance at the required level of control.

Comment 152: One commenter interpreted the proposed language at 40 CFR 63.2520(d)(5), and the language at 40 CFR 63.7(g) (*i.e.*, "the results of the performance test shall be submitted as part of the notification of compliance status required under 63.9(h)") to require the initial compliance demonstration to be completed and results reported in the NOCS within 150 days after the first compliance date. The commenter requested that the EPA confirm that this interpretation is correct and that the results of any performance testing completed as part of the initial compliance demonstration are not required to be reported within 60 days after completing each individual performance test as required by 40 CFR 63.2520(f). The commenter indicated that 150 days, not 60 days, will be necessary to prepare the initial compliance demonstrations, particularly for sources in EtO service, due to the potential number of initial compliance demonstrations required and to ensure consistency and accuracy of reported results.

The commenter further pointed out that the proposed requirement at 40 CFR 63.2520(f) contradicts the current MON standards at 40 CFR 63.2450(g)(5) which require results of all initial compliance demonstrations to be included with the NOCS due 150 days after the compliance date. The commenter also said 40 CFR 63.2450(g)(5) conflicts with 40 CFR 63.999 which requires all performance test reports, "not submitted as part of a notification compliance status report," to be submitted within 60 days of completing the test. The commenter contended that the omission of an exception to the 60-day requirement in 40 CFR 63.2520(f) (for those performance tests conducted as part of the initial compliance demonstration) is an oversight. The commenter said that the EPA specifically acknowledges the exception to the 60-day requirement in 40 CFR 63.2520(f) in proposed revisions to 40 CFR 63.2520(d)(2)(ii) where the text says "The performance test results must be submitted to [Compliance and Emissions Data Reporting Interface] CEDRI by the date the notification of compliance status report is submitted."

The commenter requested that the EPA revise the language in 40 CFR 63.2520(g) in a similar fashion. The commenter requested the EPA make the initial performance evaluation reporting requirements consistent with those for performance tests so that facilities may streamline reporting scheduling and reduce the number of unique submissions. The commenter said the EPA has not provided any explanation or justification for changing the requirement that initial performance evaluation results be submitted with the NOCS to requiring facilities to submit initial performance evaluation results within 60 days of completing the evaluation.

Finally, the commenter requested the EPA modify 40 CFR 63.2520(g) such that it is clear the requirements only apply to CEMS relative accuracy test audits. The commenter said that without such clarification, the proposed requirements may lead to significant confusion.

Response: The EPA has amended the language in 40 CFR 63.2520(f) and (g) and 40 CFR 63.2450(j)(3) to add the phrase "Unless otherwise specified in this subpart" prior to the requirement to submit performance test and performance evaluation reports within 60 days. Table 11 of 40 CFR part 63, subpart FFFF requires the NOCS (including any compliance evaluations) to be submitted within 150 days after the compliance date specified in 40 CFR 63.2445. Table 12 of 40 CFR part 63, subpart FFFF further specifies that 40 CFR 63.7(g) applies, "except this subpart specifies how and when the performance test and performance evaluation results are reported." 40 CFR 63.2450(g)(5) further states, "The performance test results must be submitted to CEDRI by the date the notification of compliance status report is submitted."

It is our intent that the performance test results be submitted no later than the date the NOCS is submitted; as such, it is possible that the performance test or performance evaluation results would be due prior to the 60-day period specified in these sections. The EPA has also updated the language in 40 CFR 63.2520(g) to indicate that only performance evaluations of CEMS are required to be electronically reported through CEDRI.

Comment 153: A commenter contended that the EPA proposed to require test methods for storage tanks that are intended for water-based matrices: Method 624.1 of 40 CFR part 136, SW-846 Method 5031/8260D, or SW-846 Method 5030B/8260D to measure EtO levels. The commenter stated that the scope of each of these methods indicate they apply to aqueous samples, and the EPA has made no demonstration that EtO can be measured at concentrations as low as 1 ppm in non-aqueous matrices such as ethylene glycol, ethoxylates, etc. The commenter concluded that the EPA cannot require facilities to use test methods in an unproven application to demonstrate compliance with the proposed regulations.

A commenter requested that the EPA allow ASTM D6348-03 as an alternative test method to EPA Method 18 or 320 for measuring the moisture content and the EtO concentration in batch and continuous process vents and equipment leaks. The commenter contended that ASTM D6348-03 is an FTIR method very similar to EPA Method 320 that has less stringent quality control/quality assurance procedures. The commenter noted that other federal air regulations list ASTM D6348-03 as an option, including 40 CFR 63.457(b) and 63.1349, table 4 to subpart DDDD, table 4 to subpart ZZZZ, and table 8 to subpart HHHHHHH.

For the purposes of determining the percent EtO content of the process fluid for storage tanks and equipment leaks, a commenter also requested that the EPA allow the alternative method to use static headspace for sample preparation, coupled with Method 8260 in the SW-846 Compendium for detection. The commenter stated that although EPA Method 624.1 of 40 CFR 136 can be used to determine EtO concentration, most contract labs determine EtO concentration using preparation by Method 5030 (purge and trap) and analysis by EPA Method 8260 in the SW-846 Compendium. The commenter also stated that the EPA 600 series and SW-846 methods are designed primarily for environmental matrices, and due to the sample matrix (*e.g.*, consisting mainly of synthetic chemical product, *e.g.*, stored fluid in a tank), the EPA should allow the option to use static headspace for sample preparation coupled with Method SW-846 8260 for detection.

The commenter also stated that, for measuring the EtO concentration in the fluid stored in the storage tanks and equipment leaks for liquid process fluid, the EPA should reference the most current methods without specifying the revisions (*e.g.*, 8260D/5030B) since the revision number can change. The commenter suggested edits to 40 CFR 63.2492(a)(5), 63.2493(a)(2)(ii), (a)(3)(ii)(B), (a)(4), (a)(4)(ii), (b), (c)(1) to implement these recommendations. The commenter also recommended that the regulation should allow for measuring the vapor concentration and calculating the liquid concentration based on vapor-liquid equilibrium data, and Raoult's Law.

Response: The EPA agrees with the commenters that there may be some specific liquid matrices that are not compatible with the purge and trap or distillation preparation aqueous methodologies specified in the rule. However, the commenters did not provide enough specific information on the problematic liquid streams to include additional methodologies in the final rule. Sources may request alternatives methodologies in accordance with the alternative test method provisions of 40 CFR 63.7(f). If there are no methodologies that exist for proper preparation and quantification for a specific process liquid stream, the EPA will consider alternative techniques, such as static headspace sample preparation and/or vapor-liquid equilibrium as appropriate. Additionally, while we recognize that revisions to SW-846 Methods may occur, we are required to incorporate the specific version of the methods by reference into the final rule, and as such, we are retaining the method version specification in the final rule.

No change is being made to allow for the use of Method 320 or ASTM D6348-03 for moisture or ASTM D6348-03 for EtO. Method 4 already allows for the use of Method 320 as an alternative for moisture measurements as long as the user has properly validated the moisture measurement. As for the allowance of ASTM D6348-03 for EtO, the EPA does not believe the less stringent validation and QA/QC of this method is appropriate for measuring EtO to determine compliance with this rule. Sources may request a version of the ASTM 6438-03 methodology with more prescriptive and restrictive validations and QA/QC in accordance with the alternative test method provisions of 40 CFR 63.7(f).

9.5 Monitoring

Comment 154: A commenter requested greater clarification as to identifying the responsible entity for monitoring in context of the "Proposed Controls to Address Risks" section in the preamble to the proposed rule. The commenter stated that the EPA should provide clear guidance to define the acceptable monitoring techniques and the responsible entity.

Response: The comment is not clear. However, in an attempt to clarify the context of the "Proposed Controls To Address Risks" section of the preamble to the proposed rule, the section is intended to focus on various control techniques to reduce risk from EtO emissions from process vents, storage tanks, and equipment in EtO service. The requirements being finalized in the rule at 40 CFR 63.2493 apply to owners and operators of each process vent, storage tank, and piece of equipment in EtO service as defined in 40 CFR 63.2550.

Comment 155: A commenter provided information on their cavity ring-down spectroscopy technology capable of quantifying EtO at part per trillion levels in real time, without sample preparation or frequent calibration. The commenter said their developments should be considered in the EPA's technology reviews of future EtO emissions controls.

Response: We acknowledge the information that the commenter provided about cavity ring-down spectroscopy measurement technology capable of quantifying EtO at part per trillion levels in real time. We are not including this measurement technique in the final rule because there is no standard method for the use of the technology to provide proper quality assurance and control criteria at this time. The EPA is undertaking evaluations of this and other ultra low level technologies. The EPA will evaluate its appropriateness in future rulemakings. In the meantime, sources may request to use this technique in accordance with the alternative test method provisions of 40 CFR 63.7(f).

Comment 156: Commenters argued that the EPA should not finalize the proposed requirement at 40 CFR 63.2450(e)(7) for adsorbers that cannot be regenerated or adsorbers that are regenerated offsite. Commenters argued that the EPA has not met the administrative process requirements to propose the requirement, the EPA's justification for the proposed requirement is invalid, and the EPA has not provided enough time to comply. One commenter argued that the proposed equipment standard is not cost-effective and would not achieve any reduction in emissions.

One commenter argued that single beds are typically oversized and/or replaced well before the 98% removal or 20 ppm HAP emission limitation is reached, and single beds are typically only used where a small percentage of their capacity is expected to be needed. The commenter argued that conservative single bed change decisions reduce the monitoring required in such cases under applicable rules or permits, or a very conservative breakthrough point is set by rule or permit (*e.g.*, 10 ppm benzene set by the benzene waste operations rule).

The commenter argued that the EPA's claim in the preamble that "Without the proposed requirement to use dual adsorbent beds in series, sources might replace the beds based on temperature readings …," (84 FR 69227) has no bearing on the proposal because temperature is only an issue for beds that are being regenerated and is not used in determining if a non-regenerated bed needs to be replaced.

One commenter disagreed with the EPA's claim in the preamble that the owner or operator "may replace the bed prematurely in order to avoid non-compliance. The burden of purchasing the initial additional adsorber bed, when compared to the large increase in compliance assurance, is small." (84 FR 69227) The commenter argued that this rationale justifies use of single bed installations because, if owners or operators replace single beds prematurely and the cost of the replacement bed is small compared to the increased compliance assurance, as the EPA claims, then early replacement (as is typically practiced) is the preferred approach for assuring compliance, because it avoids all of the costs and emissions associated with having dual beds and results in a larger margin of compliance assurance than for a dual bed installation. The commenter also contended that since single bed adsorbents are typically replaced at low saturation levels or, at worst, as soon as outlet emissions suggest a performance degradation, emissions are well below the applicable emission limitation and thus there is no compliance assurance basis for requiring additional adsorbent (*i.e.*, a second bed in series).

The commenter argued that, in most places where adsorbents are used, the target species are tightly held and adding adsorbent would not decrease their emissions further. The commenter also argued that adding piping components required for a dual bed system will have negative consequences: (1) add continuous fugitive emissions from the additional valves and connectors, and (2) create, in some cases, operating concerns or require addition of compression due to the added back pressure from the second bed.

The commenter requested that the EPA continue to allow single bed systems for non-regenerative adsorbers and adsorbers that are regenerated off-site as in other NESHAP [*i.e.*, Off-Site Waste and Recovery Operations NESHAP, the OLD NESHAP, and the Benzene Waste Operations NESHAP (BWON)] because they provide compliance assurance without the burden imposed by the EPA's proposed revisions to the MON standards. The commenter argued that some facilities sometimes operate more than two beds in series for specific applications, and the EPA's proposed revision appears to prohibit such a configuration (*i.e.*, only allowing two beds in series, no more, no less). The commenter said neither the OLD NESHAP or BWON require dual beds in series, but these rules do not prohibit such a configuration, or other configurations, either. The commenter requested that the EPA should at least incorporate additional flexibility to allow facilities to use more than two beds in series.

Commenters disagreed with the EPA's position that there would be no cost for a second bed in a dual bed system. Commenters argued that the EPA did not consider the cost of reconfiguring the piping configuration, adding valves (because the units are not set up for series flow), and relocating existing single beds where space is not available for a second bed. One commenter noted additional costs for a dual bed system: (1) additional structural elements and foundations; (2) the ability to isolate each of the two beds to allow for safe change-out of the adsorbent while the other bed is operating; (3) for larger systems, the adsorbent may be contained in permanent drums and it is the adsorbent that is changed each time (not the drum), in which case, a second pressure vessel and adsorbent change-out auxiliaries will be needed; and (4) if the adsorbent and vessel are changed together, some facilities may not have sufficient additional space needed for motorized equipment to access the location for the change out.

Commenters argued that the EPA did not account for the following additional costs: (1) initial performance test and design evaluation, and ongoing daily, weekly, and/or monthly monitoring; (2) evaluation and possible replacement of the existing fan/blower system due to an increase in the pressure drop through the vent system from adding a second bed in series; (3) engineering, purchase, permitting, installation and maintenance of duct work or sampling ports; and (4) the support structure for a second adsorber at facilities that currently only use a single adsorber or multiple parallel adsorbers.

A commenter contended that this capital equipment will cost tens to hundreds of thousands of dollars to design and install and is not justified for many temporary, intermittent or mobile applications of adsorber systems. The commenter added that, for the situations where single beds are typically used, there is no potential emission reduction to be achieved for this high cost change and, thus, requiring dual beds is not cost effective on any reasonable basis. The commenter also stated that, in these days of rapid delivery supply chains, most replacement beds remain with the vendor until they are needed, instead of with the owner or operator.

Commenters stated that, if the EPA had considered costs in comparison to the expected emissions reductions, the EPA would have concluded that the proposed equipment standard is not cost-effective, especially for temporary adsorbers (*e.g.*, systems used for less than 6 months) and small adsorbers that infrequently need replacement. A commenter contended that the EPA should exempt temporary and small adsorbers from the dual bed and monitoring requirements because the requirement to operate temporary nonregenerative and regenerative adsorbers that are regenerated offsite as dual beds in series is likely not cost-effective. The commenter explained that facilities typically operate these temporary systems during periods of maintenance on equipment and control devices, and generally for periods of less than 6 months at a time. The commenter argued that the only requirement for such systems should be a record demonstrating the bed life is appropriate for the maximum expected emissions loading. The commenter further argued that small adsorbers that are changed infrequently and adsorbers that are operated solely as back-up control devices should also be exempted on the basis of the requirements not being cost- effective, and on the basis that they are operated no more than some percentage of the minimum potential saturation time.

Commenters argued that the proposed monitoring requirements for adsorbers that cannot be regenerated or adsorbers that are regenerated offsite are overly burdensome, unjustified in light of similar rules and currently approved alternative monitoring, and would not achieve any reduction in emissions.

Commenters requested that the EPA continue to allow single bed systems and adopt the monitoring requirements in other NESHAP that already contain monitoring requirements for non-regenerative adsorbers and adsorbers that are regenerated off-site (*i.e.*, Off-Site Waste and Recovery Operations NESHAP, the OLD NESHAP, and the BWON) because they provide compliance assurance without the burden imposed by the EPA's proposed revisions to the MON standards.

Commenters argued that some facilities sometimes operate more than two beds in series for specific applications, and the EPA's proposed revision appears to prohibit such a configuration (*i.e.*, only allowing two beds in series, no more, no less). The commenter said neither the OLD NESHAP or BWON require dual beds in series, but these rules do not prohibit such a configuration, or other configurations, either. The commenter requested that if the EPA decides to not adopt the monitoring requirements in other NESHAP, then at the least, the EPA should incorporate additional flexibility to allow facilities to use more than two beds in series.

A commenter stated that single bed systems have reliably been used to meet MON limits, and the EPA has not demonstrated the need for compliance assurance or monitoring improvements for single bed adsorbers. The commenter further argued that the EPA has made no claim that the current breakthrough monitoring is unable to identify when breakthrough has occurred, and the EPA's proposal would still require breakthrough monitoring on the outlet of the first bed after the change, just as it does today.

A commenter requested that the EPA not require monitoring if the adsorbent is replaced prior to reaching the design bed life, as provided in the Benzene Waste Operations Rule and the Offsite Waste NESHAP (40 CFR 61.354(d) and 63.693(d)(4)(iii)(B)). The commenter stated that there are temporary systems, small systems, back-up systems and other cases, where it is easier to change out the bed than to monitor, so that it is much less costly than performing monitoring (than installing a second bed), particularly for small absorber systems.

Commenters requested that, if the EPA promulgates the adsorber monitoring requirements, the EPA should also remove the requirement at 40 CFR 63.2450(e)(7)(iii)(B) to conduct daily monitoring for the first three adsorber bed change outs because this amount of testing is excessive and represents an unnecessary cost. Commenters pointed out that, to ensure compliance, some facilities routinely replace adsorbent well in advance of breakthrough (for example, on a non-continuous/intermittent backup system, some facilities replace adsorbent on a yearly basis, regardless of whether the bed is approaching saturation); therefore, the bed life could never be established as required by proposed 40 CFR 63.2450(e)(7)(iii)(B). Commenters said that the EPA should adopt a reduced monitoring frequency similar to the BWON at 40 CFR 61.354(d) where facilities are allowed to monitor either daily, or at intervals no greater than 20 percent of the design carbon replacement interval. One commenter argued that it is wasteful and unnecessary to require daily sampling, explaining that bed lives often are many months, and, in many services, there will not be three replacements over the life of the installation. Commenters explained that, in general, the bed capacity is calculated and a change out schedule is set such that the adsorbent is replaced when the bed reaches 50% to 80% capacity, and because the change out frequency is determined based on a fraction of the bed capacity, adequate "buffer" is maintained for unexpected and infrequent periods where the organic loading to the bed is higher than design values. A commenter explained that, for single bed systems, breakthrough is typically defined to trigger change out well before the bed capacity is reached and, for dual bed systems, the change out occurs with the combined system is at no more than 50% capacity (*i.e.*, the second bed is still unused).

Response: The EPA's response to these comments can be found in Section IV.E.3 of the preamble to the final rule amendments.

Comment 157: Commenters requested that the EPA include provisions in the final rule that allow facilities to continue to use previously approved alternative monitoring instead of the proposed requirements at 40 CFR 63.2450(e)(7) because the proposed requirements do not modify the underlying emissions standard. The commenters said that at least two companies have received approval from EPA Regional Offices for alternative monitoring methods for adsorbers that are regenerated offsite, and the EPA has found these alternative monitoring approaches to adequately demonstrate compliance with the underlying standards.

Response: The EPA disagrees that the final rule should allow facilities to continue to use previously approved alternative monitoring. Because the underlying monitoring provisions have been revised in the final rule, facilities using alternative monitoring will need to submit to the EPA a new request for approval of alternatives to the monitoring requirements in the final rule under 40 CFR 63.8(f).

Comment 158: Commenters requested that the EPA clarify that 40 CFR 63.2450(e)(7) allows either a performance test or a design evaluation regardless of the size and/or application of the adsorber. A commenter pointed out other language in 40 CFR 63.2450(h) allows one to determine the percent reduction of a small control device that is used to comply with an emission limit by electing to conduct a design evaluation as specified in 40 CFR 63.1257(a)(1) instead of a performance test as specified in subpart SS of part 63. The commenter recommended revising 40

CFR 63.2450(e)(7)(i) to clarify that a performance test or a design evaluation is allowed to establish the breakthrough limit: "Conduct an initial performance test or design evaluation of the adsorber and establish the breakthrough limit regardless of whether the adsorber is a small or large control device."

Commenters pointed out that 40 CFR 63.2450(e)(7) does not reference 40 CFR 63.985(b)(1), 40 CFR 63.990(b), or 40 CFR 63.2450(h). The commenter said 40 CFR 63.985(b)(1) and 40 CFR 63.990(b) only allow a design evaluation for adsorbers if the system is used to control emissions from storage vessels and low throughput transfer racks. The commenter also pointed out that 40 CFR 63.2450(h) contains language that allows facilities to conduct a design evaluation instead of the performance test required by Subpart SS if the control device is a "small control device" (*i.e.*, controls total HAP emissions of less than 10 tpy).

Commenters also requested that, if the EPA promulgates a requirement to operate a series of dual beds, the EPA clarify that existing dual bed systems which have already completed the initial performance testing or design evaluation under 40 CFR 63.990 are not required to repeat testing or the design evaluation pursuant to 40 CFR 63.2450(e)(7)(i) because such a requirement would be duplicative and represent unnecessary burden.

Response: The EPA agrees with the commenters and is clarifying in the final rule that 40 CFR 63.2450(e)(7) allows either a performance test or a design evaluation regardless of the size or application of the non-regenerative adsorber to establish the breakthrough limit. The limitation for design evaluations in 40 CFR 63.2450(h) is for determining percent reduction for small control devices. Because the final rule requires the use of two adsorber beds in series, with monitoring for breakthrough at the outlet of the first adsorber bed, a design evaluation will be sufficient to establish the breakthrough limit. Once the breakthrough limit is reached, the first bed will need to be replaced. The second bed will be moved into the function of the first bed, and a new bed will be put into position as the second bed. Breakthrough monitoring will then commence for the new first adsorber bed (which was previously the second adsorber bed). Because these systems will always have a relatively fresh adsorber bed following the point where breakthrough is monitored, whether the breakthrough limit is determined from a design evaluation or a performance test will not affect emissions as the second bed provides assurance that any breakthrough will be captured. Additionally, because monitoring will occur at increasing frequencies near the expected end of the first bed's life, owners and operators will not be relying solely on the design evaluation to determine when breakthrough might occur.

The EPA agrees with commenters and is clarifying in the final rule that owners or operators of dual bed systems that have already completed a performance test or design evaluation that meets the requirements of 40 CFR 63.990 of subpart SS are not required to repeat the performance test or the design evaluation. However, they will need to begin complying with the other monitoring requirements of 40 CFR 63.2450(e)(7).

Comment 159: Commenters requested that the EPA remove references to specific monitoring methods in 40 CFR 63.2450(e)(7). A commenter noted that other rules applicable to adsorber systems do not specify specific monitoring methods, only that monitoring is required and the frequency of the monitoring. Commenters urged the EPA to not require Method 21 as proposed because Method 21 is not suitable for monitoring a vent stream, such as an adsorber outlet, but is designed to measure equipment leaks in a relatively static volume of air. The commenter pointed out that the monitoring instrument used in Method 21 can be used to determine the TOC level of a vent stream if the TOC level is low, but deviations from Method 21 calibration procedures would be needed. Commenters further pointed out that both Methods 21 and 25A measure total organic compounds, not HAP: therefore, the proposed requirements do not allow a source to demonstrate compliance based on HAP. A commenter stated that Method 21 or Method 25A as proposed would not be applicable or necessary for their facilities because LDAR monitoring is contracted, and a Method 21 operator is not available for daily measurements, so staffing arrangements would be required.

Response: The EPA disagrees with the commenter that Methods 21 and 25A should not be specified because they measure only total organic compounds and not HAP. The purpose of monitoring at the outlet of the adsorber is to determine when breakthrough of the adsorber bed occurs, and consequently, when the adsorber is no longer adequately controlling emissions, not to compare readings with the HAP limits in the rule (*e.g.*, percent removal or outlet organic HAP concentrations). As such, it not necessary to directly monitor the HAP emissions – it is only necessary to be able to determine when breakthrough has occurred. Once the adsorber bed reaches equilibrium capacity and breakthrough is detected, the performance of the bed will begin to decline for both total organic compounds and organic HAP. Often, using Methods 21 or 25A to determine breakthrough can provide better information than monitoring a single HAP of concern. Because these methods measure the total organics in the gas stream, there are less issues related to detection limits (because there is a greater total amount of organics than of one single compound) and there are no issues with needing to determine which HAP would be emitted during a particular batch process. Additionally, these methods are easier to perform than other methods that would need to be performed for some organic HAPs. We note that daily monitoring is not required until the end of the adsorber bed life. Owners and operators know when the adsorber bed is expected to reach the end of its design life and should plan to monitor the outlet of the adsorber bed accordingly.

In the final rule, we have added regulatory text to indicate that the Method 21 or Method 25A instrument can be calibrated using the primary HAP being controlled. We believe this should resolve concerns for commenters who are concerned about monitoring HAP emissions, especially when a HAP is the primary organic in the gas stream. Additionally, we have specified that methane and propane, and for Method 21, isobutylene, are also appropriate for calibrations, as it is only necessary to determine breakthrough, not the HAP content of the stream. We believe that specifying the calibration gases that can be used will alleviate concerns related to the detecting technology and calibration procedures in Method 21. Sources wishing to use another method to monitor breakthrough at the adsorber exit may request an alternative monitoring method pursuant to 40 CFR 63.7(f)(1)-(5).

Comment 160: Commenters requested that the EPA allow the use of detector tubes for the primary HAP, which are commonly used. Commenters stated that detector tubes are commonly used to indicate breakthrough, or potential breakthrough. Commenters explained that detector tubes sample the flow at a sample point some fraction through the bed for a specific compound (*e.g.*, benzene); and the use of detector tubes reduces costs by replacing instrument monitoring while offering continuous monitoring of bed performance. A commenter stated that colorimetric detector tubes may be of value for streams where HAP is a small portion of the stream. Commenters provided a description of detector tubes in Attachment C of their comment letter, which includes the alternative monitoring approval for Eastman.

A commenter explained that their 5 single-bed units currently demonstrate compliance using colorimetric desiccant indicators that indicate the presence of free organic two-thirds of the way through the bed with purple beads that turn brown when the bed begins to expire. The commenter reported that the detector tubes are inspected daily and once the tube turns brown from top to bottom, the bed is changed even though an estimated 20-30 percent of bed life remains to prevent breakthrough. The commenter reports that the EPA has approved this monitoring method and the approval is conditioned on the replacement of the catalyst before the indicator starts to turn brown once the catalyst reaches the maximum life based on past operating history using this monitoring method.

Response: The EPA's response to these comments can be found in Section IV.E of the preamble to the final rule amendments.

Comment 161: Commenters requested that the EPA clarify that monitoring should occur based on actual hours of operation of the bed to address the fact that some systems are operated intermittently. A commenter requested that no monitoring should be required if the system is not in regulated material service (*i.e.*, regulated material is not being routed to the adsorber).

Response: We agree with the commenters that the monitoring should be based on actual hours of operation of the bed and only when the bed is in regulated material service. However, if the adsorber was previously used in non-regulated material service and is then switched to regulated material service, the hours the bed was used in non-regulated service must also be used in the determination of remaining bed life and the determination of the required monitoring frequency in order to ensure that the bed has sufficient capacity to remove HAP while it is in regulated material service.

Comment 162: A commenter requested that the EPA revise the immediate change-out requirement in 40 CFR 63.2450(e)(7)(iii)(A) to provide that if the adsorber is taken out-of-service within 8 hours or 24 hours, as applicable, the bed change out must be completed prior to the adsorber being returned to service. The commenter pointed out that proposed 40 CFR 63.2450(e)(7)(iii)(A) requires adsorber replacement "immediately" when breakthrough is detected, regardless of whether the adsorber is in intermittent service, for which the vent flow can be stopped. The commenter argued that if the adsorber is taken out-of-service within the 8 hours or 24 hours, as applicable, there is no need to replace the bed until the adsorber is to be returned to service.

A commenter requested that, where the first bed of a dual bed system reaches breakthrough and the second bed is moved into primary bed service, the owner or operator should be allowed half the time the depleted bed had operated, up to a maximum of 30 days, to change out the depleted bed or adsorber. The commenter explained that most dual bed systems are sized for each bed to be able to achieve the emission limitation for at least several months, and if the breakthrough criterion is reached by the primary bed and the secondary bed is put into the primary position, it will be months before the new primary bed nears breakthrough. The commenter argued that there is no reason to incur overtime and premium costs to accomplish such a change out in 8 or even 24 hours; rather, adequate time should be allowed to plan the change out and execute it under a normal work schedule.

Response: The EPA agrees that there is no need to immediately change the bed that has reached breakthrough as long the flow through the adsorber system is stopped, and is not restarted until the bed has been replaced. However, the adsorber system cannot be operated without two beds in place, except for the amount of time allowed for bed replacement.

The EPA disagrees that half the estimated bed life, up to a maximum of 30 days, should be allowed to change or replace the depleted adsorber bed while the adsorber system is operating. Owners and operators know when the adsorber bed is expected to reach the end of its design life and should plan for bed change outs accordingly. In adsorber systems in which each bed has a volume of 55 gallons or less, the adsorber media is typically in canisters and an owner and operator can arrange with their vendor to have a new canister on site towards the end of the design life of the adsorber bed. Similarly, for larger adsorber systems, the owner and operator can schedule a carbon replacement towards the end of design life of the adsorber bed.

Comment 163: Commenters requested that the EPA not finalize the proposed changes to 40 CFR 63.2450(j)(5) unless the EPA can adequately justify the resulting burden under CAA 112(d)(6). The commenters stated that the proposed requirement implies that facilities must use oxygen CEMS to determine oxygen concentrations for correcting emissions measurements; however, the MON, like other rules (*e.g.*, OLD NESHAP) has no such requirement. The commenters also said that facilities typically use oxygen analyzers, which are not CEMS, to correct emissions values. The commenters argued that a requirement to install and certify oxygen CEMS would result in significant capital expenditure and ongoing maintenance and certification costs (*e.g.*, QA/QC, relative accuracy test audits, etc.), for which the EPA has not accounted.

Response: The EPA disagrees that where oxygen correction is required most rules do not require the use of an oxygen CEMS. For example, the Acid Rain Program codified in 40 CFR part 75, the Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units in 40 CFR part 60 subpart Db, the NESHAP from Hazardous Waste Combustors in 40 CFR part 63, subpart EEE, and the NESHAP for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units in 40 CFR part 63, subpart UUU all require that oxygen (or in some cases carbon dioxide in lieu of oxygen) be measured by a CEMS. In general, when used to determine a diluent correction, the EPA expects oxygen analyzers to be CEMS; this is why a performance specification for oxygen CEMS, originally promulgated in 1975, exists.

We note that the language in OLD was previously ambiguous, which is why we clarified the requirements in the recently promulgated final rule (see the March 12, 2020 prepublication version of 40 CFR 63 subpart EEEE, specifically 40 CFR 63.2354(d)). (See the amended 40 CFR 63.2354(d) to Subpart EEEE). As we noted in the response to comments for that rule, The EPA intended for those continuous monitors to be CEMS. In general, in the case of post-combustion continuous emissions monitoring, part of the monitoring is oxygen concentration, and as such, oxygen monitoring is part of the CEMS arrangement.

Comment 164: Commenters requested that the EPA exempt all downtime required by the applicable standards, not just zero and high-level checks, from the reporting requirement in

40 CFR 63.2520(e)(5)(iii)(A) in order to reduce burden. The commenter said that facilities must typically remove the CMS from operation to perform recommended maintenance and calibration. The commenters pointed out that the MON and Subpart SS require CMS downtime for periods in addition to zero and high-level checks (*e.g.*, 40 CFR 63.996 requires facilities to calibrate and maintain CMS according to manufacturer's specifications or other written procedures).

Response: The EPA proposed to revise 40 CFR 63.2520(e)(5)(iii)(A) to clarify that owners and operators had to report the start date, start time, and duration (in hours) that each CMS was inoperative, instead of only the "date and time." Therefore, the commenters request goes beyond the scope of the EPA's proposal and includes changes to the types of periods that would be exempt from reporting.

The EPA is not making the recommended change to expand the reporting exemptions to include the downtime associated with all recommended maintenance and calibrations. We understand that a CMS must typically be removed from operation in order to perform maintenance and calibrations and that these required activities will result in downtime; in fact, quality assurance/quality control calibrations is a downtime category included in CMS performance summary reports. The difference between these downtime periods and the exempted zero and high-level check periods is the amount of time associated with performing the action. Zero and high-level checks can be performed quickly, within a matter of minutes. It is likely that the CMS could still provide a valid data point for the 15-minute quadrant in which the checks occur. Calibrations take longer to perform than checks because they generally require manual intervention from an operator and the instrument is being tuned to a specific reading instead of just verifying that the instrument is reading correctly. Likewise, depending on the maintenance performed, the CMS could be down for hours when maintenance is being performed. Because we think that these periods provide valuable information on how the CMS is maintained and operated, we are requiring all downtime periods, other than zero and high-level checks, to be reported.

Comment 165: A commenter requested that the EPA amend the language in 40 CFR 63.2450(e)(7) to recognize other previously approved monitoring alternatives and to account for other potential adsorber system configurations. The commenter requested that the EPA consider adding flexibility to the monitoring options to account for other adsorber system configurations, such as: (1) installation of one carbon tote or carbon drum for a short term, temporary situation such as venting during a startup or shutdown scenario or as a temporary backup control method for a malfunction situation on the primary control device, (2) an adsorber system consisting of two or more adsorber units in series (*e.g.*, a few sites use carbon drum or carbon tote systems consisting of four carbon canisters in series, which although may not be used for MON compliance, could be used in the future for MON compliance); (3) several carbon drum systems, such as used by Dow Silicones Corporation at Michigan Operations to comply with MON and for which an alternative monitoring method has been approved. For the Dow Silicones Corporation configurations, the commenter indicated that the alternative monitoring was approved for a carbon drum located downstream of a carbon tote with the carbon drum on a scale that continuously monitors the weight; "if the weight of the carbon drum increases more than XX lbs (*i.e.*, 55% of carbon drum saturation) from the initial drum weight, it will be changed within 12 hours." The commenter stated that the EPA approved the request contingent on Dow Corning first establishing the weight by which it must replace each drum to maintain compliance and establish this parameter through performance testing (or a design evaluation for a small control device). The commenter argued that Dow Silicones Corporation should continue to be allowed to comply with this approved alternative monitoring approach instead of the proposed approach prescribed in 40 CFR 63.2450(e)(7). The commenter recommended revised text for 40 CFR 63.2450(e)(7) to recognize other previously approved monitoring alternatives and to account for other potential adsorber system configurations.

The commenter also recommended associated revisions to the citations within the associated recordkeeping and reporting requirements in 40 CFR 63.2520(e)(13) and 63.2525(o).

Response: The EPA is not revising the monitoring provisions as requested by the commenter. The monitoring provisions in the final rule will not include a requirement for daily monitoring, as explained in the preamble to the final rule. The final rule also will not include the alternative of complying with subpart EEEE. Owners and operators have the option of applying for permission to use alternative monitoring under 40 CFR 63.8(f), so it is not necessary to specifically include that alternative in subpart FFFF.

9.6 Recordkeeping and Reporting

Comment 166: A commenter requested that the EPA revise the proposed requirements at 40 CFR 63.2450(e)(3)(ii) and 40 CFR 63.2520(c)(8) such that they are only applicable to new or modified control devices installed or modified after the effective date of the rule. The commenter said that the requirement to include procedures for establishing monitoring parameters for halogen reduction devices other than a scrubber in the precompliance report required by 40 CFR 63.2520(c) only applies retroactively because none of the other proposed changes would require new halogen reduction devices and there is nothing in the proposal to indicate a new or revised precompliance report would be required for any facility.

Response: The proposed requirements at 40 CFR 63.2450(e)(3)(ii) and 40 CFR 63.2520(c)(8) are intended to resolve gaps in the regulation related to establishing monitoring parameters for halogen reduction devices other than a scrubber. These requirements do not apply retroactively or require resubmittal of a precompliance report. There are no changes to the rule as a result of this comment.

Comment 167: A commenter agreed with the EPA's addition of a line item in the precompliance report under 40 CFR 63.2520(c)(8) pertaining to submittal of procedures for establishing monitoring parameters for halogen reduction devices other than a scrubber and the associated requirement in 40 CFR 63.2450(e)(3)(ii). For ease of reference, the commenter recommended revising 40 CFR 63.2520(c)(8) to cross reference 40 CFR 63.2520(e)(3)(ii) as follows: "For halogen reduction device other than a scrubber, procedures for establishing monitoring parameters as required by §63.2450(e)(3)(ii)."

Response: The EPA acknowledges the commenter's support. The EPA agrees with the clarification suggested by the commenter and has revised the final rule as requested.

Comment 168: A commenter argued that the EPA should clarify whether, for flares not complying with the new flare requirements in 40 CFR 63.2450(e)(5), the insufficient monitoring data language in 40 CFR 63.999(c)(6)(i)(B)-(D) was intended to apply to both flares and nonflare control devices or if the reporting citation in 40 CFR 63.999(c)(3) is the only reporting obligation. The commenter explained that in the recordkeeping section of Subpart SS, 40 CFR 63.998(a)(1)(ii) requires keeping hourly records of whether the flare monitoring device to continuously detect that at least one pilot flame or the flare flame is present (specified in 40 CFR 63.987(c)) is continuously operating and whether the flare flame or at least one pilot flame is continuously present. The commenter continued that, in 40 CFR 63.999(c)(6), the EPA specifies the criteria for what an "excursion" is and explains what constitutes a period of insufficient monitoring data. The commenter argued that, while it is obvious that the daily average language in 40 CFR 63.999(c)(6)(i)(A) does not apply to flares, it is unclear whether the 75% uptime requirement in 40 CFR 63.999(c)(6)(i)(B)-(D) applies to flares and possibly the reporting citation in 40 CFR 63.999(c)(3) is the only reporting obligation for flares.

Response: We interpret the rule such that 40 CFR 63.999(c)(3) is the only reporting obligation for flares used as APCDs in the Miscellaneous Organic Chemical Manufacturing source category that are not complying with the new flare requirements in 40 CFR 63.2450(e)(5). As noted elsewhere in this document, the EPA may, at some time in the future, consider making amendments to 40 CFR part 63, subpart SS; however, to do so in 40 CFR part 63, subpart SS would impact other source categories not subject to this rulemaking. Therefore, for now, the EPA is not making any changes to this regulatory text.

9.7 Overlap with Other Rules

9.7.1 Flares

Comment 169: A commenter recommended that the EPA incorporate provisions into the final rule that allow facilities to determine the predominate use of a flare similar to the storage vessel ownership determination in 40 CFR 63.1100(e). The commenter requested the EPA allow facilities to comply with the NESHAP regulating the predominate use. The commenter argued that some flares are used as a common control device for several regulated source categories (*e.g.,* ethylene production MACT, HON, RSR, etc.) and that, for certain flares, the overall contribution to the waste gas stream from the MON regulated sources is relatively small compared to the waste gas flows from the other regulated source categories.

The commenter also recommended that the EPA clarify that for any emission point subject to the requirements in Tables 1, 2, 4 or 5 to 40 CFR part 63, subpart FFFF for which a facility uses a flare in compliance with 40 CFR part 63, subpart CC as a control device, the facility is not required to comply with 40 CFR 63.2450(e)(5), 40 CFR 63.2520(d)(3), 40 CFR 63.2520(e)(11), or 40 CFR 63.2525(m) for those emission points. A commenter also pointed out that while 40 CFR part 63, subpart CC addresses overlaps with 40 CFR 63.11 and 40 CFR 60.18, it does not address overlaps with flare requirements contained in other NESHAPs. The commenter recommended the final MON rule clarify in proposed 40 CFR 63.2450(e)(5) and in proposed 40 CFR 63.2535(m) that a flare complying with Refinery MACT 1 flare requirements is considered compliant with the new MON flare requirements and that recordkeeping and reporting is not required under the MON for those flares. Additionally, the commenter urged it should be indicated in 40 CFR 63.2450(e)(5)(i) that a refinery flare wishing to apply for an AMEL as specified in paragraph (r) of 40 CFR 63.670 of Refinery MACT 1, need not also apply and receive approval under 40 CFR 63.2450(e)(5)(i). The commenter also said it will be necessary to address overlap in any other rule that references 40 CFR 63.670 and 40 CFR 63.671

and where regulated material from those other source categories might reach a flare subject to 40 CFR part 63, subpart CC (*e.g.*, the currently proposed OLD NESHAP and MON).

Similarly, a commenter also requested that the EPA clarify that compliance with 40 CFR 60.18, 40 CFR 63.11, and 40 CFR 63.982(b) is not required if you are in compliance with 40 CFR 63.2450(e)(5). The commenter argued that there is no justification for a flare subject to the requirements at 40 CFR 63.2450(e)(5) to continue to meet the requirements of these rules considering the EPA has proposed that these requirements are inadequate to ensure proper performance of flares at petrochemical facilities. A commenter supported the inclusion of an option for an owner or operator to choose to opt into the proposed flare standards in lieu of complying with the current flare standards (40 CFR 63.11(b)). The commenter cited that an opt-in provision would be important for some flares due to the presence of hydrogen in the vent gas, and how the new combustion zone parameters treat hydrogen.

Response: We disagree with commenters that we should incorporate provisions into the final rule that allow facilities to determine the predominate use of a flare similar to the storage vessel ownership determination in 40 CFR 63.1100(e). Flares are considered an APCD under 40 CFR part 63 NESHAP while storage vessels are considered an affected emissions source under 40 CFR part 63 NESHAP, and the predominate use language was written for storage vessels so that they would only be considered an affected emissions source for a single source category and be subject to a single set of MACT standards. With respect to APCD, the MON standards (and other MACT standards for other source categories in general) only specify the level of control facilities must achieve and do not specify the type of APCD facilities must use to demonstrate compliance with the underlying MACT standards. Thus, while facilities are free to use the same APCD to comply with MACT standards for multiple NESHAP provided they can achieve the level of control necessary in those NESHAP, facilities have always had an obligation to meet each NESHAP's performance testing, monitoring, recordkeeping, and reporting requirements for the APCD they are using to comply with the underlying MACT standards. In other words, the EPA has never had a set of uniform performance testing, monitoring, recordkeeping, and reporting requirements for a specific APCD that may be used to comply with multiple NESHAP and facilities have always had an obligation to comply with the requirements of each NESHAP they are subject to.

In response to the commenter's request that the EPA clarify that compliance with 40 CFR 60.18 and 40 CFR 63.11 is not required if you are in compliance with 40 CFR 63.2450(e)(5), we are finalizing 40 CFR 63.2535(m)(1) as was proposed for 40 CFR 63.2535(m), that flares subject to 40 CFR 60.18 or 40 CFR 63.11 and used as a control device for an emission point subject to the requirements in Tables 1, 2, 4 or 5 to 40 CFR part 63, subpart FFFF are only required to comply with 40 CFR 63.2450(e)(5).

In response to a commenter's request that the EPA clarify that compliance with 40 CFR 63.982(b) is not required if you are in compliance with 40 CFR 63.2450(e)(5), we are adding a paragraph at 40 CFR 63.2535(m)(2) that allows owners and operators of a flare subject to 40 CFR 63.987 that is also used as a control device for an emission point subject to the requirements in Tables 1, 2, 4 or 5 to 40 CFR part 63, subpart FFFF, to comply with only 40 CFR 63.2450(e)(5).

In response to a commenter's request that the EPA clarify that a flare complying with the flare requirements in 40 CFR part 63, subpart CC is considered in compliance with the new MON flare requirements in 40 CFR part 63, subpart FFFF (including all recordkeeping and reporting provisions), we are adding a paragraph at 40 CFR 63.2535(m)(3) that allows owners and operators of a flare used as a control device for an emission point subject to the flare requirements in 40 CFR part 63, subpart CC that is also used as a control device for an emission point subject to the requirements in Tables 1, 2, 4 or 5 to 40 CFR part 63, subpart FFFF, to comply with only the flare requirements in 40 CFR part 63, subpart CC. We are also specifying in the final rule that this overlap provision does not apply to multi-point pressure assisted flares.

Comment 170: A commenter requested the EPA communicate to state air permitting agencies that implementing the new flare requirements in 40 CFR 63.2450(e)(5) should be considered equivalent to existing state air pollution rules and permits that reference the existing 40 CFR 60.18 and 63.11 requirements.

Response: We are finalizing, as proposed, rule text that addresses overlap of 40 CFR part 63, subpart FFFF with other regulations for flares for the Miscellaneous Organic Chemical Manufacturing source category. Specifically, we clarify at 40 CFR 63.2535(m) that flares subject to the provisions of 40 CFR 60.18 or 40 CFR 63.11 and used as a control device for an emission point subject to the requirements in Tables 1, 2, 4 or 5 to 40 CFR part 63, subpart FFFF are only required to comply with the provisions specified in 40 CFR 63.2450(e)(5). We find this rule text sufficient for communicating what we mean with regard to overlap between the general provision flare regulations and the MON flare regulations. No change is being made to the final rule as a result of this comment

Comment 171: Commenters said they support the EPA's proposed language in 40 CFR 63.2535(m) that eliminates cross-references to 40 CFR 60.18 and 63.11. A commenter also said it supports the EPA's proposed language in 40 CFR 63.2535(m) that allows compliance with the new provisions in 40 CFR 63.2450(e)(5) at any time prior to the compliance date. A commenter supported placing the requirements in the MON standard rather than in the General Provisions, as this requirement should apply only to sources subject to the MON standard. The commenter also supported the qualification that this requirement applies only when regulated material is being routed to the flare.

Response: We acknowledge the commenters' support for the overlap provisions at 40 CFR 63.2535(m).

9.7.2 Equipment Leaks

Comment 172: Commenters recommended that the EPA add reference to 40 CFR part 60, Subpart VVa in the overlap provisions for equipment leaks at 40 CFR 63.2535(k). The commenters pointed out that 40 CFR part 60, Subpart VVa already contains overlap provisions for 40 CFR 60, Subpart H (one of the allowed LDAR options under the MON standards), but does not address 40 CFR part 63, subpart FFFF or 40 CFR part 63, subpart UU. A commenter also pointed out that the EPA recently proposed these overlap provisions for the ethylene production MACT standards. Commenters stated that, without clarifying the overlap with NSPS VVa, facilities would currently have to request permission on whether or not they can comply with subpart H / subpart UU to demonstrated compliance with NSPS VVa and what additional requirements must be met to satisfy NSPS VVa requirements.

A commenter suggested that in order to use an overlap option with NSPS VVa, connectors in gas/vapor and light liquid service at an existing source that are subject to monitoring under NSPS VVa need to be monitored under the corresponding connector provisions 40 CFR part 63 subparts H (40 CFR 63.174) and subpart UU (40 CFR 63.1027) in order to supersede NSPS VVa. The commenter stated that the provision in 40 CFR 63.2480(b)(4) to treat connectors in gas/vapor and light liquid service at an existing source as a connector in heavy liquid service should not be allowed if using the suggested overlap option for NSPS VVa in 40 CFR 63.2535(k).

In addition, the commenter requested that the EPA not include the requirement to comply with the calibration drift assessment provisions of 40 CFR 60.485a(b)(2) as it is unnecessary and contributes to costs. The commenter pointed out that the calibration drift assessment provisions of 40 CFR 60.485a(b)(2) are not required in 40 CFR part 63, subparts H or UU. The commenter also said that if the EPA insists on maintaining the requirement to perform the calibration drift assessment, then 40 CFR 63.2535(k) should be revised to correct the calibration drift requirement at 40 CFR 60.485a(b)(2) because the requirement to use the average algebraic difference between the three meter readings and the most recent calibration value at 40 CFR 60.485a(b)(2) represents a calibration precision test as outlined in Section 8.1.2 of Method 21, not a calibration drift assessment. The commenter said that a drift assessment would instead use only one meter reading for the lowest concentration of non-zero air calibration gas when calculating the drift assessment.

Finally, the commenter requested that the EPA remove the reference to 40 CFR 63.2445(g) from the introductory paragraph of 40 CFR 63.2535. The commenter stated that the cross-reference to 40 CFR 63.2450(a)(2) in 40 CFR 63.2445(g)(1) is applicable to practically every piece of equipment, emission stream, or wastewater stream regulated by the MON standards because 40 CFR 63.2450(a)(2) refers to all the standards in Table 1 through 7 of subpart FFFF and all the requirements in 40 CFR 63.2455 through 40 CFR 63.2490. The commenter said that they concluded that the EPA’s intent was to only reference flares and equipment, process vents, and storage tanks in EtO service.

Response: We agree with the commenters’ request to include NSPS VVa in the overlap provisions of 40 CFR 63.2535(k) and are revising the final rule at 40 CFR 63.2535(k) to reflect this.

We also agree with one commenter’s suggestion that 40 CFR 63.2480(b)(4) should not apply (*i.e.*, connectors in gas/vapor and light liquid service at an existing source should not be allowed to be treated as a connector in heavy liquid service) if using the overlap option for NSPS VVa in 40 CFR 63.2535(k); therefore, we are revising the final rule at 40 CFR 63.2535(k) to reflect this.

Furthermore, with regard to a commenter’s request to not include the requirement to comply with the calibration drift assessment provisions of 40 CFR 60.485a(b)(2), the EPA is retaining the requirement but caveating the regulatory text to note that this only applies for facilities that are subject to this requirement in 40 CFR part 60 subpart VVa. Revising the requirements of 40 CFR part 60 subpart VVa is outside of the scope of this rulemaking.

Finally, we agree with the commenter's request to remove the reference to 40 CFR 63.2445(g) from the introductory paragraph of 40 CFR 63.2535. However, we also note that, at proposal, 40 CFR 63.2450(e)(5) was mistakenly referenced in the introductory paragraph of 40 CFR 63.2535; and we have determined that this reference should be removed because referencing 40 CFR 63.2493 is enough to convey that emissions sources in EtO service are not allowed to use the overlap provisions. Therefore, we are revising the final rule to reflect these errors.

Comment 173: One commenter added that the proposed pressure release management requirements in 40 CFR 63.2480(e)(3) should only be applied to PRDs in organic HAP service and not PRDs in VOC (non-organic HAP) service in an miscellaneous organic chemical manufacturing source – even when complying with one of the overlap provisions in 40 CFR 63.2535(k) of Subpart FFFF or 40 CFR 63.160(b) or (c) of Subpart H, or 60.480a(e)(1) or (e)(2) of 40 CFR 60 Subpart VVa. The commenter stated that the pressure release management requirements are work practice standards designed to immediately detect releases of organic HAP vapors and to minimize these release events by implementing redundant measures preventing reoccurrence with root cause analysis and corrective action analysis. The commenter added that these work practice standards are not LDAR type requirements and are not included in the underlying rules such as 40 CFR 60 Subpart VV or VVa. The commenter questioned whether the EPA considered the extra costs of implementing these measures for all PRDs in VOC (non-organic HAP) service. The commenter recommended amending the overlap language in 40 CFR 63.2535(k) to exclude the owner / operator from complying with the new pressure release management requirements in 40 CFR 63.2480(e)(3) and the associated root cause analysis and corrective action analysis requirements in 40 CFR 63.2480(e)(6) and (e)(7).

Response: We disagree with the comment. No change is being made to the final rule as a result of this comment. Pursuant to 40 CFR 63.2480(e), the work practice standards for pressure release devices only apply to PRDs in organic HAP service (except those PRDs routed to a control device, process, fuel gas system, or drain system as specified in 40 CFR 63.2480(e)(4)). Therefore, there is no reason to clarify the overlap language in the final rule at 40 CFR 63.2535(k) or elsewhere to exclude the owner or operator from complying with the new pressure release management requirements in 40 CFR 63.2480(e)(3) for PRDs in non-organic HAP VOC service.

Comment 174: One commenter contended that if the EPA finalizes the requirement to comply with 40 CFR 63.2480(e)(1) and (e)(2) instead of the PRD requirements of 40 CFR 63.1030 of subpart UU, 40 CFR 63.165 of subpart H, or 40 CFR 65.111 of subpart F, then there are portions of other citations within these referenced subparts that no longer apply. The commenter stated that if the EPA intends for these associated requirements to continue to apply, then additional language needs to be added to subpart FFFF to capture these requirements. The commenter also noted that additional language may also need to be added to the recordkeeping, NOCS, and Compliance Report sections of MON to capture some of these requirements in order for this approach to work.

Response: We agree with most of the requests made by the commenter to list certain citations that they identified in 40 CFR part 63, subparts H and UU, and 40 CFR part 65 subpart F, as either no longer applicable for PRDs subject to 40 CFR 63.2480(e) and/or requiring clarification language to substitute in portions of these citations relative to PRDs subject to 40 CFR 63.2480(e). We disagree with the commenter's suggested edits for the NOCS requirements at 40 CFR 63.2520(d) because their suggested edits do not involve specific referenced citations. As explained in the response to comment document for the original MON rulemaking (see docket item number EPA-HQ-OAR-2003-0121-0036), the final rule already references the notification requirements in the applicable subparts and specifies only the necessary exceptions and additional requirements. Therefore, it is not necessary to include additional caveat text in 40 CFR 63.2480(f) and 40 CFR 63.2520(d) for NOCs relative to PRDs subject to 40 CFR 63.2480(e). Otherwise, we are revising the final rule at 40 CFR 63.2480(f)(18) to reflect all other requests made by the commenter to list certain citations that they identified in 40 CFR part 63, subparts H and UU, and 40 CFR part 65, subpart F, as either no longer applicable for PRDs subject to 40 CFR 63.2480(e) and/or requiring clarification language to substitute in portions of these citations relative to PRDs subject to 40 CFR 63.2480(e).

We also note that among other caveats that we proposed to add at 40 CFR 63.2525(a), we proposed (and are finalizing the requirement for) owners and operators to keep applicable records as specified in 40 CFR part 63, subparts H and UU, and 40 CFR part 65, subpart F except as specified in 40 CFR 63.2480(f). We have determined that similar caveat language should have been added to the periodic reporting requirement at 40 CFR 63.2520(e)(9). Therefore, we are also revising the final rule at 40 CFR 63.2520(e) to reflect this.

9.8 Other Recommended Rule Changes (Not Proposed)

Comment 175: One commenter asked for several clarifications and/or technical corrections related to those that the EPA initially proposed (although ultimately did not finalize) for the MON on August 6, 2008 (73 FR 45676).

- The commenter requested that the EPA adopt a previously proposed amendment to add language to 40 CFR 63.2460(c)(2)(v) and the definition of "process condenser" clarify that the requirement to demonstrate that a process condenser is properly operated applies only in the case where a HAP is heated above its boiling point. The commenter additionally added that some condensers are not designed to remove HAP materials from the process but instead recover non-HAP materials for re-use in the process, and in these cases, meeting the process condenser initial demonstration requirements is not technically feasible. The commenter recommended that the EPA provide language to allow the owner or operator to explain the purpose of the condenser and the rationale as to why the initial demonstration requirements cannot be met in the NOCS.
- The commenter recommended that the EPA provide the option to "designate" process vents that emit hydrogen halide and halogen HAP or HAP metals as being subject to control without calculating collective uncontrolled hydrogen halide and halogen HAP emissions as required by 40 CFR 63.2465(b).

- The commenter requested that the EPA amend the language in 40 CFR 63.2450(o) to allow all other vent streams containing hydrogen halide / halogen HAP that are not subject to control to be routed to a flare.

- The commenter stated that the MON final rule amendments should include the alternative emission control requirements for wastewater tanks that were included in the EPA’s August 6, 2008 proposed rule changes to the HON /MON rules. The commenter recommended adding language to 40 CFR 63.133(b)(1)(iii) of the HON rule regarding alternative emission control for wastewater tanks using a fixed roof with openings under negative pressure and vapors routed through a closed vent system to a control device, or alternatively, added to 40 CFR 63.2485(d) of the MON rule as a technology improvement. The commenter stated that the EPA previously concluded in the 2008 proposal that maintaining a fixed roof with openings under negative pressure achieves an equivalent emissions reduction compared to maintaining a fixed roof with no openings. The commenter reiterated the EPA’s accompanying 2008 proposed monitoring requirements and proposed work practices and requested the EPA add these provisions to the MON rule. In addition, the commenter requested the EPA also consider previously proposed wastewater requirements as an alternative for liquid streams in open systems. The commenter asserted that the EPA has allowed enclosures maintaining negative pressure on wastewater tanks under the Benzene Waste NESHAP (40 CFR 61 Subpart FF), and that enclosures operated under negative pressure can be superior to fixed-roof covers as a method of control for wastewater tanks, and should be allowed as an acceptable control requirement.

- The commenter recommended removing the reference to Table 3 in 40 CFR 63.2450(h), and when referencing Table 5, indicate that the paragraph applies strictly to Group 1 transfer racks other than low throughput transfer racks. The commenter stated that the reference to Table 3 for Emission Limits for Hydrogen Halide and Halogen HAPs should be eliminated because 40 CFR 63.2465(c)(1) already allows facilities to conduct a design evaluation in accordance with 40 CFR 63.1257(a)(1) regardless of whether the control device is small or large or whether the facility is complying with a percent reduction or outlet concentration limit. Similarly, the commenter stated that the reference to Table 5 is somewhat misleading because if the transfer rack is a Group 1 transfer rack that is classified as a low throughput transfer rack, then 40 CFR 63.985(b) of Subpart SS already provides the option to conduct a design evaluation or a performance test, regardless of whether the non-flare control device is small or large or whether the facility is complying with a percent reduction or outlet concentration limit.

- The commenter stated that the EPA should clarify in 40 CFR 63.2475(b) the intent for low throughput transfer racks. The commenters stated that the MON is silent on how the term "low throughput transfer rack" as used in Subpart SS applies for purposes of MON. The commenter contended that a low throughput transfer rack (*e.g.*, one that transfers less than a total of 11.8 million liters per year of liquid containing regulated material") could still be considered a Group 1 transfer rack if more than 0.65 million liters/year of liquids that contain organic HAP with a rack-weighted average partial pressure ≥1.5 psia.

Response: The EPA reviewed the 2008 proposal and comments received, and assessed specific rule changes for consideration in the rule proposed December 17, 2019. In some cases, we have incorporated these rule changes, however, we did not incorporate a 2008 proposed change if it met at least one of the following criteria: (1) the change was not necessary to improve the understanding or clarify the rule, (2) the change would require a major edit to the rule requirements other than how we intended the rule to be interpreted, (3) we did not receive sufficient or clear rationale for the change, or (4) the recommended change could create unintended loopholes in the rule. Where we have already excluded a change in the December 17, 2019 proposal, we are not reconsidering the change for inclusion in the final rule; however, we may address other 2008 proposed changes in a separate future action, as appropriate.

Comment 176: One commenter stated that the EPA should establish a rule applicability threshold HAP level based on the presence of impurities in feedstock or impurities that are created as incidental by-products of production that would determine whether the MON is applicable to certain processes. The commenter urged that impurities or incidental by-products are not being "processed, used or produced" as part of a miscellaneous organic chemical manufacturing operation and should not be regulated under the MON. The commenter suggested to establish a threshold of 1.0 weight percent for HAP content or 0.1 weight percent for HAP that are carcinogens, as defined by the OSHA at 29 CFR 1910.1200. The commenter expressed that such an exemption would provide regulatory relief, consistent with E.O. 12866 and E.O. 13771. The commenter urged that if providing a categorical threshold exemption from the MON is unacceptable, the Agency should provide regulatory relief by narrowing significantly the MON requirements that would apply to a process that triggers MON applicability merely on the presence of HAP impurities below a specified threshold. The commenter pointed to the EPA's policy rationale or justifications for other certain applicability exemption thresholds including: (1) consistency with other regulatory thresholds or reporting levels in other statutes; (2) where the HAP emission from certain materials below a threshold level is comparable with the otherwise-controlled emission level; (3) simplification and/or reduction of compliance burden; and (4) environmental insignificance. The commenter iterated that the EPA should consider these justifications alongside the burdens of regulating HAP present as impurities in raw materials, or as incidental by-products of production, which the commenter alleged yields benefits of trivial or no value.

Response: No change is being made to the final rule as a result of this comment. The EPA does not have an obligation to review prior MACT determinations and recalculate MACT floors as part of the RTR. Notably, this argument has been repeatedly rejected by the courts. See, *e.g., Nat'l Ass'n of Surface Finishing v. EPA*, 795 F.3d 1 (D.C. Cir. 2015); *Association of Battery Recyclers v. EPA,* 716 F.3d 667, 673 (D.C. Cir. 2013), *NRDC v. EPA*, 529 F.3d 1077(D.C. Cir. 2008). Thus, our CAA sections 112(d)(6) and 112(f) reviews in this action neither re-evaluated nor reopened the existing rule applicability threshold HAP level under CAA sections 112(d)(2) and (3).

Comment 177: A commenter said that subpart FFFF uses the term "transfer operation" in 40 CFR 63.2450(c)(2)(iii) but does not provide a definition of transfer operation in 40 CFR

63.2550. There commenter pointed to a definition of transfer operation in 40 CFR 63.101 of HON subpart F, but no cross reference to the definition in 40 CFR 63.2550(a)-(i) of MON. The commenter stated that there is a definition for "transfer rack" in 40 CFR 63.2550, but it does not contain the exclusion for racks, arms, or hoses that only transfer liquids containing organic HAP at impurities. The commenter stated that without an impurity exclusion in the transfer rack definition, facilities are forced to classify any transfer racks with trace amounts of impurity HAP as a Group 2 transfer rack, resulting in additional recordkeeping and reporting burdens.

Response: No change is being made to the rule as a result of this comment. As explained in the response to comment document for the original MON rulemaking (see docket item number EPA-HQ-OAR-2003-0121-0036), we intentionally did not provide an exclusion in the definition of "transfer rack" in the final rule for organic HAP as impurities because the MON already considers this concept. We explained that we do not believe an exclusion for HAPs as impurities is necessary because the rack weighted average vapor pressure applicability threshold for Group 1 transfer racks should eliminate the concern that transfers involving HAPs present only as impurities will require control. Generally, if a material is present only as an impurity, the partial pressure of the material will be very low and control requirements would not be triggered.

Comment 178: A commenter recommended the EPA amend the affected source language in the MON, 40 CFR 63.2440(b), to include equipment required by, or utilized as a method of compliance with Subpart FFFF and referenced subparts, which may include control devices and recovery devices. The commenter explained that this would reduce burden and prevent overlap issues with 40 CFR part 63, subpart DDDDD, NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters. The commenter explained that the current exclusion of control devices from the affected source description in 40 CFR 63.2440(b) results in applicability confusion for boilers / process heaters that are used as control devices to comply with an emission limit in Table 1 through 7 of Subpart FFFF. The commenter also urged that ancillary activities are not considered a process or part of any process in the "miscellaneous organic chemical manufacturing process" definition in 40 CFR 63.2550, and that one could argue that boilers and incinerators that are used to comply with the emission limits in Tables 1 through 7 are not considered ancillary activities. Alternatively, the commenter stated that if the EPA purposefully intended to exclude control devices from the affected source under Subpart FFFF, then an overlap provision could be added to the overlap provisions of MON, 40 CFR 63.2535.

Response: We disagree with the commenter. The MON is already clear in the definition of "miscellaneous organic chemical manufacturing process" that ancillary activities are not considered a process or part of any process. Ancillary activities, as defined in 40 CFR 63.2550, would include only those boilers and incinerators that are not used to comply with the emission limits in Tables 1 through 7 of subpart FFFF. Further, 40 CFR part 63, subpart DDDDD already provides exclusions for boilers and process heaters that are used as control devices for other subparts under parts 60, 61, 63, and 65 at 40 CFR 63.7491(i). No change is being made to the final rule as a result of this comment.

Comment 179: A commenter recommended adding the HON definition of impurity in 40 CFR 63.101 directly to 40 CFR 63.2550 for storage tanks storing EtO. The commenter stated that the terms "impurity" or "impurities" is in the proposed changes to MON under 40 CFR

63.2460(c)(2)(v), 63.2470(c)(4), and 63.2550 (within the definition for 'in ethylene oxide service'). The commenter pointed out that currently 40 CFR 63.2550(i) does cross-reference terms in 40 CFR 63.101, but only if the term is defined in 40 CFR 63.101 and paragraph (i) of MON.

Response: No change is being made to the rule as a result of this comment. As discussed in Section IV.A of the preamble to the final rule, we are changing the definition of "in ethylene oxide service" for storage tanks to mean a storage tank of any capacity and vapor pressure storing a liquid that is at least 0.1 percent by weight of EtO instead of 1 ppmw, to account for impurities.

Comment 180: A commenter recommended adding a paragraph (j) to 40 CFR 63.2550 to clarify that the definitions for terms of Subpart H have the meaning given to them in 40 CFR 63.161 unless otherwise defined in 40 CFR 63.2550.

Response: We did not propose to reference the terms from subpart H into the MON nor were they considered as part of our technology review, and MON facilities have been complying without this cross-reference since the effective date of the original rule (*i.e.*, November 10, 2003). Therefore, we are not making any changes to the final rule as a result of this comment. The EPA may, at some time in the future, consider making amendments to cross-reference to the definitions in the HON.

Comment 181: A commenter recommended that the EPA add exclusions to the batch process vent definition for (1) a gas stream from a batch operation that is transferred to another process or back to the originating process for reaction or other use in the process (*i.e.*, for chemical value as a product, isolated intermediate, byproduct, or coproduct, or for heat value) and (2) relief valve discharges. The commenter noted that under 40 CFR 63.2550, the term "continuous process vent" which references the definition in HON Subpart F, 40 CFR 63.107, contains these exclusions. The commenter provided that the EPA originally included the exclusion for "a gas stream transferred to other processes (on-site or off- site) for reaction or other use in another process (*i.e.*, for chemical value as a product, isolated intermediate, byproduct, or coproduct, or for heat value)" in HON Subpart F, 40 CFR 63.107(h)(5) because the control requirements would be determined with respect to the process that ultimately discharges the gas stream to the atmosphere. The commenter also urged that relief valve discharges can also occur on batch operations with batch process vents. The commenter stated that a similar exclusion should be provided within the batch process vent definition in MON.

Response: The exclusions from the definition of batch process vent requested by the commenter were not proposed to be amended, and MON facilities have been complying with this regulatory language since the effective date of the original rule (*i.e.*, November 10, 2003). We are also finalizing a definition for "pressure relief device" and finalizing requirements for PRDs in 40 CFR 63.2480(e). Therefore, we are not making any changes to the definition of batch process vent in the final rule as a result of this comment.

Comment 182: A commenter stated that the EPA should add definitions for the terms "uncontrolled organic HAP emissions" and "uncontrolled hydrogen halide and halogen HAP emissions" to prevent confusion. The commenter stated that currently, one must rely on a similar term in 40 CFR 63.1251 of Pharma MACT (Subpart GGG) and then know to substitute “OHAP” or “hydrogen halide and halogen HAP” in place of “HAP”.

Response: We disagree with the commenter that the suggested definitions are necessary for clarification of the rule. These terms were not proposed to be amended and MON facilities have been complying with this regulatory language since the effective date of the original rule (*i.e.*, November 10, 2003) so the comment is outside the scope of the proposed rule. Therefore, no changes are being made to the final rule as a result of this comment.

Comment 183: A commenter stated that the requirement to report the total process operating time and total source operating time and calculate percentages of CMS deviations and CMS downtime based on the total source operating time in 40 CFR 63.2520(e)(5)(ii)(A), (e)(5)(iii)(D), and (e)(5)(iii)(F), and 63.999(c)(1), and requirement to keep a record of total process operating time (for CEMS) under 40 CFR 63.10(c)(13) of Subpart A should be removed since the information is not needed, confusing to determine, and difficult to calculate for the MON affected source. The commenter stated that the recordkeeping requirement of 63.10(c)(13) for total process operating time applies only to CEMS according to Table 12 to Subpart F, and is ambiguous and confusing for a rule like the MON. The commenter stated that the requirement to document the total operating time in Subpart A was needed because of the percentage calculations required by 40 CFR 63.10(e)(3)(vii)-(viii), and the Excess Emissions Report and Summary Report and the associated percentage calculations in Subpart A under 40 CFR 63.10(e)(3)(vii)-(viii) are not applicable to MON according to Table 12 of Subpart FFFF because the reporting requirements are specified in 40 CFR 63.2520. The commenter also stated that 40 CFR 63.2520(e)(5)(iii)(D) and (e)(5)(iii)(F) require reporting the total duration of CMS deviations/CMS downtime as a percent of the total operating time of the affected source, and the reporting section of 40 CFR 63.999(c)(1) requires reporting the “total source operating time” for the reporting period. The commenter noted that the EPA provides no definition or clarification of what the phrase “total process operating time” or “total source operating time” actually means for the MON affected source. The commenter recommended eliminating the need to determine total process / source operating time and the associated percentage calculations by amending these sections in Subpart FFFF, 40 CFR 63.2520(e)(5)(ii)(A), (iii)(D), (iii)(F), Table 12 to Subpart FFFF, and 40 CFR 63.2450(e)(4).

Response: No change is being made to the final rule as a result of this comment. We think it is reasonable and consistent with the original rule intent to request information on the emission source operating time in order to understand the percentage of time that the CMS system applicable to the emission source and control system indicated a deviation or was inoperative or out of control, per the provisions of 40 CFR 63.2520(e)(5)(ii)(A), (iii)(D), (iii)(F), Table 12 to subpart FFFF, and 40 CFR 63.2450(e)(4). However, we are clarifying in this document that the “total process operating time” or “total source operating time” means the time during the compliance period when the MCPU associated with the MON affected source is either producing, processing, using, or generating any material or family of materials described in 40 CFR 63.2435(b)(1)(i) through (v), or (b)(2).

Comment 184: A commenter recommended that the EPA amend the Precompliance Report provisions in 40 CFR 63.2520(c) of Subpart FFFF to allow for automatic approval if the Administrator (or delegated state agency) either approves the change in writing or fails to disapprove the change in writing within 90 days of receipt. The commenter pointed to similar provisions in Part 63 NESHAP Subparts JJJ, MMM, and PPP at 40 CFR 63.1335(e)(3)(i), 40 CFR 63.1368(e), and 40 CFR 63.1439(e)(4)(i).

Response: We disagree with the commenter that the change is necessary for inclusion in the final rule. 40 CFR 63.2520(c) currently states that we will either approve or disapprove the report within 90 days after we receive it. If we disapprove the report, facilities must still be in compliance with the emission limitations and work practice standards in this subpart by the compliance date. No changes have been made to the final rule as a result of this comment.

Comment 185: A commenter stated that Table 3, Item 1.b needs to be corrected to "hydrogen halide and halogen HAP mass emission rate". The commenter noted that the emission limits in Table 3 as referenced by 40 CFR 63.2465 should only apply to hydrogen halide and halogen HAP. The commenter expounded that the current terminology "to reduce the "halogen atom mass emission rate to < 0.45 kg/hr" makes sense if combusting a Group 1 halogenated vent stream (from a continuous process vent, batch process vent, storage tank) and using a halogen reduction device before the combustion device, however, in this case, hydrogen halides / halogen HAPs are generated as a result of combustion control and the goal is to reduce the halogenated mass emission rate to ≤ 0.45 kg/hr making the vent stream "non-halogenated" prior to combustion control.

Response: We disagree with the commenter. The recommended change is not necessary to clarify the existing requirements and is not reflective of the prior MACT determination. The EPA does not have an obligation to review prior MACT determinations and recalculate MACT floors as part of the RTR. Notably, this argument has been repeatedly rejected by the courts. See, *e.g.*, *Nat'l Ass'n of Surface Finishing v. EPA*, 795 F.3d 1 (D.C. Cir. 2015); *Association of Battery Recyclers v. EPA*, 716 F.3d 667, 673 (D.C. Cir. 2013), *NRDC v. EPA*, 529 F.3d 1077(D.C. Cir. 2008). Thus, our CAA sections 112(d)(6) and 112(f) reviews in this action neither re-evaluated nor reopened the existing rule applicability threshold HAP level under CAA sections 112(d)(2) and (3). No change is being made to the final rule as a result of this comment.

Comment 186: A commenter requested the EPA clarify under 40 CFR 63.2465 that if the halogen atom mass emission rate from aggregated continuous and batch process vents is already ≤ 0.45 kg/hr or the hydrogen halide / halogen HAP concentration is already < 20 ppmv without control or prior to control, then the aggregated continuous and batch process vents can be routed to atmosphere without control (or the control device ignored) since vent stream already meets the emission limit in Table 3, Items 1.a or 1.b (without control). Similarly, the commenter asked that the EPA confirm that if the halogen atom mass emission rate from the aggregated continuous and batch process vents is already ≤0.45 kg/hr prior to a halogen reduction device or the hydrogen halide / halogen HAP concentration is already < 20 ppmv prior to a halogen reduction device, then the halogen reduction device is not required to comply with Subpart SS, 40 CFR 63.994 for halogen scrubbers and other halogen reduction devices because the vent already meets the emission limit in Table 3, Items 1.a or 1.b (without control).

Response: We disagree that the commenter's recommendation is necessary for clarification of the existing rule. A halogenated vent stream is defined in 40 CFR 63.2550 as a vent stream determined to have a mass emission rate of halogen atoms contained in organic compounds of 0.45

kilograms per hour or greater determined by the procedures presented in 40 CFR 63.115(d)(2)(v). Therefore, no changes have been made to the final rule as a result of this comment.

Comment 187: A commenter recommended adding language to the requirements for process vents that emit hydrogen halide and halogen HAP at 40 CFR 63.2465(b) similar to 40 CFR 63.2465(d)(1) to allow the use of process knowledge, engineering assessment, or test data to calculate uncontrolled hydrogen halide / halogen HAP emissions from continuous process vents.

Response: The requirements found in 40 CFR 63.2465(b) were not proposed to be amended, nor were they part of the technology review conducted for the MON. Therefore, we are not making any changes to the final rule as a result of this comment. The EPA may, at some time in the future, consider making amendments to the provisions of 40 CFR 63.2465(b).

Comment 188: A commenter requested that the EPA clarify that the initial process condenser demonstration requirements for batch process vents mentioned in 40 CFR 63.2460(c)(1), (c)(2)(v), and 40 CFR 63.1257(d)(2)(i)(C)(4)(ii), and (d)(3)(iii)(B) do not apply if using the alternative provided in 40 CFR 63.2460(b)(7) for non-reactive organic HAP usage. The commenter urged that if using the alternative for non-reactive HAP usage in 40 CFR 63.2460(b)(7), uncontrolled organic HAP emissions are not required to be calculated in accordance with 40 CFR 63.1257(d)(2)(i) and (ii), and demonstrating that a process condenser is properly operated under 40 CFR 63.1257(d)(3)(iii)(B) will not have any impact on the group status of the batch process vents.

Response: The requirements found in 40 CFR 63.2460(b)(7) were not proposed to be amended, nor were they part of the technology review conducted for the MON. Therefore, we are not making any changes to the final rule as a result of this comment. The EPA may, at some time in the future, consider making amendments to the provisions of 40 CFR 63.2460(b)(7).

Comment 189: A commenter stated that the requirement in 40 CFR 63.2485(j) that requires determining the annual average concentration and annual average flowrate for wastewater streams for each MCPU should be revised to add flexibility in cases where there are Group 2 process wastewater streams based only on annual average flow or annual average concentration and streams that are designated as Group 1. The commenter also noted that there is also a recordkeeping requirement in 40 CFR 63.147(b)(8)(iii)-(iv) of HON Subpart G which contains a similar burdensome recordkeeping requirement for documenting both the concentration of Table 8/Table 9 compounds and the annual average flow rate for all Group 2 wastewater streams (except ones complying with 40 CFR 63.138(g)), and suggested that another sub-paragraph would be needed under 40 CFR 63.2485(j) to specify that 40 CFR 63.147(b)(8) does not apply and instead specify what records are required for purposes of MON compliance.

Response: The requirements found in 40 CFR 63.2485(j) were not proposed to be amended, nor were they part of the technology review conducted for the MON. Therefore, we are not making any changes to the final rule as a result of this comment. The EPA may, at some time in the future, consider making amendments to the provisions of 40 CFR 63.2485(j).

Comment 190: A commenter stated that under the vapor balancing alternative in 40 CFR 63.2470(e) for Group 1 storage vessels, the EPA should provide more flexibility relative to

Department of Transportation (DOT) certification requirements, similar to the flexibility provided in the DOT certification requirements for transfer racks under HON Subpart G and OLD MACT. The commenter stated that 40 CFR 63.2470(e) of Subpart FFFF references the vapor balancing provisions in 40 CFR 63.1253(f) of Subpart GGG (Pharma MACT), which would also indirectly include 40 CFR 63.1259(b)(12) of Subpart GGG. The commenter noted that under Pharma MACT, 40 CFR 63.1259(b)(12) does not provide any flexibility on the acceptable methods to prove the DOT certification requirements. The commenter urged that other Part 63 NESHAP, such as the transfer rack provisions in HON Subpart G and OLD MACT, provide much more flexibility on how to record that the verification of DOT tank certification or Method 27 testing has been performed. The commenter requested the EPA add similar exception to the MON language in 40 CFR 63.1253(f).

Response: No changes have been made to the final rule as a result of this comment because we did not propose the commenter's recommend changes and we do not think they are related to the changes we are making in this final rule.

Comment 191: A commenter recommended updating the "empty" or "emptying" definition in 40 CFR part 63, subpart WW (or add a definition to 40 CFR 63.2550 for Subpart FFFF) to be consistent with the definition in the federal CAR, under 40 CFR 65 Subpart A, 40 CFR 65.2. The commenter stated that in 40 CFR 63.1061 of Subpart WW, the definition has not been updated to be consistent with the CAR's definition in 40 CFR 65.2. The commenter noted that the EPA previously clarified the CAR definition of ''empty'' or ''emptying'' to specify that when the liquid level drops below the roof supports during normal operation, the event is not considered emptying. The commenter urged this clarification is important because the term "empty", "emptied", "emptying" are used in several places in 40 CFR part 63, subpart WW with respect to upgrading the design on internal floating roof and external floating roof, inspection frequency requirements, and repair requirements.

Response: No changes have been made to the final rule as a result of this comment because it is outside of the scope of this rulemaking. We are also not making revisions directly in 40 CFR part 63, subpart WW. Changing requirements that could apply to affected sources in other source categories would be unreasonable in the context of a single source category rulemaking such as this action.

Comment 192: A commenter stated that the EPA should clarify the monitoring and recordkeeping requirements for the liquid-to-gas (L/G) ratio for absorbers used to control organic HAP and halogenated vent streams. The commenter explained that the rule is silent about whether an actual operating limit for the L/G ratio must be established during the performance test and reported in the NOCS, and also regarding whether a daily average L/G ratio must be calculated on an ongoing basis or reported in the Compliance Report if the daily average is outside a limit established in the NOCS. The commenter requested that the EPA confirm the following: 1) the gas stream flow rate parameter in the L/G ratio could be a one-time measurement of the gas stream flow rate (*e.g.*, the gas stream flow rate measured at the scrubber inlet during a performance test or estimated as part of a design evaluation); (2) a L/G ratio operating limit does not need to be established in the NOCS and continuously monitored / calculated and no daily average L/G ratio needs to be calculated or reported in the Compliance Report to demonstrate ongoing compliance; and (3) the L/G ratio for halogen scrubbers following a combustion device used to control a halogenated vent stream is a parameter that is not continuously monitored or reported in the Compliance Report.

Response: The commenter is incorrect in their interpretation of the rule. 40 CFR 63.2450(k) requires MON sources to comply with the requirements in 40 CFR part 63, subpart SS. For halogen scrubbers, 40 CFR 63.998(a)(2)(ii)(D) of Subpart SS requires recording the scrubber L/G ratio averaged over the time period of the performance test, and 40 CFR 63.998(c)(2)(ii) of subpart SS requires keeping records of the daily average liquid-to-gas ratio. For absorbers using water to control organic compounds, the EPA intended 40 CFR 63.2450(k)(5) to require L/G monitoring. In the July 14, 2006 final rule, the EPA states, "Our intent was to require liquid and gas flow monitoring only for absorbers where water is used as the scrubbing fluid. As the commenters pointed out, the rule already requires this monitoring for halogen scrubbers by referencing the requirements in 40 CFR 63.994. However, water can also be used to scrub organic compounds from an emission stream. We believe the same monitoring requirements that apply to halogen scrubbers should also apply to any other absorber that uses water as the scrubbing liquid. Therefore, 40 CFR 63.2450(k)(5) in the final amendments has been revised to require the liquid and gas flow monitoring only for absorbers that control organic compounds and use water as the scrubbing fluid." (71 FR 40324) No changes were made to the final rule in response to the comment.

Comment 193: A commenter requested that the EPA revise 40 CFR 63.983(a) to use the word "section" instead of "paragraph" to broaden the exclusion for closed vent systems operated and maintained under negative pressure. The commenter pointed out that 40 CFR 63.983(a) excludes closed vent systems operated and maintained under negative pressure from the provisions of "this paragraph" implying only paragraph "a". The commenter said that they believe that closed vent systems operated under negative pressure should be exempt from the entire 40 CFR 63.983 section (which includes inspection and monitoring requirements, inspection procedures, and leak repair provisions). The commenter said that this interpretation is consistent with the closed vent system language in the HON and the self-assessment checklist on closed vent systems in the EPA's MON Inspection Tool (EPA-305-B-06-002 - September 2006).

Response: No change is being made to the final rule as a result of this comment; however, we agree that closed vent systems operated under negative pressure that are in the Miscellaneous Organic Chemicals Manufacturing source category should be exempt from the entire 40 CFR 63.983 section; and we note that this is consistent with the closed vent system language in the HON and the self-assessment checklist on closed vent systems in the EPA's MON Inspection Tool. Also, we are not making this revision directly in 40 CFR 63.983(a) because changing requirements that could apply to affected sources in other source categories would be unreasonable because sources subject to these provision due to applicability of other NESHAP may not be paying attention to this action.

Comment 194: A commenter requested that the EPA revise 40 CFR 63.987(c) to more specifically reference 40 CFR 63.999(a)(2) instead of 40 CFR 63.999(a) and include the periodic reporting requirements in 40 CFR 63.999(c)(3). The commenter contended that 40 CFR 63.999(a)(1) pertains to general requirements for performance test and flare compliance assessment notifications and reports and not specifically to what is required to be reported. The commenter said that parts of 40 CFR 63.999(a)(2) specify the reporting requirements for the flare compliance assessment and also another flare reporting requirement is in 40 CFR 63.999(c)(3).

Response: No changes have been made to the final rule as a result of this comment because it is outside of the scope of this rulemaking. We are also not making revisions directly in 40 CFR 63.987(c) because changing requirements that could apply to affected sources in other source categories would be unreasonable because sources subject to these provision due to applicability of other NESHAP may not be paying attention to this action. The EPA may, at some time in the future, consider making amendments to the provisions of 40 CFR 63.987(c).

Comment 195: A commenter requested that the EPA correct the reference "§63.998(a)(1)(i)(C)" to "§63.998(a)(1)(iii)" in 40 CFR 63.999(c)(3). The commenter pointed out that the reference "§63.998(a)(1)(i)(C)" is specifically a flare compliance assessment record and not actually an ongoing compliance record; and it only applies to records of information that is required to be collected during the flare compliance assessment.

Response: No changes have been made to the final rule as a result of this comment because this comment is outside of the scope of this rulemaking. We are also not making revisions directly in 40 CFR 63.999(c)(3) because changing requirements that could apply to affected sources in other source categories would be unreasonable because sources subject to these provision due to applicability of other NESHAP may not be paying attention to this action. The EPA may, at some time in the future, consider making amendments to the provisions of 40 CFR 63.999(c)(3).

Comment 196: A commenter requested that the EPA clarify that the closed vent system requirements referenced in 40 CFR 63.983 of Subpart SS are applicable only to closed vent systems conveying organic HAP emissions and do not apply to closed vent systems conveying hydrogen halide/halogen HAP emission streams to a control device, series of control devices, or recovery devices.

Response: As required in 40 CFR 63.2450(e), if the organic HAP emissions from a vent stream must be reduced, the vent stream must be vented through a closed vent system to a non-flare control device or recovery device, and the closed vent system must meet the requirements in 40 CFR 63.983 of subpart SS. If 40 CFR 63.2450(e)(3) is applicable to the vent stream, and the vent stream does not contain organic HAP that is required to be controlled, the vent stream is not subject to the requirements for closed vent systems in 40 CFR 63.983(c) of subpart SS.

Comment 197: A commenter stated that the requirement to do initial Method 21 monitoring as specified in 40 CFR 63.983 for the closed vent system for hydrogen halide/halogen HAP, as required by the alternative standard in 40 CFR 63.2505(b)(1), should be removed since Method 21 cannot be used to detect HCl, hydrogen fluoride, and chlorine. The commenter stated that under the alternative standard language in 40 CFR 63.2505, if you use a non-combustion control device to reduce hydrogen halide and halogen HAP to $\leq$ 50 ppmv per 40 CFR 63.2505(a)(1)(ii), then you must comply with the requirements in 40 CFR 63.983 for closed vent systems as specified by 40 CFR 63.2505(b)(1). The commenter suggested revising the language in 40 CFR 63.2505(b)(1) to be similar to the language used in 40 CFR 63.2450(e).

Response: We agree with the commenter that the requirements in 40 CFR 63.2505(b)(1) should be consistent with 40 CFR 63.2450(e) and have revised 40 CFR 63.2505(b)(1) to clarify that you must comply with the requirements in 40 CFR 63.2450(e)(4) and (6), and the requirements in §63.983 and the requirements referenced therein for closed-vent systems only if you are reducing organic HAP emissions by venting emissions through a closed-vent system to any combination of control devices, including a flare or recovery device. If you are not reducing organic HAP emissions by venting emissions through a closed-vent system to any combination of control devices, including a flare or recovery device, then these same requirements apply except you are not required to comply with the requirements in §63.983(b)(1)(i)(A), (b)(1)(ii), (c), (d)(1)(ii), (d)(2), and (d)(3). While Method 21 can be used to detect chlorine, it cannot be used to detect hydrogen halides.

Comment 198: A commenter stated that the EPA should clarify in Subpart SS, 40 CFR 63.998(b)(6)(i) the meaning of the term "excursion" to include periods of insufficient monitoring data consistent with Subpart SS language in 40 CFR 63.998(b)(6)(ii) and the periodic reporting requirements in 40 CFR 63.999(c)(6)(i). The commenter explained that MON only uses the term "excursion" once in 40 CFR 63.2450(m)(3), but the term "excursion" is used multiple times in Subpart SS (cross-referenced by various sections of MON), leaving readers to rely on the definition of "excursion" in Subpart SS as defined in 40 CFR 63.998(b)(6)(i) and the periodic reporting requirements in Subpart SS, 40 CFR 63.999(c)(6)(i). However, the commenter states that MON is clear in 40 CFR 63.2450(l) that 40 CFR 63.998(b)(2)(iii) and (b)(6)(i)(A) of Subpart SS, which apply to the exclusion of monitoring data collected during periods of SSM from daily averages do not apply, and the excused excursion language in 40 CFR 63.998(b)(6)(ii) does not apply according to 40 CFR 63.2450(m)(3) of MON.

Response: No changes have been made to the final rule as a result of this comment because it is outside of the scope of this rulemaking. The requirements found in 40 CFR 63.998(b)(6) and 40 CFR 63.999(c)(6) were not proposed to be amended and MON facilities have been complying with this regulatory language since the effective date of the original rule (*i.e.*, November 10, 2003) so the comment is outside the scope of the proposed rule. While the language cited by commenters could be clearer, commenters grasped the EPA's intention that records should be kept for anything required to be reported. The EPA may, at some time in the future, consider making amendments to the provisions of 40 CFR 63.998(b)(6) to be more consistent with those of 40 CFR 63.999(c)(6); however, to do so in 40 CFR part 63, subpart SS would impact other source categories not affected by this rulemaking. Therefore, for now, the EPA is not making any changes to this regulatory text.

Comment 199: One commenter requested that the overlap option provided in 40 CFR 63.2535(b)(2) for 40 CFR part 264/265 Subpart BB be revised and clarified to be consistent with 40 CFR 63.160(c) of Subpart H and 40 CFR 264/265.1064(m) under the Resource Conservation and Recovery Act (RCRA) BB.

The commenter explained that 40 CFR 63.160(c) of Subpart H provides that if a process unit subject to Subpart H has equipment to which Subpart H does not apply, but which is subject to 40 CFR part 264, subpart BB or 40 CFR part 265, subpart BB, the owner or operator may elect to apply HON Subpart H to all such equipment in the process unit provided all VOC in such equipment is considered as if it were organic HAP. The commenter noted this provision in HON Subpart H is the same for 40 CFR part 60, Subpart VV and 40 CFR 61, subpart F or J (which reference subpart V). The commenter stated that although 40 CFR 63.2535(k) of the MON captures this overlap provision correctly for NSPS VV and NESHAP V, it does not capture this overlap option correctly for 40 CFR part 264/265 Subpart BB.

The commenter stated that the provision in RCRA BB (40 CFR 264/265.1064(m)) allows the owner or operator of any facility with equipment that is subject to RCRA BB and to leak detection, monitoring, and repair requirements under regulations at 40 CFR part 60, part 61, or part 63 to elect to determine compliance with RCRA BB either by documentation pursuant to 264/265.1064 of RCRA BB or by documentation of compliance with the regulations at 40 CFR part 60, part 61, or part 63. The commenter requested that 40 CFR 63.2535(b)(2) be revised and clarified to be consistent with 40 CFR 264/265.1064(m) under RCRA BB. The commenter recommended language similar to 40 CFR 63.2535(k) for NSPS VV and NESHAP V overlap be used in lieu of the language in 40 CFR 63.2535(b)(2) for RCRA BB.

Response: No changes have been made to the final rule as a result of this comment because it is outside of the scope of this rulemaking. The requirements found in 40 CFR 63.2535(b)(2) were not proposed to be amended, nor were they part of the technology review conducted for the MON so the comment is outside the scope of this action. The EPA may, at some time in the future, consider making amendments to the provisions of 40 CFR 63.2535(b)(2).

Comment 200: A commenter recommended that the EPA either revise or remove 40 CFR 63.2505(b)(3) to allow facilities currently subject to the Pharmaceuticals NESHAP to use existing HCl CEMS to demonstrate compliance with the MON standards. The commenter said that facilities have not been able to identify and procure CEMS that are capable of monitoring HCl, hydrogen fluoride, and chlorine; and as a result, the requirement at 40 CFR 63.2505(b)(3) cannot be implemented. The commenter pointed out that the original 1998 Pharmaceuticals NESHAP included a requirement under the alternative standard to measure the concentration of "hydrogen halide and halogen" with a CEMS; however, in the August 29, 2000 final rule amendments, the EPA revised the Pharmaceuticals NESHAP to only require an HCl CEMS because they recognized that here were no existing CEMS methods for hydrogen halides and halogens, and HCl is an acceptable surrogate for hydrogen halide and halogen when using combustion control devices.

Response: No changes have been made to the final rule as a result of this comment because it is outside of the scope of this rulemaking. The requirements found in 40 CFR 63.2505(b)(3) were not proposed to be amended, nor were they part of the technology review conducted for the MON so the comments are outside the scope of this final action. We note that CEMS using multiple technologies are capable of monitoring both HCl and hydrogen fluoride; these CEMS are available, have been required in other EPA rulemakings, and could also potentially be used for MON sources. There are no EPA performance specifications or procedures for the measurement of Cl_2. If an owner or operator is trying to use the alternative standard on a stream containing Cl_2, the owner or operator must either comply with 40 CFR 63.1258(b)(5)(i)(C) or, prior to promulgation of a performance specification and procedures for Cl_2 CEMS, request an alternative test method pursuant to 40 CFR 63.7(f). The alternative test method must contain procedures and quality control and assurance similar to Performance Specification 18 of 40 CFR part 60, Appendix B and Procedure 6 of 40 CFR part 60, Appendix F.

Comment 201: A commenter requested that the EPA clarify in the overlap provisions in 40 CFR 63.2535(a)(1) whether batch process vents in a HON plant that are potentially subject to MON batch process vent provisions are also potentially subject to the provisions in MON for process vents that emit hydrogen halide and halogen HAP. The commenter contended that the current overlap language in 40 CFR 63.2535(a)(1) is unclear as to whether the provisions in 40 CFR 63.2465 for process vents that emit hydrogen halide and halogen HAP apply in addition to the batch process vent provisions in 40 CFR 63.2460 for batch process vents associated with a HON chemical manufacturing process unit (CMPU).

Response: No change is being made to the final rule. Section 63.2535(a)(1) specifies that a batch process vent that is subject to the MON, and also subject to the HON (40 CFR part 63, subparts F and G), must comply with the emission limits, operating limits, work practice standards and the compliance, monitoring, reporting, and recordkeeping requirements of the MON and also the HON. Therefore, the provisions in 63.2465 for process vents that emit hydrogen halide and halogen HAP apply if the process vent is a batch process vent and subject to the MON.

Comment 202: A commenter requested that in the overlap provision under 40 CFR 63.2535(c) for 40 CFR part 60, subpart Kb and 40 CFR part 61, subpart Y, the EPA allow the owner/operator to comply with Group 1 storage tank requirements in subpart FFFF to constitute compliance with 40 CFR 60 subpart Kb or 40 CFR 61 subpart Y for those storage tanks that are associated with a MCPU but do not meet the technical definition of a storage tank under MON. The commenter noted that, as currently worded, facilities must first have a storage tank assigned to an MCPU in order to use the overlap provision for 40 CFR 60, subpart Kb and 40 CFR part 61, Subpart Y. The commenter noted a facility may have a storage tank that does not technically meet the storage tank definition in MON but is a storage tank under NSPS Kb. The commenter noted that it would be beneficial for the EPA to allow the owner/operator to elect to control the storage tank as a Group 1 storage tank under MON to constitute compliance with 40 CFR part 60, subpart Kb or 40 CFR 61, Subpart Y. The commenter recommended this approach to minimize the complexity with complying with older storage tank rules like NSPS Kb or NESHAP Y and provide more flexibility in control options such as the use of the vapor balancing alternative.

Response: We disagree with the comment and we are not revising 40 CFR 63.2535(c) in the final rule to allow a storage tank to comply with 40 CFR part 63, subpart FFFF instead of 40 CFR part 60, subpart Kb or 40 CFR part 61, subpart Y even if the storage tank does not technically meet the storage tank definition in the MON (*i.e.,* even if the tank is not assigned to an MCPU). There is nothing in the original rulemaking of the MON standards (see 67 FR 16154, April 4, 2002; 68 FR 64853, November 10, 2003; and the response to comment document for the original MON rulemaking, Docket Item Number EPA-HQ-OAR-2003-0121-0036) that would suggest if the tank is not assigned to an MCPU, then the EPA meant anything other than actual control is required under both rules before the overlap provision at 40 CFR 63.2535(c) can be used.

Finally, the MON standards apply specifically to emission sources in the Miscellaneous Organic Chemicals Manufacturing source category and adding any requirements that could apply to affected sources in other source categories, whether optional or not, would be outside the scope of this action. No change is being made to the final rule as a result of this comment.

10.0 Electronic Reporting Provisions

10.1 General

Comment 203: A commenter said that the addition of electronic reporting should not establish any new data requirements beyond what is currently in a regulation. The commenter said a clear regulatory citation should be provided for all data requirements.

Response: No change is being made to the final rule as a result of this comment. The EPA agrees that electronic reporting should not establish data requirements beyond what is required in a regulation, but the commenter provided no data or information to demonstrate that this has occurred in this instance. In general, electronic reporting templates provide fields to allow users to optionally enter additional information, but these fields are not required to be completed and are provided to allow users to enter information that does not fit into a specific field in the template.

Comment 204: Some commenters supported the EPA's proposed updates to the recordkeeping and electronic reporting requirement in the standards, to require electronic reporting of performance test results, reports, performance evaluation reports, and other compliance reports. A commenter said that the proposal appropriately allows for delays in electronic reporting in instances where doing so is impossible or at least impracticable, including outages of the EPA's system and events constituting force majeure. The commenter pointed out that in either of these scenarios, facilities subject to reporting obligations would be unable to complete electronic reporting when required.

However, another commenter opposed the proposed electronic reporting extension provisions contending they would create a broad and vague mechanism that a facility owner or operator could use to evade binding emission standards. The commenter stated that the new proposed provisions would remove the deadline for a particular reporting requirement without creating a new firm deadline. The commenter stated that the CAA sets binding compliance deadlines for air toxics emission standards that the EPA may not lawfully evade or extend, citing CAA section 112(i)(3)(A), (B), and (f)(4). The commenter added that the EPA's proposal to extend compliance dates for reporting is an unlawful extension of emission standards, as those compliance dates are an essential part of ensuring that the emission standard is in force and compliance is assured. The commenter stated that the language ("as soon as possible") removes a requirement ensuring the enforceability of the requirements and makes it likely that reporting will be significantly delayed, and may lead a facility to drag its feet in submitting reports for an extended period, or ever, within a time when corrective action could and should be taken to prevent harmful and unlawful emission exceedances. The commenter concluded that because the EPA's proposal contains no new reporting deadline for CEDRI outages or force majeure events, it is an exemption from the standard and not an extension provision. The commenter added that an exemption from reporting requirements is equivalent to an unlawful exemption from the standards. The commenter stated that the EPA gave no justification for adding these provisions showing that they are actually needed or assessing their impact. The commenter also stated that the EPA cannot make a change of this kind, even if lawful, without providing a reasoned basis, and evidence showing the actual need and value to clean air or the public interest in creating the extension provisions.

The commenter added that there is no such evidence in the record provided for public notice and comment or any evidence that if there were any reporting problem where any such event occurred, that it could not be resolved through a case-by-case resolution, or that there was any harm of any kind from not having an extension provision.

The commenter noted that, on the other hand, delayed reporting and potentially a failure to report will cause harm in that it delays compliance assurance by the EPA, the states, and affected community residents, and thus undermines the health and environmental protections of the standards themselves. The commenter stated the EPA's proposal is thus arbitrary because it has not given any rational basis for providing the reporting extension provisions, nor any basis for providing extensions without any hard new deadline to assure reporting indeed does occur, whereas there is such a strong interest in ensuring reporting does occur on the timeframe the regulations require. The commenter stated that the EPA may not create an open-ended exemption for CEDRI outages or force majeure events without setting a new firm deadline, assuring that the extension request allows only a temporary period when the facility need not report, such as a 10-day extension.

The commenter also contended that the EPA failed to evaluate the steps to take to predict and prevent reporting lapses or pollution increases related to foreseeable types of events it defines as force majeure. The commenter added that if the EPA creates a force majeure event extension provision, it must, at least, ensure that the facility is required to prevent similar problems in the future, and report what steps it will take in the future to prevent the same problem from recurring. The commenter asserted that when there is such a problem, the need for prompt reporting is especially important so that the EPA can ensure that any actual emissions exceedances end and are corrected. The commenter concluded that allowing an unreasonable extension or not setting any deadline is unlawful and problematic because of the greater need for prompt reporting in the event of the type of event the EPA describes, to protect public health and welfare.

Response: The EPA is finalizing the electronic reporting requirements as proposed. The commenter questions the limited flexibility the EPA proposed (and is finalizing), namely inclusion of electronic reporting provisions for reporters facing circumstances beyond their control. The commenter asserts the brief case-by-case extension of report submittal deadlines is an "unlawful exemption from [compliance with] the [emission] standards." This is not the case, as explained below. The proposed provisions the commenter questions are as follows (emphasis added):

(h) *Claims of EPA system outage*. If you are required to electronically submit a report through CEDRI in the EPA's [Central Data Exchange] CDX, you may assert a claim of EPA system outage for failure to timely comply with the reporting requirement. To assert a claim of EPA system outage, you must meet the requirements outlined in paragraphs (h)(1) through (7) of this section.

(1) You must have been or will be precluded from accessing CEDRI and submitting a required report within the time prescribed due to an outage of either the EPA's CEDRI or CDX systems.

(2) The outage must have occurred within the period of time beginning five business days prior to the date that the submission is due.

(3) The outage may be planned or unplanned.

(4) You must submit notification to the Administrator in writing as soon as possible following the date you first knew, or through due diligence should have known, that the event may cause or has caused a delay in reporting.

(5) You must provide to the Administrator a written description identifying:

(i) The date(s) and time(s) when CDX or CEDRI was accessed and the system was unavailable;

(ii) A rationale for attributing the delay in reporting beyond the regulatory deadline to EPA system outage;

(iii) Measures taken or to be taken to minimize the delay in reporting; and

(iv) The date by which you propose to report, or if you have already met the reporting requirement at the time of the notification, the date you reported.

(6) The decision to accept the claim of EPA system outage and allow an extension to the reporting deadline is solely within the discretion of the Administrator.

(7) In any circumstance, the report must be submitted electronically as soon as possible after the outage is resolved.

(i) *Claims of force majeure.* If you are required to electronically submit a report through CEDRI in the EPA's CDX, you may assert a claim of force majeure for failure to timely comply with the reporting requirement. To assert a claim of force majeure, you must meet the requirements outlined in paragraphs (i)(1) through (5) of this section.

(1) You may submit a claim if a force majeure event is about to occur, occurs, or has occurred or there are lingering effects from such an event within the period of time beginning five business days prior to the date the submission is due. For the purposes of this paragraph, a force majeure event is defined as an event that will be or has been caused by circumstances beyond the control of the affected facility, its contractors, or any entity controlled by the affected facility that prevents you from complying with the requirement to submit a report electronically within the time period prescribed. Examples of such events are acts of nature (*e.g.*, hurricanes, earthquakes, or floods), acts of war or terrorism, or equipment failure or safety hazard beyond the control of the affected facility (*e.g.*, large scale power outage).

(2) You must submit notification to the Administrator in writing as soon as possible following the date you first knew, or through due diligence should have known, that the event may cause or has caused a delay in reporting.

(3) You must provide to the Administrator:

(i) A written description of the force majeure event;

(ii) A rationale for attributing the delay in reporting beyond the regulatory deadline to the force majeure event;

(iii) Measures taken or to be taken to minimize the delay in reporting; and

(iv) The date by which you propose to report, or if you have already met the reporting requirement at the time of the notification, the date you reported.

(4) The decision to accept the claim of force majeure and allow an extension to the reporting deadline is solely within the discretion of the Administrator.

(5) In any circumstance, the reporting must occur as soon as possible after the force majeure event occurs.

There is no exception or exemption to reporting, much less an exemption from compliance with the numerical emission standards, only a method for requesting an extension of the reporting deadline. Reporters are required to justify their request and identify a reporting date. There is no predetermined timeframe for the length of extension that can be granted, as this is something best determined by the Administrator (*i.e.*, the EPA Administrator or delegated authority as defined in 40 CFR 63.2) when reviewing the circumstances surrounding the request. Different circumstances may require a different length of extension for electronic reporting. For example, a tropical storm may delay electronic reporting for a day, but a Hurricane Katrina scale event may delay electronic reporting much longer, especially if the facility has no power, and as such, the owner or operator has no ability to access electronically stored data or to submit reports electronically. The Administrator will be the most knowledgeable of the events leading to the request for extension and will assess whether an extension is appropriate, and if so, a reasonable length for the extension. The Administrator may even request that the report be sent in hardcopy until electronic reporting can be resumed. While no new fixed duration deadline is set, the regulation requires that the report be submitted electronically as soon as possible after the CEDRI outage or after the force majeure event resolves.

The concept of force majeure is not arbitrary, as it has been implemented since May 2007 within the CAA requirements through the performance test extensions provided in 40 CFR 63.7(a)(4) and 60.8(a)(1). Like the performance test extensions, the approval of a requested extension of an electronic reporting deadline is at the discretion of the Administrator.

The EPA also disagrees that the ability to request a reporting extension “would create a broad and vague mechanism” that owners and operators “could use to evade binding emission standards.” While reporting is an important mechanism for the EPA and air agencies to assess whether owners and operators are in compliance with emissions standards, reporting obligations are separate from (*i.e.*, in addition to) requirements that an owner or operator be in compliance with an emissions standard, especially where the deadline for meeting the standard has already passed and the owner or operator has certified compliance and is monitoring operations to show that they are in compliance with the standard. The commenter references deadlines set forth in the CAA for demonstrating initial compliance following the effective date of emission standards, which differs from deadlines for submitting reports. There are no such deadlines stated in the CAA for report due dates, meaning the EPA has discretion to establish reporting schedules, and also discretion to allow a mechanism for extension of those schedules on a case-by-case basis. In fact, under the commenter’s reasoning, if the statutory deadlines for compliance with standards were read to strictly apply to continuing reporting requirements, no such reporting could be required after 3 years from the promulgation of the standards. This would not be a reasonable result. Reporting deadlines are often different from compliance deadlines. Rules under 40 CFR parts 60 and 63 typically allow months following an initial compliance deadline to conduct testing and submit reports, but compliance with standards is required upon the compliance date.

Additionally, the ability to request a reporting extension does not apply to a broad category of circumstances; on the contrary, the scope for submitting an extension request for an electronic report is very limited in that claims can only be made for an event outside of the owner’s or operator’s control that occurs in the five business days prior to the reporting deadline. The claim must then be approved by the Administrator, and in approving such a claim, the Administrator agrees that something outside the control of the owner or operator prevented the owner or operator from meeting its reporting obligation. In no circumstance does this electronic reporting extension allow for the owner or operator to be out of compliance with the underlying emissions standards.

The EPA disagrees with the commenter's assumption that the requirement to report "as soon as possible" makes it likely that reporting will be significantly delayed, may lead a facility to drag its feet in submitting reports for an extended period, or may lead to a facility never reporting information. Each request for an extension of the electronic reporting deadline must be approved by the Administrator, and each request must state the time requested for the extension as well as the dates and times at which the unsuccessful attempt(s) to access CEDRI were made in the case of a CEDRI outage. The EPA also disagrees that a delay in reporting due to a CEDRI outage or a force majeure event would necessitate a delay in a corrective action that could be taken to prevent harmful and unlawful emission exceedances. The facility must remain in compliance with all air emissions requirements and has an ongoing responsibility under the general duty clause of 40 CFR 63.6(e) to operate and maintain any affected source in a manner consistent with safety and good air pollution practices for minimizing emissions. An extension of the deadline for submitting an electronic report in no way eliminates culpability for exceedances of emissions limitations or the requirement to address them.

The EPA disagrees that the force majeure extension request must require a facility to report what steps it will take in the future to prevent the same problem from occurring. A force majeure event for the purpose of electronic reporting is defined as "…an event that will be or has been caused by circumstances beyond the control of the affected facility, its contractors, or any entity controlled by the affected facility." Examples of such events are acts of nature and acts of war or terrorism. By definition, force majeure events are not something that a facility is able to control, and thus there is no way for the facility to prevent it from happening.

Comment 205: A commenter said that any reporting system should allow companies the option to provide explanatory comments on data or information submitted. Similarly, the commenter said that the agency should work with other regulatory authorities (*i.e.*, states, local agencies) to establish comparable or compatible electronic systems. The commenter pointed out that they expect that companies reporting electronically to the EPA will still have to submit hardcopy reports to other agencies that do not have electronic systems, thereby reducing or eliminating burden savings associated with EPA electronic reporting, and instead imposing an additional burden on facilities to comply.

Response: No change is being made to the final rule as a result of this comment. Flare management plans are portable document format (PDF) uploads; any explanatory information and data can be provided in the PDF file. The electronic reporting tool (ERT) has areas for users to enter comments on data and a place to add attachments. Reporting templates for Compliance Reports will contain fields for additional information; attachments can also be provided in the final zip file that is uploaded to CEDRI.

EPA's electronic reporting system provides quick and easy access to submitted data for state, local, and tribal agencies in two convenient locations: CEDRI and WebFIRE. The EPA works with state, local, and tribal agencies to encourage and implement the use of CEDRI for electronic delivery of reports within their jurisdiction. As more information is provided through the EPA's electronic reporting system, the EPA expects more state, local, and tribal agencies to adopt the use of the EPA's electronic reporting system. Electronic reporting minimizes submission of unnecessary or duplicative reports in cases where facilities report to multiple government agencies and the agencies opt to rely on the EPA's electronic reporting system to view report submissions. Where air agencies continue to require a paper copy of these reports and will accept a hard copy of the electronic report, facilities will continue to have the option to print paper copies of the electronic report to submit to the air agencies, and, thus, minimize the time spent reporting to multiple agencies.

Comment 206: A commenter said that electronic reporting should not place further restrictions on who is eligible to submit a report.

Response: No change is being made to the final rule as a result of this comment. The commenter provided no data or information, nor specific citations to demonstrate that the EPA placed restrictions on who is eligible to submit a report. The upload of files to CEDRI may be done by any authorized user, including a contractor. The current system requires that the final step of certifying the accuracy and completeness of submittals be done by a certifier or delegated certifier, who must be an employee of the owner/operator of the facility. The EPA does not currently intend to change that practice as it ensures that the final action prior to submittal is the certification of accuracy and completeness, minimizing the possibility of inadvertent changes between certification and submission. CEDRI does not limit the number of delegated certifiers or restrict who at the facility may be registered as a delegated certifier for the facility.

Comment 207: Some commenters contended that more time is needed for companies to implement the electronic reporting requirements. One commenter recommended that the EPA consider the reporting schedule that was proposed in the rule for Electronic Reporting and Recordkeeping Requirements for NSPS in Docket ID EPA-HQ-OAR-2009-0174 to allow electronic submission of reports 2 years from publication of the final rule or 1 year after the reporting form becomes available in CEDRI, whichever date is later. The commenter argued that this reporting schedule is also consistent with recently approved changes to 40 CFR 60 Subpart DDDD.

Another commenter requested the EPA add language to the final rule that requires use of the template 3 years from the date of publication of the final rule in the **Federal Register**, or one year after the final version of the electronic template becomes available, whichever is later. The commenter pointed out that 40 CFR 63.2520(e) says nothing about the availability of the template prior to the reporting deadline. The commenter said facilities were allowed one year after reporting templates became available in the NESHAP for Chemical Recovery Combustion Sources at Kraft, Soda, Sulfite, and Stand-Alone Semichemical Pulp Mills (Subpart MM), before they were required to use the electronic reporting templates.

Response: The commenter provided no data or information, nor specific citations to support the claim that the EPA has not allowed sufficient compliance time for companies to implement the electronic reporting requirements and to integrate the EPA and company systems. In fact, we are allowing a compliance period of at least 3 years after the effective date of the final rule (or upon startup, whichever is later) for most affected sources to be in compliance with all of the regulation's revised requirements. A compliance period of 2 years is being finalized for sources in EtO service to be in compliance, and a compliance period of 1 year compliance period is being finalized for light liquid pumps.

We proposed that Compliance Reports would not be required to be submitted electronically (*i.e.*, through the EPA's CDX using the appropriate electronic report template for this subpart) for at least 3 years after the effective date of the final rule. However, we are correcting an error to clarify that compliance reports must be submitted electronically beginning three years after date of publication of final rule in the **Federal Register** or once the reporting template has been available on the CEDRI website for 1 year, whichever date is later. We will prepare a final version of the reporting template to be located on the CEDRI website at https://www.epa.gov/electronic-reporting-air-emissions/cedri. Therefore, we are revising 40 CFR 63.2520(e) to add "or once the reporting template has been available on the CEDRI website for 1 year, whichever date is later".

Comment 208: A commenter said that regulatory language must allow companies to submit hardcopy reports if there is an issue with the EPA's system availability or company systems.

Response: No change is being made to the final rule as a result of this comment. the EPA proposed, and is finalizing, the ability for owners and operators to request an extension of the reporting deadline in the instances where there is an issue with the EPA's reporting system immediately prior to a reporting deadline. Owners and operators should discuss other reporting issues, such as company system issues, with the delegated authority.

Comment 209: A commenter said that electronic reporting should allow for the submission of PDF documents.

Response: No change is being made to the final rule as a result of this comment. One of the report types (*i.e.,* a flare management plan) that is required to be electronically submitted by this rulemaking is a PDF file upload. For performance test reports, the ERT allows users to attach PDF files within the ERT file. Likewise, PDF files may be submitted in the zip file with the reporting template for Compliance Reports. However, the majority of the benefits of electronic reporting can only be achieved through report standardization, as such, the EPA disagrees with the option to allow PDF documents to replace reporting templates.

Comment 210: A commenter said that the reporting system should have the capability for updates or corrections to be submitted.

Response: CEDRI currently has the ability to accept report resubmittals in the event that a correction or update to a submitted report is required.

Comment 211: A commenter requested that the EPA continue to work with State agencies to develop an efficient and one stop location for submittal of information that is now required to be reported electronically to the EPA or provide states access to the EPA's CDX to eliminate duplicate reporting obligations. The commenter said that the EPA should clarify whether this electronic reporting requirement also applies to affected sources located in states like Texas[130] which have received delegation for the Part 63 NESHAP (MACT) rules and are not required to submit copies of reports to the EPA.

The commenter argued that the current system, as proposed, still contains duplicative requirements and more time and resourcing to accomplish. The commenter said that reporting of deviations is required to be submitted in the semi-annual compliance report as well as the Title V deviation report. The commenter said with the addition of electronic reporting, the same information will now have to be submitted three times and in three different formats, including: (1) an electronic MON semi-annual compliance report to the EPA; (2) a semi-annual MON compliance report to the Delegated authority (if different than the EPA); and (3) the Title V semi-annual deviation report.

The commenter also said that the act of populating the EPA's CDX using the CEDRI results in duplicate and inefficient work for companies and consultants because most state agencies will continue to request submittal of the performance test reports, performance evaluations, notifications of compliance status, site-specific monitoring plans, and semiannual compliance reports directly to them.

Response: The EPA does not agree with the comment and no change is being made to the final rule. The electronic reporting requirements apply to all affected sources. The EPA's electronic reporting system provides quick and easy access to submitted data for state, local, and tribal agencies in two convenient locations: CEDRI and WebFIRE. The EPA works with state, local, and tribal agencies to encourage and implement the use of CEDRI for electronic delivery of reports within their jurisdiction. As more information is provided through the EPA's electronic reporting system, the EPA expects more state, local, and tribal agencies to adopt the use of the EPA's electronic reporting system. Electronic reporting minimizes submission of unnecessary or duplicative reports in cases where facilities report to multiple government agencies and the agencies opt to rely on the EPA's electronic reporting system to view report submissions. Where air agencies continue to require a paper copy of these reports and will accept a hard copy of the electronic report, facilities will continue to have the option to print paper copies of the electronic report to submit to the air agencies, and, thus, minimize the time spent reporting to multiple agencies.

Comment 212: A commenter requested that the EPA clarify in the final rule that the requirement to submit electronic reports does not change a previously obtained approval to follow a reporting schedule that is different that the reporting schedule in the MON rule.[131] The commenter said that 40 CFR 63.2520(e) should be reworded to allow for a different schedule for submission of reports under 40 CFR 63.9(i) and 40 CFR 63.10(a).

Response: The requirement to report electronically is not intended to impact any alternative reporting schedules that have been agreed to by the delegated authority. The EPA has added the clarification requested by the commenter to the regulatory text.

[130] https://www.epa.gov/tx/region-6-delegation-documents-state-texas-0

[131] We note that the commenter referred to the Coatings MACT rule, but we believe this was an error and the commenter meant the MON rule.

10.2 Compliance Template

Comment 213: A commenter contended that the MON electronic reporting template has many errors and does not function correctly. Another commenter said that the EPA provided a very thorough template that contains almost all of the reporting elements/citations, but also said that there are a few required reporting elements/citations missing. A commenter requested that the EPA provide comments in some of the cells with the actual reporting requirement or regulatory text rather than just providing the paraphrased header cell with the cross-referenced citations. The commenter said that alternatively, The EPA could add instructions on a tab at the beginning of the workbook with more information for each cell. A commenter said that they prefer using their own reporting templates, which provide instructions and guidance on how to complete the required forms and provide checkboxes in various sections to indicate whether a section is "Not Applicable" for different reasons. The commenters provided tables that list issues that they identified regarding the proposed template, including revisions to formatting, updates to references, and other improvements for clarity.

Commenters requested that all templates be structured to allow reporting by MCPU. A commenter said that every tab on the reporting template needs an additional "MCPU Identification" column as the first column. The commenters stated that there could be many MCPUs that make up one affected source. The commenter noted that one of their large facilities completes MON compliance reports for each MCPU, and the site has multiple Title V permits that report on different cycles, so it would not be possible to submit one MON report that covers all MCPUs.

A commenter added that for all CMS tabs, a "Control Device / Treatment Device Identification" column should be added to each tab next to "Affected CMS" because one MCPU can have multiple control devices with CMS and one affected source can have many MCPUs / many control devices and many CMS.

Response: The EPA has considered the commenters' feedback regarding corrections and clarifications for the reporting template. We are not finalizing the reporting template at this time. We have determined that additional time is needed to accurately develop the template; we intend to consider the comments received and will prepare a final version to be located on the CEDRI website at https://www.epa.gov/electronic-reporting-air-emissions/cedri. The EPA is finalizing that the electronic reporting template is not required to be used for reporting until it has been available on the CEDRI website for at least 1 year (or 3 years after publication of the final rule in the **Federal Register**, whichever date is later).

11.0 Impacts

11.1 Air Quality Impacts

Comment 214: A commenter requested that the EPA quantify the emission reductions from all proposed changes and include them as part of the record to enable facilities to utilize such reductions for permitting purposes and for predicting ambient air impacts for state implementation plan planning. The commenter requested that the EPA should determine the emission reductions of VOCs and HAPs from the proposed changes in flare, SSM, and PRD provisions, as well as from enhanced requirements for adsorbers that cannot be regenerated or must be regenerated off-site.

A commenter stated that it is unclear in the preamble language exactly what the EPA is relying on for this rule as it stated the proposed changes have a range of reductions between 52 and 116 tpy for HAPs, and between 283 and 385 tpy for VOCs.

Response: As discussed in the proposal preamble (84 FR 69182, December 17, 2019), we estimated HAP emissions using two different methods (*i.e.*, based on model plants and based on the MON emission inventory), so estimated emission reductions are presented as a range. In the final rule, updated emissions reductions are estimated to be between 107 and 130 tpy for HAPs, and between 283 and 532 tpy for VOCs. These emissions reductions do not consider the potential excess emissions reductions from flares that could result from the final monitoring requirements, which we estimate to be 263 tpy HAP and 1,254 tpy VOC. When considering the flare excess emissions, the total emissions reductions as a result of the final amendments are estimated to be between 370 and 393 tpy of HAP and between 1,537 and 1,786 tpy of VOC.

In the technical memoranda for this rulemaking, we used model plants to estimate baseline emissions and emissions reductions after application of controls. We also used this model plant data to estimate the percent emissions reductions expected after applying the controls. The model plant emissions reductions and details on how the percent emissions reductions were estimated are documented in the following memoranda, which are available in the docket for this rulemaking:

- Contro*l Option Impacts for Flares Located in the Miscellaneous Organic Chemical Manufacturing Source Category;*
- *Clean Air Act Section 112(d)(6) Technology Review for Equipment Leaks Located in the Miscellaneous Organic Chemical Manufacturing Source Category for the Final Rule;*
- *Review of Regulatory Alternatives for Certain Vent Streams in the Miscellaneous Organic Chemical Manufacturing Source Category;*
- *Clean Air Act Section 112(d)(6) Technology Review for Heat Exchange Systems Located in the Miscellaneous Organic Chemical Manufacturing Source Category for the Final Rule;*
- *Analysis of Control Options for Equipment Leaks at Processes that use Ethylene Oxide Located in the Miscellaneous Organic Chemical Manufacturing Source Category for the Final Rule;*
- *Analysis of Control Options for Storage Tanks and Process Vents Emitting Ethylene Oxide Located in the Miscellaneous Organic Chemical Manufacturing Source Category For the Final Rule; and*
- *Storage Tank Degassing Cost and Emissions Impacts for the Miscellaneous Organic Chemical Manufacturing Source Category For the Final Rule.*

The percent emissions reduction estimates for the finalized controls were then applied to the pre-control MON emissions inventory (see Appendix 1 of *Residual Risk Assessment for the Miscellaneous Organic Chemical Manufacturing Source Category in Support of the 2020 Risk and Technology Review Final Rule*, which is available in the docket for this rulemaking) to develop post-control emissions for modeling purposes.

We cannot quantify emissions reductions from the standards for flares, PRD releases, or from implementation of malfunction provisions for specific facilities as these activities are by their very nature unscheduled and resulting from malfunctions. Malfunction events are, by definition, sudden, infrequent, and not reasonably preventable failures of emissions control, process, or monitoring equipment. For flares, we estimated emissions based on model operating scenarios, but we did not quantify them for specific facilities. PRDs are generally safety devices that are used to prevent equipment failures that could pose a danger to the facility and facility workers. PRD releases are triggered by equipment or process malfunction. As such, they do not occur frequently or routinely and do not have the same emissions or release characteristics that routine emission sources have, even if the PRD and the vent are on the same equipment. This is because conditions during a PRD release (temperature, pressure, and vessel contents) differ from the conditions that exist during routine emissions from equipment. For adsorbers, we are adding monitoring requirements for adsorbers that cannot be regenerated and regenerative adsorbers that are regenerated offsite because the MON does not currently include specific monitoring requirements for this type of APCD. As such, we did not have source category-specific emissions information available regarding these controls to evaluate for specific emissions reductions.

Similarly, for emissions reductions from periods of startup and shutdown, we did not evaluate quantitative emissions reductions as we did not have sufficient data for these periods. However, as noted in the proposal preamble, emission reductions for process vents and transfer rack operations are typically achieved by routing vapors to an APCD such as a flare, thermal oxidizer, or carbon adsorber. It is common practice in this source category to start an APCD prior to startup of the emissions source it is controlling, so the APCD would be operating before emissions are routed to it. We expect APCDs would be operating during startup and shutdown events in a manner consistent with normal operating periods, and that these APCDs will be operated to maintain and meet the monitoring parameter operating limits set during the performance test.

Moreover, it is not proper for the EPA or the permitting authority to estimate emissions as part of a rulemaking for use by an individual facility for permitting purposes. Permitting requirements influence how the plant will be allowed to operate and are influenced in large part by the level of emissions. Accurate emissions estimates are necessary to ensure an equitable and legally proper permitting process. The plant owner or operator is in the best position to estimate emissions, because they understand the process equipment at the facility and how the equipment is designed and operated. The EPA, as part of a national rulemaking, has no access to all the information needed to accurately estimate emissions or emission reductions from any individual control measure, considering the unique local operating conditions or how the owner or operator plans to utilize the equipment for future business purposes. The permitting process properly requires that the permit applicant estimate emissions and that a responsible corporate official certify to the accuracy of the application. The permitting agency reviews the emission estimates for completeness, accuracy, and adherence to good engineering calculation procedures. Accordingly, no published emission reductions associated with a NESHAP rulemaking should be used directly in any permitting actions for an individual facility.

11.2 Economic Impacts

Comment 215: One commenter expressed concerned that the proposed limitations on the use of EtO would have a negative effect on U.S. specialty chemical manufacturing. The commenter stated that the proposed standards call for a reduction in limits that could result in diminished availability of EtO for the domestic manufacture of critical consumer and household products and the health care industry, and could result in shortages.

Another commenter stated that even if changing exposure levels caused shortages in certain supply chains, it could also cause innovative alternatives to be sought out.

Commenters expressed concern that the proposed rule would result in the elimination or significant restriction on the use of EtO as a sterilant, which they argued could immediately compromise the U.S. healthcare system's ability to provide a consistent and safe supply of sterile medical devices and could cause a public health crisis, such as delayed or canceled procedures, which would pose grave risk to those in medical need. One commenter also asserted that there is no effective substitute for EtO use as a sterilant.

Response: MON facilities do not manufacture EtO; instead, MON facilities use EtO as a feedstock to manufacture other products. Therefore, we disagree with the commenters that the proposed MON requirements for emissions sources in EtO service would have a negative effect on the use of EtO as a sterilant. For the proposed and final amendments, we performed a screening analysis for impacts on all affected facilities by comparing compliance costs to revenues at the ultimate parent company level. This is known as the cost-to-revenue or cost-to-sales ratio, or the *sales test*. The sales test is an impact methodology the EPA employs in analyzing entity impacts as opposed to a *profits test*, in which annualized compliance costs are calculated as a share of profits. The costs of the proposal are not expected to result in a significant market impact, regardless of whether they are passed on to the purchaser or absorbed by the firms. The screening analysis is documented in the memorandum, *Economic Impact and Small Business Screening Assessments for Proposed Amendments to the National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing*, which is available in the docket for this rulemaking.

12.0 Other

12.1 Statutory and Executive Orders

Comment 216: Commenters argued that the EPA has ignored the disproportionate impact of risk from toxic emitting facilities on low-income communities of color, which ignores the Environmental Justice Executive Order 12898.

Response: We disagree with the comment. Under EO 12898, the EPA is directed to the greatest extent practicable and permitted by law, to make Environmental Justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low income populations. Consistent with EO 12898 and the Presidential Memorandum that accompanies it, the EPA's Environmental Justice policies promote justice by focusing attention and the EPA efforts on addressing the types of Environmental Justice harms and risks that are prevalent among minority, low-income, and indigenous populations. EO 12898 and the EPA's Environmental Justice policies do not mandate particular outcomes from an action, but they require that decisions involving the action be informed by a consideration of Environmental Justice issues.

We further note that we worked with to engage local environmental justice communities and tribal members in the development of the proposed rule. We held two public hearings following publication of the proposed rule, on January 14, 2020, in Houston, Texas and January 16, 2020, in Washington D.C, as well as an informational webinar for tribes and communities on the proposed rule on January 21, 2020. We also provided materials to further explain the uncertainties in the estimated cancer risks from EtO and a memorandum explaining the range of models used in the EtO carcinogenicity assessment.

The EPA defines "environmental justice" to mean fair treatment and meaningful involvement of all people, and this definition represents a commitment to ensuring that the EPA works to improve conditions affecting the public health of all Americans so that everyone has access to clean water, clean air and healthy communities. In the Urban Air Toxics Strategy Report to Congress[132], we acknowledge that national rules and standards can address part of the risk to communities, but because the assessments did not include background risks or contributions to risk from sources outside the facilities, more needs to be done at the community level with other tools available within the CAA and within state, local, and other federal programs. The EPA is committed to our efforts to make a difference in communities of concern and developing an integrated strategy focusing work in communities with the most need for the EPA's assistance. We have been working, and will continue to work, in thousands of communities across the country. Over the next years we will look for opportunities to enhance our partnership with communities to strengthen and improve their health – both environmental and economic. This effort to enhance coordination across our EPA programs and with other federal agencies will improve how we support community needs. We will focus on those communities where we think we have opportunities to leverage resources and actions to make a real difference. As we learn lessons on coordinating and focusing our efforts, we will use these lessons to help more communities in the future. The EPA is continuing to discuss and pilot approaches that are consistent with the agency's responsibilities regarding EJ as outlined in Executive Order 12898.

With respect to this rule, the EPA found the overall level of risk from the source category to be acceptable after implementation of the controls that we are finalizing in this rulemaking, and we note that the emissions reductions from the final revisions will benefit these groups the most. See Section IV.A of the preamble to the final rule for additional information of the EPA's revised risk assessment. For additional information on the EPA's demographic and environmental justice analysis, see section 3.4 of this document.

[132] https://www.epa.gov/urban-air-toxics/second-integrated-urban-air-toxics-report-congress

12.2 Rulemaking Process/Schedule

Comment 217: One commenter asserted that the EPA failed to meet the CAA public notice and comment requirements. The commenter stated that the EPA issued a section 114 request to only one source and did not include the results in the draft risk assessment or explain how these data would change the risk assessment or proposed rule. The commenter further pointed out that the EPA failed to place into the docket relevant documents such as:

- The inquiry prompting the White memo on "uncertainty," including its scope, communication between Office of Air Quality Planning and Standards, IRIS, and/or any other persons regarding this "inquiry" and the memo that resulted
- Title V permits cited by the EPA and used to determine the MON facility list
- Materials cited in interagency review of preamble, such as the SAB Review of the EPA's evaluation of the inhalation carcinogenicity of EtO: Revised external review draft - August 2014.
- A review by the OMB included a meeting with an outside party and the OMB review then led to some "change" in the proposed rule.
- Data from the National Enforcement Investigations Center cited in the equipment leaks memo.
- Consent decrees issued by the EPA that are important for consideration as developments and health risk emission reduction methods.

The commenter contended that the EPA's failure to provide these documents violates the CAA notice-and-comment requirements and cause prejudice to people in communities affected by MON sources' emissions who want time to respond. The commenter maintained that in another rule where commenters similarly found missing material after bringing this to the EPA's attention, the EPA provided an additional 85 new documents into the docket and reopened the comment period for 30 additional days.

Response: We disagree with commenters that we have failed to place all material that is centrally relevant to this rulemaking in the rulemaking record. First, the commenter cites in general terms to publicly available information the EPA generally "reviewed," such as consent decrees, permit, permit applications, and state requirements, however their comments fail to highlight with any reasonable specificity a specific facility's permit, permit application, or consent decree or state regulatory rule citation that was of central relevance and relied upon for this rulemaking that was missing in the record. Second, commenters take out of context the word "review" in the sense that the EPA only looked over these various pieces of information, and any information that may have specifically relied upon was clearly documented in our supporting materials and memoranda. Specifically, we relayed general information back to the commenter on where publicly available information could be found as well as where the information specific to the central relevance for this rulemaking could be found in the rulemaking record, particularly with respect to the information used to develop and assess residual risk for the source category. The same commenter who claimed that the Title V permits, permit applications, consent decrees, and settlement agreements the EPA "reviewed" were not in the docket cited to these items numerous times throughout their own comments, meaning they clearly had no issues accessing, reviewing, and providing comment on this information.

Regarding the specific list of documents the commenter noted were missing, the discussions within the EPA leading up to the development of the memo from the EPA's Office of Research and Development are generally protected by the deliberative process privilege and do not fall within the definition of materials required to be docketed. The EPA has included the Office of Research and Development memo itself in the docket. The Title V permits are available to the public on State agency websites. Materials cited in interagency review of preamble, such as the SAB Review of the EPA's evaluation of the inhalation carcinogenicity of EtO: Revised external review draft - do not fall within the definition of materials that are required to be docketed under either section 307(d)(3) or section 307(d)(4)(B)(ii) of the CAA. The referenced document is publicly available on the EPA's website[133]. Commenters are welcome to seek out this publicly available document and use it as the basis of a comment if they choose. For the OMB meeting with an outside party and the OMB review then led to some "change" in the proposed no documents were shared at this meeting. Every change that was made to the proposed rule as part of OMB's review is documented in the docket at https://www.regulations.gov/document?D=EPA-HQ-OAR-2018-0746-0030. All written correspondence between OMB and the EPA and drafts of the preamble that were shared between the EPA and OMB during OMB review, including redline/strikeout versions of the proposed action, are included in the docket. The memorandum, *Clean Air Act Section 112(d)(6) Technology Review for Equipment Leaks Located in the Miscellaneous Organic Chemical Manufacturing Source Category* cites another EPA memorandum, *Analysis of Emissions Reduction Techniques for Equipment Leaks* (also included in the MON docket) which summarizes data from the National Enforcement Investigations Center. The original National Enforcement Investigations Center data set is not available to us and was not used in the development of this rulemaking. All necessary data that was used in this analysis is available in the memoranda placed in the MON docket.

Further, as we acknowledged in the proposal preamble (84 FR 69186, December 17, 2019), although the EPA did not receive the CAA section 114 data from Lanxess in time to be used at proposal, we posted this data publicly to the docket at proposal to provide the public with sufficient time to review the data and provide comments during the comment period. Further, we acknowledged we intended to "use the collected information to assist the Agency in filling data gaps, establishing the baseline emissions and control levels for purposes of the regulatory reviews, identifying the most effective control measures, and estimating the environmental impacts associated with the regulatory options considered and reflected." (84 FR 69186, December 17, 2019). Thus, as has always been our intent, in the final rule we have revised the residual risk assessment to incorporate the data received in the response to the CAA section 114 request to update Lanxess' emissions.

In summary, we believe the rulemaking record contains all material of central relevance and that, contrary to commenter's assertions, no violation of our notice and comment obligations

[133] Available at:
https://yosemite.epa.gov/sab/sabproduct.nsf/fedrgstr_activites/BD2B2DB4F84146A585257E9A0070E655/%24File/EPA-SAB-15-012+unsigned.pdf

occurred. Further, we note that the EPA initially extended the comment period by 18 days (from a January 31, 2020 closing to a February 18, 2020 closing) to allow for a public comment period of 30 days following the public hearing that took place on January 16, 2020, and again from February 19, 2020 to March 19, 2020. In total, the EPA provided the public with a 93-day comment period for the RTR from December 17, 2019 to March 19, 2020 and provided the public with sufficient time to review the information of central relevance to the rulemaking and located in the rulemaking docket.

Comment 218: Commenters stated that the EPA has not fulfilled its obligations to engage with local communities, citing the EPA's lack of engagement subsequent to the 2016 reclassification of ethylene oxide. A commenter urged that the EPA's central role is clearly and effectively communicating the risk of EtO poses to neighboring communities, and that the EPA should work with communities to gather more data on the air they breathe, to communicate with local leaders and stakeholders about the risk of EtO, to engage directly with Congress, and to effectively communicate with the public every step of the way. Another commenter requested that the EPA issue a white paper to better explain the rule changes, given its complexity, to make it easier for the general public to follow and provide comment on.

Response: We disagree with the commenter. In response to the need to communicate risk, the Agency recently appointed a risk communication advisor at EPA Headquarters to consult on all risk communication involving EtO. The work done by this new EPA career staffer supplements the work already underway in this area being done by the Office of Air Quality, Planning, and Standards.

The EPA has also worked to engage local communities in the development of the rule. We held two public hearings following publication of the proposed rule, on January 14, 2020, in Houston, Texas and January 16, 2020, in Washington D.C, so interested parties could present data, views, or arguments concerning the proposed action. The EPA also held a public informational webinar for Tribes and communities on the proposed rule on January 21, 2020. The webinar outlined the risk and technology review process and included information specific to the proposed MON rulemaking. The webinar offered a chance for the public to ask clarifying questions related to the proposal. The slides from this webinar are posted online at: https://www.epa.gov/stationary-sources-air-pollution/miscellaneous-organic-chemical-manufacturing-national-emission#additional-resources. We also provided materials to further explain the uncertainties in the estimated cancer risks from EtO and a memorandum explaining the range of models used in the EtO carcinogenicity assessment. Further, we note that the EPA extended the comment period from January 31, 2020 to February 18, 2020 to allow for a public comment period of 30 days following the public hearing that took place on January 16, 2020, and again from February 19, 2020 to March 19, 2020. In total, the EPA provided the public with a 93-day comment period for the RTR from December 17, 2019 to March 19, 2020 to allow the public sufficient time to engage and review the information. Further, we intend to continue to communicate with the public regarding the final rule requirements, and to publish additional materials that further explain the final rule changes and how the final rule impacts risks to local communities.

In response to the request for a white paper, for all proposed and final rules including this action, the EPA provides a plain-language fact sheet that highlights relevant details of the action.

The fact sheet for the MON is posted online on the regulatory actions page at: https://www.epa.gov/stationary-sources-air-pollution/miscellaneous-organic-chemical-manufacturing-national-emission#additional-resources.

Comment 219: A commenter requested an additional extension of the comment deadline due to the need for affected community residents to be able to meaningfully evaluate the rulemaking and provide comment.

Response: We disagree with the commenters that additional time is needed for the comment period. The proposed rule was published in the **Federal Register** on December 17, 2019 and the comment period ended on February 18, 2020. On February 19, 2020, the court granted the EPA an extension on the final rule from March 13, 2020, to May 29, 2020, and the EPA re-opened the comment period to March 19, 2020. In total, the EPA provided the public with a 103-day comment period for the RTR from December 17, 2019 to March 19, 2020. Additionally, the proposed rule was signed on November 6, 2019, and made publicly available on the EPA's website, allowing an additional 41 days for review, for a total of 134 days. We consider this sufficient time.

Comment 220: Two commenters requested that the EPA hold an additional public hearing. A commenter specifically requested the EPA visit Louisiana since 17 MON facilities are located there.

Response: Given the tight timeframe the agency is under to meet the court-ordered deadline to promulgate its decisions on the RTR for the MON, the EPA could not grant these requests. We note that the EPA re-opened the comment period to March 19, 2020, to provide additional time for comments. As noted in response to comment 219 of this document, the EPA provided a total of 134 days for review.

The EPA also notes that CAA section 307(h) requires the EPA to "ensure a reasonable period for public participation of at least 30 days…" and that CAA section 307(d)(5) requires that the EPA allow for a public hearing and keep the comment period open for 30 days after completion of a public hearing and that the EPA met these CAA obligations for this RTR rulemaking.

Comment 221: A commenter contended that the EPA was supposed to review its MON standards eight years after first being established, but failed to do so.

Response: On March 13, 2017, the U.S. District Court for District of Columbia ordered the EPA to perform all acts or duties required by CAA section 112(f)(2) and CAA section 112(d)(6) for 20 source categories, including miscellaneous organic chemical manufacturing, within three years of the date of the court order (*See California Communities Against Toxics, et al. v. Scott Pruitt,* 241 F. Supp. 3d 199 (DDC 2017)). This final rulemaking satisfies this order.

12.3 Editorial Corrections

Comment 222: A commenter pointed out that 40 CFR 63.2450(k) should reference paragraphs (k)(1) through (8), rather than paragraphs (k)(1) through (68).

Response: We agree with the commenter's suggested edit and are revising the final rule as requested to correct the reference paragraphs (1) through (8) in 40 CFR 63.2450(k).

Comment 223: A commenter requested a correction to 40 CFR 63.2445(g)(1), which is missing the recordkeeping requirement for adsorbers under 40 CFR 63.2525(o).

Response: We agree with the commenter's suggested edit and are revising the final rule as requested to add the reference to 40 CFR 63.2525(o) to 40 CFR 63.2445(g)(1).

Comment 224: A commenter requested the following 8 edits to correct "minor typographical errors" in the MON:

Provision	Issue (summarized)
§63.2435(b)(3)	The reference in §63.2435(b)(3) to the CMPU definition in §63.100 probably should reference the definition of CMPU in §63.101 instead. Section 63.100 concerns the applicability of HON and designation of the source.
§63.2450(e)(6)(ii)	Within §63.2450(e)(6)(ii), there is a cross reference to §63.2485(q) which is located in the MON's provisions for wastewater and liquid streams in open systems and pertains to the referenced SSM provisions in Subparts F, G, and UU that no longer apply after a certain date. This cross-reference to §63.2485(q) does not seem appropriate for this paragraph which pertains to the bypass monitoring requirements in §63.172(j) of Subpart H.
§63.2460(c)(2)(ii)	In the last sentence of §63.2460(c)(2)(ii), the reference to the test methods in §63.1257(b)(8) should be §63.1257(b)(1)-(b)(6) instead.
§63.2450(h)	Please confirm whether a design evaluation for a small control device is also allowed if complying with an outlet concentration limit or a pound per hour emission limit. A design evaluation is already allowed under §63.2465(c)(1) under the requirements for process vents that emit hydrogen halide and halogen HAP regardless of whether a small or large control device is used. Table 3 should not be listed in §63.2450(h). Under §63.985(b)(1) for "Nonflare control devices used to control emissions from storage vessels and low throughput transfer racks" a design evaluation or a performance test is allowed regardless of whether the control device is large or small. The EPA may want to add a clarification to §63.2450(h) for storage vessels and low throughput transfer racks.
§63.2475(b)	This section is silent on how to handle low throughput transfer racks that are Group 1 transfer racks. For example, you can have a transfer rack that meets the "low throughput transfer rack" definition (*i.e.*, transfer less than a total of 11.8 million liters per year of liquid containing regulated material) and is above the cut-offs for a Group 1 transfer rack, (*i.e.*, loads more than 0.65 million liters per year with a rack-weighted average partial pressure greater than or equal to 1.5 psia). The commenter said they assume that they can comply with §63.982(c)(3) of Subpart SS for the low throughput transfer rack. Section 63.982(c)(3) points to §63.982(b), (c)(1) and (d) which further references §63.985.
§63.2485(q)(5)(ii)	The reference to §63.139(d)(2)(vii)(3) should be §63.139(d)(3).
§63.2535(b)	The reference to §63.2520(e) should be §63.2520(d)(2)(vi).
63.998(a)(2)(ii)(A)	The reference to "(a)(2)(ii)(B) through (C)" should read "(a)(2)(ii)(B) through (D)".

Response: The requested changes are not related to the risk and technology review that we conducted for the MON; however, we note that the request to correct the typo at 40 CFR 63.2485(q)(5)(ii) is addressed elsewhere in this document. With the exception of this particular typo correction, we are not making any other changes to the final rule as a result of this comment. The EPA may, at some time in the future, consider making amendments to these provisions.

12.4 Miscellaneous

Comment 225: Several commenters supported the proposed revisions to 40 CFR part 63, subpart FFFF.

Response: This comment requires no response.

Comment 226: Commenters requested that the EPA prohibit facilities from emitting cancerous chemicals, including EtO, near residentials communities or schools. A commenter urged that laws must be more strict regarding where these companies are built and how they filter the air and even residual emissions. A commenter argued that the government has failed to protect the public from EtO; the commenter stated the EPA and local governments continue to issue permits at thousands of pounds per year, even knowing EtO causes cancer, and that the EPA should not privilege profits over health. The commenter maintained that acceptable levels of exposure to cancer-causing EtO should not be increased and protested the weakening of the MON rule responsible for protecting neighboring communities from health problems.

Response: We disagree with the comment that the EPA has failed to protect the public from EtO or weakened the MON. We considered standards for proposal under CAA sections 112(f) as well as 112(d)(6). Our final decisions on the proposed requirements are discussed in Section IV.A (residual risk assessment, CAA section 112(f)) and Section IV.B (technology review, CAA section 112(d)(6)) of the preamble to the final rule. With respect to this rule, the EPA is finalizing requirements that strengthen the MON standards and, as discussed in those sections, adds provisions that ensure the 112(f) standards are being met and reduce the overall level of risk from the source category to acceptable levels, particularly for EtO. Further, the EPA found that these final emission standards for the source category provide an ample margin of safety to protect public health and will reduce the overall HAP emissions from the source category by 107 tpy.

Regarding the commenter's remaining concerns, these comments are beyond the scope of this rulemaking.

Comment 227: Two commenters supported all the recommendations and comments of Earthjustice, as well as comments from community members in impacted communities. A commenter also expressed support for the comments of Texas Environmental Justice Advocacy Services, People Concerned About Chemical Safety, Mossville Environmental Action Now and Clean Power Lake County, as well as our partners at Faith In Place, Union of Concerned Scientists and NRDC.

A commenter concurs with and incorporates by reference the American Chemistry Council submitted comments on the proposed MON RTR Amendments.

A commenter supported and incorporated by reference the comments of the Advanced Medical Technology Association that the EPA's proposal will result in unwarranted litigation against commercial medical sterilization providers and other users and producers of EO.

A commenter stated that they supported the comments submitted by the American Chemical Council and incorporates those comments by reference.

Response: We have considered and responded to all comments received. In certain responses to comments summarized in this document, we note that our response is expounded upon in the preamble to the final rule.

12.5 Out of Scope

Comment 228: A commenter expressed concerns regarding studies indicating that EtO can be trapped indoors. The commenter referenced an indoor air study[134] indicating higher EtO concentrations measured indoors than outdoors. The commenter also noted that the study indicated EtO may also sink to lower levels of buildings, as shown by measurements on different floors of buildings, with the highest concentrations in the lowest levels. The commenter expressed concern that the EPA has been permitting design evaluations in lieu of physical measurements to determine whether control strategies are functioning as expected. Specifically, the commenter stated that there is a presumption that indoor spaces will have equal or lower concentrations of a pollutant than outdoor spaces because air handling systems are presumed to be designed for a certain rate of air turnover, however, the available data indicate that those assumptions may not be justified. Without some significant assurance through testing that these designs are actually functioning as designed, it is irresponsible to rely on heating, ventilation, and air conditioning design in downstream risk determinations.

Response: This comment is not directly relevant to the Miscellaneous Organic Chemical Manufacturing source category rulemaking because this rulemaking applies to the regulation of major and area sources of HAP; the EPA does not specifically regulate indoor air. In addition, we note that the risk assessment conducted for this RTR evaluated exposure to HAP in the ambient air, not in indoor spaces. The risk assessment uses the exposure assumption of an individual most exposed (*i.e.*, the MIR estimate), that is developed assuming someone breathes the maximum ambient air concentration at their location 24 hours a day, 7 days a week, for 365 days a year without decreases for commuting or activities away from the area of maximum exposure.

Comment 229: Commenters specifically requested that the EPA shut down the Sterigenic facility in Smyrna, GA, citing health risks from EtO. One commenter stated that there must be a full investigation into what the companies have known about EtO, and if they have been found to be withholding information, they should be shut down immediately.

[134] Commenter provided the following reference: https://www.willowbrookil.org/DocumentCenter/View/1500.

Response: This comment is beyond the scope of this rulemaking.

Comment 230: One commenter asserted that, because of the EPA's collaboration with an author of the NIOSH study, the IRIS EtO Assessment did not meet the EPA's guidance for risk evaluations under the amended TSCA Section 26 Lautenberg Act 2017.

Response: This comment is beyond the scope of this rulemaking.

Comment 231: One commenter expressed support for the EPA's decision to convene a Small Business Advocacy Review Panel, and emphasized that the EPA cannot adopt a one-size-fits-all approach that would not take into account the unique nature of a sterilization facility, specifically in regard to control of fugitive emissions. The commenter noted that a number of sterilizers are considered small businesses, and encouraged the EPA to work with Congress to develop resources for these small businesses and assist sources with achieving the overall standard, in lieu of pursuing specific exemptions on emissions for small businesses.

Response: This comment is in reference to sterilization facilities, not miscellaneous organic chemical manufacturing facilities, and is beyond the scope of this rulemaking. However, as noted by the commenter, the EPA did analyze the impacts on small businesses, which are presented in the memorandum, *Economic Impact and Small Business Screening Assessments Analysis for the Final Amendments to the National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing*, which is available in the docket for this rulemaking.

Comment 232: A commenter expressed concerned about EtO exposures related to the manufacturing and consumption of spices, noting that EtO is banned in all food production except in raw spice, spice blends, and dehydrated vegetables where EtO is used as a fumigant. The commenter urged that EtO and other toxic derivatives are found in many major spice brands and processed foods.

Response: This comment is beyond the scope of this rulemaking.

Comment 233: One commenter requested the EPA consider revising 40 CFR part 63, subparts F and G with similar controls and requirements to those proposed, specifically, removal of startup, shutdown, or malfunction exemptions, and urged the EPA to examine other HAP standards in the chemical sector to incorporate the proposed Subpart FFFF requirements.

Response: This comment is beyond the scope of this rulemaking.

Comment 234: One commenter recommended that the EPA consider the additional flare efficiency standards in setting proposed regulations for future RTRs.

Response: This comment is beyond the scope of this rulemaking.

Comment 235: A commenter stated that it is hypocritical of the head of the EPA to expose some people to high risks of cancer and not be willing to live next to a chemical plant.

Response: This comment is beyond the scope of this rulemaking.

Comment 236: A commenter argued that the EPA should also evaluate emission factors that MON sources used to report annual HAP emissions to the 2014 NEI, and assess their reliability.

Response: This comment is beyond the scope of this rulemaking.

Comment 237: A commenter requested that the EPA require conflicts of interest disclosures for companies to eliminate the benefits reaped between those responsible for the breaks or leaks, and their adjunct business investments to clean-up after leaks.

Response: This comment is beyond the scope of this rulemaking.

Comment 238: Commenters requested information on the EPA's efforts to reduce EtO from each of the industrial sources that it has identified, including (1) Miscellaneous Organic Chemical Manufacturing; (2) Polyether Polyols Production; (3) Synthetic Organic Chemical Manufacturing; (4) Commercial sterilizers; (5) Hospital EtO Sterilizers; and (6) EtO production facilities, and recommended prompt regulatory action.

Response: This comment is beyond the scope of this rulemaking.

Comment 239: One commenter requested that the EPA clarify the impact of the EPA's expansion of the solid waste exclusions in 40 CFR 261.4(a) in 2015 to the identification of and compliance options for process wastewaters regulated under the MON. The commenter specifically noted that their MON-regulated clients with streams currently classified as Group 1 MON process wastewaters requiring treatment and control in accordance with Table 7 of 40 CFR part 63, subpart FFFF, as referenced by 40 CFR 63.2485, are also classified and managed as RCRA hazardous wastes. The commenter interpreted the requirements to mean that, for streams historically classified as both RCRA hazardous wastes and Group 1 process wastewaters under the NESHAP that can now be classified as hazardous secondary materials meeting the requirements of 40 CFR 264.1(a), not solid wastes, are now, by definition, excluded from the definition of a wastewater, as specified in 40 CFR 63.2550, as they are specifically exempted from being considered "discarded" by the provisions of 40 CFR 261.2(a)(2)(i)(B) and (c) when sent to reclamation or remanufacture facilities meeting the requirements outlined in 40 CFR 264.1(a).

Response: No change is being made to the final rule as a result of this comment because this comment is not within the scope of this rulemaking. We recommend that the commenter submit more detailed information regarding their specific situation to the EPA and request an alternative monitoring method pursuant to 40 CFR 63.8(f).

Comment 240: Multiple commenters questioned potential stakeholder influences regarding the consideration of the 2016 IRIS EtO Assessment and related TCEQ documents. One commenter said that the IRIS EtO Assessment should be referred back to the IRIS office for clarification, and that the IRIS assessment outcome provoked fear among people who believe their health is in danger from EtO. This commenter also observed that the IRIS EtO Assessment has created a misunderstanding that there is a public health crisis that is shutting down medical sterilization facilities. One commenter stated that when the IRIS EtO was available for public comment, "interested parties" could not foresee its future regulatory use. Another commenter stated that various industries have been trying to gut the IRIS program and if the EPA departs from using IRIS assessments, it will endanger public health and trust in the EPA. One commenter suggested that industry pushed the use of an alternative to the overly conservative IRIS value, and described a planned alternative risk assessment manuscript to be communicated to TCEQ. One commenter stated that interagency communications show a push for the EPA to consider a non-final, non-peer-reviewed value and to ignore the 2016 IRIS, though the EPA refused to do so.

Response: No change is being made to the final rule as a result of this comment because this comment is beyond the scope of this rulemaking.

Comment 241: One commenter stated that "Some industry-funded parties reflect a desire to obfuscate results in such a way to make it plausible that no health effect is observed with chemicals such as EtO. This is an all-too-common tactic to sow confusion or cover for decision-makers where red herrings are planted to draw attention away from consensus issues. As a scientist, this is disingenuous and inauthentic and is motivated not by a search for truth, but rather external, predetermined interest."

Response: No change is being made to the final rule as a result of this comment because this comment is beyond the scope of this rulemaking.

January 8, 2025

E-MAIL RESPONSE
Texas Commission on Environmental Quality
ATTN: Mr. Mark McDonald
Air Permits Division, MC-163
P.O. Box 13087
Austin, TX 78711-3087

The Dow Chemical Company, CN600356976
Hydrocarbons, RN100225945
Title V Operating Permit NOD Response for Hydrocarbons Plant, O2213
TCEQ Project Number: 37218

Dear Mr. McDonald,

The Dow Chemical Company is providing a response to the Notice of Deficiency (NOD) provided on November 18, 2024.

Please do not hesitate to contact me at (979) 238-1742 or cschmidt6@dow.com if you require additional information regarding this submittal.

Sincerely,

Crystal Schmidt

Crystal Schmidt
Air Permit Manager

enclosure

cc:

US EPA Region 6	R6AirPermitsTX@epa.gov
TCEQ Air Section Manager, Region 12	R12apdmail@tceq.texas.gov
Brazoria County Environmental Health Director	jodiev@brazoria-county.com

Additional Information Request

Item 1	B60L7F1: Please update the 40 CFR Part 63, Subpart FFFF citations as requested in Revision #1.) See OP-REQ3 –(in the minor revision application received by TCEQ on 08/28/2023) "Dow is also requesting to remove any citations that reference daily averages since these citations do not apply to flares [63.998(b) and 63.999(c)]. Dow received an interpretation on these citations in 2020. This interpretation is available upon request from the TCEQ permit writer." • Please submit technical justifications for removing citations, as strike throughs on the OP-REQ3 are not justifications. If part of AMOC, include in justification. Reviewer check previous projects mentioned and cannot find any notes in the technical summary or statement of basis.
Item 1 Response	**Please see the attached PDF document "EPA-HQ-OAR-2018-0746-0252" for more information. Please see Comment 168 on Pages 217 and 218 for Dow's justification for not including citations referring to daily averages to the flares.**
Item 2	OC6L8RX1; OC6L8RX2; OC6L8RX3; OC6L8RX4: Revision #9, 18, 19, & 23 • Add citation 63.1103(e)(4)(xii)-(xiii) to the Standards • Please make the changes to the 30 TAC Chapter 115, Vent Gas Control citations as requested in (Also in the minor revision application received by TCEQ on 08/28/2023. (AMOC 62)) I will add citation 63.1103(e)(4)(xii)-(xiii) to the Standards for these units due to AMOC Please submit technical justifications for removing citations, as strike throughs on the OP-REQ3 are not justifications. If part of AMOC, include in justification. All updates were made to units; however, periodic monitoring (PM) is now required. Submit PM for units: OC6L8RX1 (R5121-01) OC6L8RX2 (R5121-01 and R5121-02) OC6L8RX3 (R5121-01) OC6L8RX4 (R5121-01)
Item 2 Response	**Has Alfredo had a chance to review AMOC 62 to see if the monitoring listed in the document will be sufficient? I have attached it to the email for your reference.** **The AMOC states we have to comply with 63.670(g)-(j), found in 40 CFR Part 63, Subpart CC. 63.670(g) requires the continuous monitoring of the presence of a pilot flame. 63.670(i) requires us to maintain a monitoring system that is capable of continuously measuring, calculating, and recording the volumetric flow rate in the flare header.** **Please let me know if the AMOC isn't sufficient enough, and we will provide a Form OP-MON for additional Periodic Monitoring.**
Item 3	B72L7D4; OC6L8D433: Please update the 30 TAC Chapter 115, Water Separation citations Revision #20. Dow requested to update the Exemption answer from "ATVP" to "NONE". • Updates were made for the Exemption answer from "ATVP" to "NONE", however, periodic monitoring (PM) is now required. • Submit PM for units: • B72L7D4 (R5131-01) • OC6L8D433 (R5131-01) OP-REQ3 = Citation removals for 30 TAC Chapter 115, Water Separation (to match the changes requested in Revision #1 in the application update submitted to TCEQ on November 9, 2023. • Please submit technical justifications for removing citations, as strike throughs on the OP-REQ3 are not justifications. If part of AMOC, include in justification.
Item 3 Response	**Please see the attached Form OP-MON for more information.**

Additional Information Request (cont.)

Item 4	OC2L8GF500; OC6L8F1; OC6L8F1018: Need more discussion. Please remove reference to 60.18 in the 30 TAC Chapter 115, HRVOC Vent Gas "Textual Description" as requested in Revisions #7, 13, 14. (Also, in the minor revision application received by TCEQ on 08/28/2023. (AMOC 62) • 60.18 Textual Description are not enforceable, and we cannot adjust in the Permit. Group (GRPL8DIST) – control. "Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart NNN for all distillation units per AMOC #62, dated September 21, 2022. All distillation units are routed to control devices (OC6L8H1 – OC6L8H10, OC6L8F1018, OC6L8F1, or OC2L8GF500). Therefore, all requirements will be found at these control devices." • Additionally, we need to discuss the General 40 CFR Part 63, Subpart A and YY high-level for these units.
Item 4 Response	**Dow understands that 40 CFR Part 63, Subpart YY applicability cannot be added to the flares. Therefore, Dow is requesting to add 40 CFR Part 63, Subpart CC applicability to these flares. Please see the attached Form OP-2 and Form OP-UA7/Table 6 for more information.**

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**January 8, 2025**
Permit No.:	**O2213**
Regulated Entity No.:	**RN100225945**
Company Name:	**The Dow Chemical Company**

I.Description of Revision

Revision No.	Revision Code	Unit/Group Process			NSR Authorization	Description of change and Provisional Terms and Conditions
		New Unit	ID No.	Applicable Form		
27	MS-C	NO	B72L7F2 OC2L8GF500 OC6L8F1 OC6L8F1018	OP-UA7	N/A	Please add 40 CFR Part 63, Subpart CC positive applicability to these flares. Compliance with 40 CFR Part 63, Subpart YY for flares is referenced in 40 CFR Part 63, Subpart CC

Texas Commission on Environmental Quality
Federal Operating Permit Program
Individual Unit Summary for Revisions
Form OP-SUMR
Table 1

Date	Permit No.	Regulated Entity No.
January 8, 2025	O2213	RN100225945

Unit/Process						Preconstruction Authorizations	
AI	Revision No.	ID No.	Applicable Form	Name/ Description	CAM	30 TAC Chapter 116/ 30 TAC Chapter 106	Title I
	27	B72L7F2	OP-UA7	FS-2 FLARE-SMALL/TANK FARM FLARE		123731 144784 106.261/11/01/2003 [158547] 106.262/11/01/2003 [158547]	PSDTX994M1
	7, 14, 27	OC2L8GF500	OP-UA7 OP-UA15	GROUND FLARE GF-500		20432	PSDTX994M2 N274
	7, 14, 27	OC6L8F1	OP-UA7	FS-1 ELEVATED FLARE STACK		20432	PSDTX994M2 N274
	7, 14, 27	OC6L8F1018	OP-UA7	FS-1018 VENT FLARE #1		20432	PSDTX994M2 N274

Texas Commission on Environmental Quality
Flare Attributes
Form OP-UA7 (Page 7)
Federal Operating Permit Program

Table 6: Title Code of Federal Regulations Part 63 (40 CFR Part 63)
Subpart CC, National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries

Date	Permit No.:	Regulated Entity No.
January 8, 2025	O2213	RN100225945

Unit ID No.	SOP Index No.	Flare Applicability	Operating Limits	AMEL ID No.	Flare Tip Velocity	Perimeter Assist Air
B72L7F2	*63CC-01*	*OTHER*	*REGOP*		*60-*	*NONE*
OC2L8GF500	*63CC-01*	*OTHER*	*AMEL*	*09/21/2022*		
OC6L8F1	*63CC-01*	*OTHER*	*AMEL*	*09/21/2022*		
OC6L8F1018	*63CC-01*	*OTHER*	*AMEL*	*09/21/2022*		

Applicable Requirements Summary
Form OP-REQ3 (Page 1)
Federal Operating Permit Program
Table 1a: Additions

Date: January 8, 2025	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
27	***B72L7F2***	***OP-UA7***	***63CC-01***	***HAPS***	***40 CFR Part 63, Subpart CC***	***63.670(c), 63.670, (b), (d), (d)(1), (e), 63.670(o), [G](o)(1)-(5), (o)(6), [G]63.670(o)(7), [G]63.671(c)***
27	***OC2L8GF500***	***OP-UA7***	***63CC-01***	***HAPS***	***40 CFR Part 63, Subpart CC***	***63.670(c), 63.670, (b), (o), [G](o)(1)-(5), 63.670(o)(6), [G](o)(7), (r)(4), [G]63.671(c)***
27	***OC6L8F1***	***OP-UA7***	***63CC-01***	***HAPS***	***40 CFR Part 63, Subpart CC***	***63.670(c), 63.670, (b), (o), [G](o)(1)-(5), 63.670(o)(6), [G](o)(7), [G]63.671(c)***
27	***OC6L8F1018***	***OP-UA7***	***63CC-01***	***HAPS***	***40 CFR Part 63, Subpart CC***	***63.670(c), 63.670, (b), (o), [G](o)(1)-(5), 63.670(o)(6), [G](o)(7), [G]63.671(c)***

Applicable Requirements Summary
Form OP-REQ3 (Page 2)
Federal Operating Permit Program
Table 1b: Additions

Date: January 8, 2025	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
27	*B72L7F2*	*63CC-01*	*HAPS*	*63.670(b)-(c), (d)(1), (e), (g), [G]63.670(h)-(k), [G](m), [G]63.671(a)-(e)*	*[G]63.670(h)-(j), [G](o)(1), [G]63.670(o)(5), (o)(6), (p), [G]63.671(a)-(b)*	*[G]63.670(h), [G](j), [G](o)(2), 63.670(q)*
27	*OC2L8GF500*	*63CC-01*	*HAPS*	*63.670(b)-(c), (g), [G](h)-(i), (r), [G]63.670(r)(1), [G]63.671(a)-(e)*	*[G]63.670(h)-(i), [G](o)(1), [G]63.670(o)(5), (o)(6), (p), [G]63.671(a)-(b)*	*[G]63.670(h), [G](o)(2), (q), (r), [G]63.670(r)(1)-(4)*
27	*OC6L8F1*	*63CC-01*	*HAPS*	*63.670(b)-(c), (g), [G](h)-(i), (r), [G]63.670(r)(1), [G]63.671(a)-(e)*	*[G]63.670(h)-(i), [G](o)(1), [G]63.670(o)(5), (o)(6), (p), [G]63.671(a)-(b)*	*[G]63.670(h), [G](o)(2), (q), (r), [G]63.670(r)(1)-(4)*
27	*OC6L8F1018*	*63CC-01*	*HAPS*	*63.670(b)-(c), (g), [G](h)-(i), (r), [G]63.670(r)(1), [G]63.671(a)-(e)*	*[G]63.670(h)-(i), [G](o)(1), [G]63.670(o)(5), (o)(6), (p), [G]63.671(a)-(b)*	*[G]63.670(h), [G](o)(2), (q), (r), [G]63.670(r)(1)-(4)*

Texas Commission on Environmental Quality
Monitoring Requirements - Form OP-MON (Page 1)
Federal Operating Permit Program
Table 1a: CAM/PM Additions

I. Identifying Information			
Account No.: ***BL-0082-R***	RN No.: ***RN100225945***		CN: ***CN600356976***
Permit No.: ***O2213***		Project No.: ***35544***	
Area Name: ***Hydrocarbons***			
Company Name: ***The Dow Chemical Company***			
II. Unit/Emission Point/Group/Process Information			
Revision No.: ***N/A***			
Unit/EPN/Group/Process ID No.: ***B72L7D4; OC6L8D433***			
Applicable Form: ***OP-UA14***			
III. Applicable Regulatory Requirement			
Name: ***30 TAC Chapter 115, Water Separation***			
SOP/GOP Index No.: ***R5131-01***			
Pollutant: ***VOC***			
Main Standard: ***115.132(a)(1)***			
IV. Title V Monitoring Information			
Monitoring Type: ***PM***			
Unit Size:			
CAM/PM Option No.: ***PM-V-049***			
Deviation Limit: ***A leak is a deviation***			
CAM/PM Option No.:			
Deviation Limit:			
V. Control Device Information			
Control Device ID No.:			
Control Device Type:			

October 2, 2024

E-MAIL RESPONSE
Texas Commission on Environmental Quality
ATTN: Mr. Mark McDonald
Air Permits Division, MC-163
P.O. Box 13087
Austin, TX 78711-3087

The Dow Chemical Company, CN600356976
Hydrocarbons, RN100225945
Title V Operating Permit NOD Response for Hydrocarbons Plant, O2213
TCEQ Project Number: 37218

Dear Mr. McDonald,

The Dow Chemical Company is providing a response to the Notice of Deficiency (NOD) provided on September 25, 2024. Dow is also providing an updated Form OP-PBRSUP.

Please do not hesitate to contact me at (979) 238-1742 or cschmidt6@dow.com if you require additional information regarding this submittal.

Sincerely,

Crystal Schmidt

Crystal Schmidt
Air Permit Manager

enclosure

cc:

US EPA Region 6	R6AirPermitsTX@epa.gov
TCEQ Air Section Manager, Region 12	R12apdmail@tceq.texas.gov
Brazoria County Environmental Health Director	jodiev@brazoria-county.com

Additional Information Request

Item 1	We are wrapping up the updates to your working draft permit (WDP) and have a request for final clarification. To ensure that we are capturing everything, we will need an updated OP-2 and OP-SUMR that includes all requested updates for project 35544.
Item 1 Response	**Please see the attached Form OP-2 and Form OP-SUMR for more information.** **Revisions #1-19 are from the August 28, 2023, submittal. The revisions requesting to add 40 CFR Part 63, Subpart YY citations have not been included since Dow has decided to keep the General High-Level Applicability.** **Revisions #20-23 are from the November 9, 2023, application update.** **Revisions #24-25 are from the July 30, 2024, application update.** **Revision #26 is from the May 23, 2024, Working Draft Permit response.**

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**October 2, 2024**
Permit No.:	**O2213**
Regulated Entity No.:	**RN100225945**
Company Name:	**The Dow Chemical Company**

I.Description of Revision

Revision No.	Revision Code	Unit/Group Process			NSR Authorization	Description of change and Provisional Terms and Conditions
		New Unit	ID No.	Applicable Form		
1	MS-C	NO	B60L7F1	OP-REQ3	N/A	Please update the 40 CFR Part 63, Subpart FFFF citations in order to remove the citations that are no longer applicable after August 12, 2023, and to include the new citations that are applicable after August 12, 2023. Dow is also requesting to remove any citations that reference daily averages since these citations do not apply to flares [63.998(b) and 63.999(c)]. Dow received an interpretation on these citations in 2020. This interpretation is available upon request from the TCEQ permit writer. Please see Form OP-REQ3 for the detailed citations.
2	MS-C	NO	N/A	OP-REQ1 (Page 78)	N/A	Please incorporate AMOC #62, dated September 21, 2022, into this Title V Permit. Question XI.D.4 on the Form OP-REQ1 has been changed to "YES".
3	MS-C	NO	BSRSRLR615	OP-UA1 OP-REQ3	N/A	Please add 40 CFR Part 63, Subpart EEEE (OLD MACT) low-level positive applicability to this unit. Please see Form OP-REQ3 for detailed citations.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**October 2, 2024**					
Permit No.:	**O2213**					
Regulated Entity No.:	**RN100225945**					
Company Name:	**The Dow Chemical Company**					
I.Description of Revision						
Revision No.	**Revision Code**	**Unit/Group Process**			**NSR Authorization**	**Description of change and Provisional Terms and Conditions**
		New Unit	**ID No.**	**Applicable Form**		
4	MS-C	NO	BSRSRST615 BSRSRST616 OC6L8D97	OP-UA1 OP-REQ3	N/A	Please remove 40 CFR Part 63, Subpart EEEE (OLD MACT) general high-level positive applicability from these units. Please add 40 CFR Part 63, Subpart EEEE (OLD MACT) low-level positive applicability to these units. Please see Form OP-REQ3 for detailed citations.
5	MS-C	NO	BSRHSBH	OP-SUMR	N/A	Please remove this unit from the entire Title V Permit. This unit is the vent stack for the Salt Bath Heater (BSRSRHSBH), which was removed in the last minor revision (Project #34140)
6	MS-C	NO	N/A	Major NSR Summary Table	N/A	Please update the 20432, PSDTX994M2, and N274 Major NSR Summary Table. This table has been provided in a separate Word document with track changes.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**October 2, 2024**
Permit No.:	**O2213**
Regulated Entity No.:	**RN100225945**
Company Name:	**The Dow Chemical Company**

I.Description of Revision

Revision No.	Revision Code	Unit/Group Process			NSR Authorization	Description of change and Provisional Terms and Conditions
		New Unit	ID No.	Applicable Form		
7	MS-C	NO	OC2L8GF500 OC6L8F1 OC6L8F1018	N/A	N/A	Please remove reference to 60.18 in the 30 TAC Chapter 115, HRVOC Vent Gas "Textual Description" on the Applicable Requirements Summary Table for these units. Please add reference to 63.1103(e)(4) to the 30 TAC Chapter 115, HRVOC Vent Gas "Textual Description" for these units. Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart A for all units venting to a flare per AMOC #62, dated September 21, 2022.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**October 2, 2024**					
Permit No.:	**O2213**					
Regulated Entity No.:	**RN100225945**					
Company Name:	**The Dow Chemical Company**					
I.Description of Revision						
Revision No.	**Revision Code**	**Unit/Group Process**			**NSR Authorization**	**Description of change and Provisional Terms and Conditions**
		New Unit	**ID No.**	**Applicable Form**		
8	MS-C	NO	OC6L8D91 OC6L8D97 OC6L8ST916	OP-UA3 OP-REQ3	N/A	Please remove citation 60.18 from the 30 TAC Chapter 115, Storage of VOCs requirements for this unit. Please update the Alternate Control Requirement answer from "NO" to "YES" for operating scenario 1 (R5112-01) on Form OP-UA3/Table 4a. Please add citation 63.1103(e)(4)(xii)-(xiii) to the Standards for these units. Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart A for all units venting to a flare per AMOC #62, dated September 21, 2022. Please see Form OP-REQ3 for detailed citations.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**October 2, 2024**
Permit No.:	**O2213**
Regulated Entity No.:	**RN100225945**
Company Name:	**The Dow Chemical Company**

I.Description of Revision

Revision No.	Revision Code	Unit/Group Process			NSR Authorization	Description of change and Provisional Terms and Conditions
		New Unit	ID No.	Applicable Form		
9	MS-C	NO	OC6L8RX1 OC6L8RX2 OC6L8RX3 OC6L8RX4	OP-UA15 OP-REQ3	N/A	Please remove citation 60.18 from the 30 TAC Chapter 115, Vent Gas Controls requirements for this unit. Please update the Alternate Control Requirement answer from "NONE" to "ALTED" on Form OP-UA15/Table 2b. Please add citation 63.1103(e)(4)(xii)-(xiii) to the Standards for these units. Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart A for all units venting to a flare per AMOC #62, dated September 21, 2022. Please see Form OP-REQ3 for detailed citations.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**October 2, 2024**					
Permit No.:	**O2213**					
Regulated Entity No.:	**RN100225945**					
Company Name:	**The Dow Chemical Company**					
I.Description of Revision						
Revision No.	**Revision Code**	**Unit/Group Process**			**NSR Authorization**	**Description of change and Provisional Terms and Conditions**
		New Unit	**ID No.**	**Applicable Form**		
10	MS-C	NO	OC2L8D1181 OC6L8D169 OC6L8D280	OP-UA19 OP-REQ3	N/A	Please remove citation 60.18(b) from the 30 TAC Chapter 115, Industrial Wastewater requirements for this unit. Please update the Alternate Control Requirement answer from “NO” to “YES” on Form OP-UA19/Table 1a. Please add citation 63.1103(e)(4)(xii)-(xiii) to the Standards for these units. Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart A for all units venting to a flare per AMOC #62, dated September 21, 2022. Please see Form OP-REQ3 for detailed citations.
11	MS-C	NO	OC6L8H8 OC6L8H9 OC6L8H10 (GRP2L8PF)	OP-UA1 OP-UA48	N/A	Please remove 40 CFR Part 63, Subpart RRR positive applicability from these units. Please add 40 CFR Part 63, Subparts YY General High-Level positive applicability to these units. Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart RRR for all reactor processes per AMOC #62, dated September 21, 2022.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

<table>
<tr><th>Date:</th><th colspan="7">October 2, 2024</th></tr>
<tr><th>Permit No.:</th><th colspan="7">O2213</th></tr>
<tr><th>Regulated Entity No.:</th><th colspan="7">RN100225945</th></tr>
<tr><th>Company Name:</th><th colspan="7">The Dow Chemical Company</th></tr>
<tr><th colspan="8">I.Description of Revision</th></tr>
<tr><th rowspan="2">Revision No.</th><th rowspan="2">Revision Code</th><th colspan="4">Unit/Group Process</th><th rowspan="2">NSR Authorization</th><th rowspan="2">Description of change and Provisional Terms and Conditions</th></tr>
<tr><th>New Unit</th><th colspan="2">ID No.</th><th>Applicable Form</th></tr>
<tr><td>12</td><td>MS-C</td><td>NO</td><td colspan="2">OC6L8H1
OC6L8H2
OC6L8H3
OC6L8H4
OC6L8H5
OC6L8H6
OC6L8H7
(GRP1L8PF)</td><td>OP-UA1</td><td>N/A</td><td>Please add 40 CFR Part 63, Subparts YY General High-Level positive applicability to these units.

Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart RRR for all reactor processes per AMOC #62, dated September 21, 2022.</td></tr>
<tr><td>13</td><td>MS-C</td><td>NO</td><td>OC6L8T1251
OC6L8T160
OC6L8T19
OC6L8T201
OC6L8T20A
OC6L8T20B
OC6L8T251
OC6L8T252
OC6L8T301
OC6L8T350
OC6L8T40</td><td>OC6L8T41
OC6L8T50
OC6L8T51
OC6L8T52
OC6L8T54A
OC6L8T54B
OC6L8T60
OC6L8T64A
OC6L8T64B
OC6L8T72
(GRPL8DIST)</td><td>OP-SUMR</td><td>N/A</td><td>Please remove 40 CFR Part 63, Subpart NNN positive applicability from these units.

Please remove these units from the entire Title V Permit; they no longer have any positive or negative applicability listed in the Title V Permit.

Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart NNN for all distillation units per AMOC #62, dated September 21, 2022. All distillation units are routed to control devices (OC6L8H1 – OC6L8H10, OC6L8F1018, OC6L8F1, or OC2L8GF500). Therefore, all requirements will be found at these control devices.</td></tr>
</table>

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**October 2, 2024**					
Permit No.:	**O2213**					
Regulated Entity No.:	**RN100225945**					
Company Name:	**The Dow Chemical Company**					
I.Description of Revision						
Revision No.	**Revision Code**	**Unit/Group Process**			**NSR Authorization**	**Description of change and Provisional Terms and Conditions**
		New Unit	**ID No.**	**Applicable Form**		
14	MS-C	NO	OC2L8GF500 OC6L8F1 OC6L8F1018	OP-UA1 OP-UA7	N/A	Please add 40 CFR Part 63, Subparts YY General High-Level positive applicability to these units. Please remove 40 CFR Part 63, Subpart A negative applicability from these units. Please add 40 CFR Part 63, Subpart A positive applicability to these units.
15	MS-C	NO	OC6L8ST01A OC6L8ST01B OC6L8ST901 OC6L8V1905	OP-UA1 OP-UA3	N/A	Please add 40 CFR Part 63, Subparts YY General High-Level positive applicability to these units.
16	MS-C	NO	OC6L8D91	OP-UA3	N/A	Please update the 30 TAC Chapter 115, Storage of VOCs Control Device Type from “FLARE” to “DIRINC” in the second operating scenario (R5112-02). Also, please change the Control Device ID No. from “OC6L8F1” to “OC6L8TO”.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**October 2, 2024**					
Permit No.:	**O2213**					
Regulated Entity No.:	**RN100225945**					
Company Name:	**The Dow Chemical Company**					
I.Description of Revision						
Revision No.	**Revision Code**	**Unit/Group Process**			**NSR Authorization**	**Description of change and Provisional Terms and Conditions**
		New Unit	**ID No.**	**Applicable Form**		
17	MS-C	NO	OC6L8D97	OP-UA3	N/A	Please remove the 30 TAC Chapter 115, Storage of VOCs second operating scenario (R5112-02) from this unit. Both operating scenarios vent to the same control device type. Therefore, Dow would like to combine the two operating scenarios into one, listing both control devices in the same row.
18	MS-C	NO	OC6L8RX1	OP-UA15	N/A	Please remove the 30 TAC Chapter 115, Vent Gas Control second operating scenario (R5121-02) from this unit. Both operating scenarios vent to the same control device type. Therefore, Dow would like to combine the two operating scenarios into one, listing both control devices in the same row.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**October 2, 2024**					
Permit No.:	**O2213**					
Regulated Entity No.:	**RN100225945**					
Company Name:	**The Dow Chemical Company**					
I.Description of Revision						
Revision No.	**Revision Code**	**Unit/Group Process**			**NSR Authorization**	**Description of change and Provisional Terms and Conditions**
		New Unit	**ID No.**	**Applicable Form**		
19	MS-C	NO	OC6L8RX2	OP-UA15	N/A	Please update the Control Device ID No. from “OC6L8F902” to “OC6L8TO” in the 30 TAC Chapter 115, Vent Gas Control first operating scenario (R5121-01). Please update the Control Device ID No. from “OC6L8F902” to “OC6L8F1018” in the 30 TAC Chapter 115, Vent Gas Control second operating scenario (R5121-02).
20	MS-C	NO	B72L7D4 OC6L8D433	OP-UA14	N/A	Please update the Exemption answer from “ATVP” to “NONE” on OP-UA14/Table 1 for 30 TAC Chapter 115, Water Separation applicability.
21	MS-C	NO	OC6L8D91	OP-UA3	N/A	Please remove the first operating scenario (R5112-01) from this storage tank on OP-UA3/Table 4 for 30 TAC Chapter 115, Storage of VOCs applicability; emissions will no longer be sent to the flares (OC2L8GF500 and OC6L8F1).

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**October 2, 2024**
Permit No.:	**O2213**
Regulated Entity No.:	**RN100225945**
Company Name:	**The Dow Chemical Company**

I.Description of Revision

Revision No.	Revision Code	Unit/Group Process			NSR Authorization	Description of change and Provisional Terms and Conditions
		New Unit	ID No.	Applicable Form		
22	MS-C	NO	OC6L8D97	OP-UA3	N/A	Please add a second operating scenario (R5112-02) to this storage tank on OP-UA3/Table 4 for 30 TAC Chapter 115, Storage of VOCs applicability. This storage tank can now vent to the ten LHC-8 furnaces (OC6L8H1, OC6L8H2, OC6L8H3, OC6L8H4, OC6L8H5, OC6L8H6, OC6L8H7, OC6L8H8, OC6L8H9, and OC6L8H10) and the ten LHC-9 furnaces (OC6L9H120, OC6L9H121, OC6L9H122, OC6L9H123, OC6L9H124, OC6L9H125, OC6L9H126, OC6L9H127, OC6L9H128, and OC6L9H129), which can be found in another Dow Title V Permit, O3949.
23	MS-C	NO	OC6L8RX1	OP-UA15	N/A	Please add a second operating scenario (R5121-02) to this process vent on OP-UA15/Table 2b for 30 TAC Chapter 115, Vent Gas Controls applicability. This process vent can now vent to the ten LHC-8 furnaces (OC6L8H1, OC6L8H2, OC6L8H3, OC6L8H4, OC6L8H5, OC6L8H6, OC6L8H7, OC6L8H8, OC6L8H9, and OC6L8H10) and the ten LHC-9 furnaces (OC6L9H120, OC6L9H121, OC6L9H122, OC6L9H123, OC6L9H124, OC6L9H125, OC6L9H126, OC6L9H127, OC6L9H128, and OC6L9H129), which can be found in another Dow Title V Permit, O3949.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**October 2, 2024**
Permit No.:	**O2213**
Regulated Entity No.:	**RN100225945**
Company Name:	**The Dow Chemical Company**

I.Description of Revision

Revision No.	Revision Code	Unit/Group Process			NSR Authorization	Description of change and Provisional Terms and Conditions
		New Unit	ID No.	Applicable Form		
24	MS-C	NO	A25SILRT25 A25SISTT25 B4SILRD500 B4SISTD500 BM54SILR30 BM54SIST30	OP-SUMR	N/A	Please remove these units from this Title V Permit. They are being moved to another Dow Title V Permit, O2697. A minor revision application for Title V Permit O2697 is being submitted concurrently with this application update.
25	MS-C	NO	A25SIFU01 B4ADFU01 B4SIFU01 BM54SIFU01	OP-SUMR	N/A	Please remove these units from this Title V Permit. They are being moved to another Dow Title V Permit, O2697. A minor revision application for Title V Permit O2697 is being submitted concurrently with this application update. These units were requested to be added to Title V Permit O2213 in the 2022 Minor Revision. However, these units only had negative applicability; therefore, they were included on the OP-2 for completeness purposes only.
26	MS-C	NO	OC6L8SC01	OP-SUMR	N/A	Please remove this unit from the entire Title V Permit; it has been removed.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Individual Unit Summary for Revisions
Form OP-SUMR
Table 1

Date	Permit No.	Regulated Entity No.
October 2, 2024	O2213	RN100225945

Unit/Process						Preconstruction Authorizations	
AI	Revision No.	ID No.	Applicable Form	Name/ Description	CAM	30 TAC Chapter 116/ 30 TAC Chapter 106	Title I
D	25	~~A25SIFU01~~	~~OP-REQ2~~	~~A-2500 DISTILLATE TANK FUGITIVES~~		~~106.478/09/04/2000~~	
D	24	~~A25SILRT25~~	~~OP-UA4~~	~~A-25 DISTILLATE LOADING~~		~~106.473/09/04/2000~~	
D	24	~~A25SISTT25~~	~~OP-UA3~~	~~A-2500 DISTILLATE TANK-25~~		~~106.478/09/04/2000~~	
D	25	~~B4ADFU01~~	~~OP-REQ2~~	~~AMMONIA DISTRIBUTION FUGITIVES~~		~~106.478/09/04/2000~~	
D	25	~~B4SIFU01~~	~~OP-REQ2~~	~~B-400 DISTILLATE TANK FUGITIVES~~		~~106.478/09/04/2000~~	
D	24	~~B4SILRD500~~	~~OP-UA4~~	~~B-400 DISTILLATE LOADING~~		~~106.473/09/04/2000~~	
D	24	~~B4SISTD500~~	~~OP-UA3~~	~~B-400 DISTILLATE TANK D-500~~		~~106.478/09/04/2000~~	
D	25	~~BM54SIFU01~~	~~OP-REQ2~~	~~A/B METER STATION DISTILLATE TANK FUGITIVES~~		~~106.478/09/04/2000~~	
D	24	~~BM54SILR30~~	~~OP-UA4~~	~~A/B METER STATION DISTILLATE LOADING~~		~~106.473/09/04/2000~~	
D	24	~~BM54SIST30~~	~~OP-UA3~~	~~A/B METER STATION DISTILLATE TANK D-301~~		~~106.478/09/04/2000~~	
	1	B60L7F1	OP-UA7 OP-UA15	FLARE FS-1		114784	PSDTX994M1
	20	B72L7D4	OP-UA14	D-4 OIL/WATER SEPARATOR		161913	
D	5	~~BSRHSBH~~	~~OP-UA5~~	~~SALT BATH HEATER STACK~~		~~22072~~	
	3	BSRSRLR615	***OP-UA1*** OP-UA4	DW 6 HC LOADING RACK		22072	

Texas Commission on Environmental Quality
Federal Operating Permit Program
Individual Unit Summary for Revisions
Form OP-SUMR
Table 1

Date	Permit No.	Regulated Entity No.
October 2, 2024	O2213	RN100225945

Unit/Process						Preconstruction Authorizations	
AI	Revision No.	ID No.	Applicable Form	Name/ Description	CAM	30 TAC Chapter 116/ 30 TAC Chapter 106	Title I
	4	BSRSRST615	OP-UA1 OP-UA3	DW 6 HC TANK		22072	
	4	BSRSRST616	OP-UA1 OP-UA3	DW 6 METHANOL TANK		22072	
	7, 14	OC2L8GF500	OP-UA7 OP-UA15	GROUND FLARE GF-500		20432	PSDTX994M2 N274
	10	OC6L8D1181	OP-UA14 OP-UA19	D-1181 (VERTICAL VESSEL) WASTE OIL WATER SEPARATOR		20432	PSDTX994M2 N274
	10	OC6L8D169	OP-UA14 OP-UA19	D-1169 (HORIZONTAL) LIGHT OIL/WATER SEPARATOR		20432	PSDTX994M2 N274
	10	OC6L8D280	OP-UA19	V-280 VESSEL		20432	PSDTX994M2 N274
	20	OC6L8D433	OP-UA14	D-433 OIL/WATER SEPARATOR		166672	
	8, 16, 21	OC6L8D91	OP-UA3	D-91 DIMETHYL DISULFIDE STOR. DRUM		20432	PSDTX994M2 N274
	4, 8, 17, 22	OC6L8D97	OP-UA1 OP-UA3	D-97 METHANOL STORAGE DRUM		20432	PSDTX994M2 N274
	7, 14	OC6L8F1	OP-UA7	FS-1 ELEVATED FLARE STACK		20432	PSDTX994M2 N274
	7, 14	OC6L8F1018	OP-UA7	FS-1018 VENT FLARE #1		20432	PSDTX994M2 N274

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Unit/Process						Preconstruction Authorizations	
AI	Revision No.	ID No.	Applicable Form	Name/ Description	CAM	30 TAC Chapter 116/ 30 TAC Chapter 106	Title I
	12	OC6L8H1	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-1		20432	PSDTX994M2 N274
	11	OC6L8H10	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-10		20432	PSDTX994M2 N274
	12	OC6L8H2	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-2		20432	PSDTX994M2 N274
	12	OC6L8H3	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-3		20432	PSDTX994M2 N274
	12	OC6L8H4	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-4		20432	PSDTX994M2 N274
	12	OC6L8H5	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-5		20432	PSDTX994M2 N274
	12	OC6L8H6	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-6		20432	PSDTX994M2 N274
	12	OC6L8H7	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-7		20432	PSDTX994M2 N274
	12	OC6L8H8	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-8		20432	PSDTX994M2 N274
	12	OC6L8H9	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-9		20432	PSDTX994M2 N274

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Unit/Process						Preconstruction Authorizations	
AI	**Revision No.**	**ID No.**	**Applicable Form**	**Name/ Description**	**CAM**	**30 TAC Chapter 116/ 30 TAC Chapter 106**	**Title I**
	9, 19, 23	OC6L8RX1	OP-UA15	PROCESS VENTS TO FLARES OC2F500 AND OC6F1		20432	PSDTX994M2 N274
	9, 20	OC6L8RX2	OP-UA15	PROCESS EPN FOR VENT TO TOX FX-2000		20432	PSDTX994M2 N274
	9	OC6L8RX3	OP-UA15	PROCESS FIN FOR VENT TO F-902 FLARE		20432	PSDTX994M2 N274
	9	OC6L8RX4	OP-UA15	PROCESS FIN FOR VENT TO FLARE FS-1018		20432	PSDTX994M2 N274
D	26	~~OC6L8SC01~~	~~OP-UA16~~	~~OC-602 DEGREASER~~		~~20432~~	~~PSDTX994M2~~ ~~N274~~
	15	OC6L8ST01A	***OP-UA1*** OP-UA3	PYGAS STORAGE TANK V-1101A		20432 106.261/11/01/2003 106.262/11/01/2003	PSDTX994M2 N274
	15	OC6L8ST01B	***OP-UA1*** OP-UA3	PYGAS STORAGE TANK V-1101B		20432 106.261/11/01/2003 106.262/11/01/2003	PSDTX994M2 N274
	15	OC6L8ST901	***OP-UA1*** OP-UA3	V-1901 NAPTHA OR CONDENSATE STORAGE TANK		20432	PSDTX994M2 N274
	8, 16	OC6L8ST916	OP-UA3	V-1916 FUEL OIL STORAGE		20432	PSDTX994M2 N274
D	13	~~OC6L8T1251~~	~~OP-UA17~~	~~T-1251 HEAVY FUEL OIL STRIPPER~~		~~20432~~	~~PSDTX994M2~~ ~~N274~~

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D	13	~~OC6L8T160~~	~~OP-UA17~~	~~T-160 DEBUTANIZER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T19~~	~~OP-UA17~~	~~T-19 LP DRIP STRIPPER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T201~~	~~OP-UA17~~	~~T-201 OIL QUENCH TOWER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T20A~~	~~OP-UA17~~	~~T-20A CAUSTIC TOWER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T20B~~	~~OP-UA17~~	~~T-20B CAUSTIC TOWER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T251~~	~~OP-UA17~~	~~T-251 HEAVY FUEL OIL STRIPPER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T252~~	~~OP-UA17~~	~~T-252 LIGHT FUEL OIL STRIPPER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T301~~	~~OP-UA17~~	~~T-301 WATER QUENCH TOWER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T350~~	~~OP-UA17~~	~~T-350 OILY WATER STRIPPER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T40~~	~~OP-UA17~~	~~T-40 HP DEPROPANIZER~~		~~20432~~	~~PSDTX994M2 N274~~

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AI	Revision No.	ID No.	Applicable Form	Name/ Description	CAM	30 TAC Chapter 116/ 30 TAC Chapter 106	Title I
D	13	~~OC6L8T41~~	~~OP-UA17~~	~~T-41 LP DEPROPANIZER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T50~~	~~OP-UA17~~	~~T-50 ETHYLENE RECOVERY TOWER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T51~~	~~OP-UA17~~	~~T-51 METHANE STRIPPER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T52~~	~~OP-UA17~~	~~T-52 DEETHANIZER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T54A~~	~~OP-UA17~~	~~T-54A C3 SPLITTER TOP SECTION~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T54B~~	~~OP-UA17~~	~~T-54B C3 SPLITTER BOTTOM SECTION~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T60~~	~~OP-UA17~~	~~T-60 DEBUTANIZER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T64A~~	~~OP-UA17~~	~~T-64A C3 SPLITTER BOTTOM SECTION~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T64B~~	~~OP-UA17~~	~~T-64B C3 SPLITTER TOP SECTION~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T72~~	~~OP-UA17~~	~~T-72 C2 SPLITTER~~		~~20432~~	~~PSDTX994M2 N274~~

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Unit/Process						Preconstruction Authorizations	
AI	Revision No.	ID No.	Applicable Form	Name/ Description	CAM	30 TAC Chapter 116/ 30 TAC Chapter 106	Title I
	15	OC6L8V1905	***OP-UA1*** OP-UA3	PROCESS WATER		20432	PSDTX994M2 N274

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Table A: Registered Permits by Rule (30 TAC Chapter 106) for the Application Area
Texas Commission on Environmental Quality

Date	Permit Number	Regulated Entity Number
October 2, 2024	O2213	RN100225945

Unit ID No.	Registration No.	PBR No.	Registration Date
B72L7FU1	152308	106.261 106.262	07/20/2018
B72L7FU1	154686	106.261 106.262	02/05/2019
B72L7FU1	156270	106.261 106.262	04/18/2019
B72L7FU1	157613	106.261 106.262	08/09/2019
B72L7FU1 B72L7F2	158547	106.261 106.262	10/29/2019
B72L7FU1	159113	106.261 106.262	11/18/2019
B72L7FU1	160358	106.261	03/10/2020
B72L7FU1	161923	106.261 106.262	08/27/2020
B72L7FU1	162615	106.261 106.262	10/06/2020
B72L7FU1	163041	106.261 106.262	11/02/2020
B72L7FU1	164116	106.261 106.262	03/09/2021

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Table A: Registered Permits by Rule (30 TAC Chapter 106) for the Application Area
Texas Commission on Environmental Quality

Date	Permit Number	Regulated Entity Number
October 2, 2024	O2213	RN100225945

Unit ID No.	Registration No.	PBR No.	Registration Date
B72L7FU1	165274	106.261 106.262	06/11/2021
B72L7FU1	165805	106.262	07/20/2021
B72L7D81	166260	106.261 106.262	09/08/2021
B72L7FU1	167397	106.261 106.262	12/22/2021
B72L7FU1	169510	106.261	07/28/2022
OC6L8FU01 ~~OC6L8FU11~~	161951	106.261	08/06/2020
OC6L8FU01 ~~OC6L8FU11~~ ~~OC6L8FU12~~	162922	106.261 106.262	10/14/2020
OC6L8FU01 OC6L8FU11	163968	106.261 106.262	02/11/2021
OC6L8FU01	164734	106.261	05/05/2021
OC6L8FU01	165416	106.261 106.262	06/25/2021
OC6L8FU01	166753	106.261	11/10/2021

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Table A: Registered Permits by Rule (30 TAC Chapter 106) for the Application Area
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Date	Permit Number	Regulated Entity Number
October 2, 2024	O2213	RN100225945

Unit ID No.	Registration No.	PBR No.	Registration Date
OC6L8FU01 ***OC6L8F1018***	170264	106.261	09/30/2022
BSRSRFUBRK BSRSRFUDOW BSRSRFUSTV	152182	106.261	07/13/2018
BSRSRFUSTV	154273	106.261	01/28/2019
OC6L8FU11 OCNTFFU3 BSRSRFUBRK BSRSRST177	157214	106.261 106.262 106.472	06/24/2019
BSRSRFUBRK BSRSRFUSTV	157724	106.261	08/05/2019
BSRSRFUSTV	163128	106.261	11/12/2020
BSRSRFUSTV	170207	106.261	09/19/2022
B56FU01	149923	106.261 106.262	02/02/2018
B56FU01	150865	106.261 106.262	04/17/2018
B56FU01	152663	106.261 106.262	08/22/2018
B56FU01	158062	106.261	09/10/2019

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Texas Commission on Environmental Quality

Date	Permit Number	Regulated Entity Number
October 2, 2024	O2213	RN100225945

Unit ID No.	Registration No.	PBR No.	Registration Date
B56FU01	159863	106.261 106.262	02/10/2020
B56FU01	161544	106.261 106.262	06/15/2020
B56FU01	163650	106.261 106.262	01/07/2021
OC6L8FU01	***171949***	***106.261 106.262***	***03/14/2023***
OC6L8FU01 OC6L8FU11	***172813***	***106.261 106.262***	***06/06/2023***
OC6L8FU01	***173020***	***106.261 106.262***	***06/16/2023***
OC6L8FU01	***173885***	***106.261***	***08/25/2023***
OC6L8FU01	***176418***	***106.261 106.262***	***07/01/2024***
B72L7FU1	***171224***	***106.261 106.262***	***12/19/2022***
B72L7FU1	***172555***	***106.261 106.262***	***05/02/2023***
B72L7FU1	***177229***	***106.261***	***08/27/2024***

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Table B: Claimed (not registered) Permits by Rule (30 TAC Chapter 106) for the Application Area
Texas Commission on Environmental Quality

Date	Permit Number	Regulated Entity Number
October 2, 2024	O2213	RN100225945

Unit ID No.	PBR No.	Version No./Date
B72L7CT1	106.371 106.472	09/04/2000
B72L7GE02	106.511	09/04/2000
OC6L8CT800	106.371 106.472	09/04/2000
~~A25SIFU01~~	~~106.478~~	~~09/04/2000~~
~~A25SILRT25~~	~~106.473~~	~~09/04/2000~~
~~A25SISTT25~~	~~106.478~~	~~09/04/2000~~
~~B4SIFU01~~	~~106.478~~	~~09/04/2000~~
~~B4SILRD500~~	~~106.473~~	~~09/04/2000~~
~~B4SISTD500~~	~~106.478~~	~~09/04/2000~~
~~BM54SIFU01~~	~~106.478~~	~~09/04/2000~~
~~BM54SILR30~~	~~106.473~~	~~09/04/2000~~
~~BM54SIST30~~	~~106.478~~	~~09/04/2000~~
BSRSRSC01 ***BSRSRSC301***	***106.454***	***11/01/2001***
BSRSRTLT1	***106.263***	***11/01/2001***

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Table B: Claimed (not registered) Permits by Rule (30 TAC Chapter 106) for the Application Area
Texas Commission on Environmental Quality

Date	Permit Number	Regulated Entity Number
October 2, 2024	O2213	RN100225945

Unit ID No.	PBR No.	Version No./Date
BSRSRVSTV	***106.472***	***09/04/2000***

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Table C: Claimed (not registered) Permits by Rule (30 TAC Chapter 106) for Insignificant Sources for the Application Area
Texas Commission on Environmental Quality

Date	Permit Number	Regulated Entity Number
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PBR No.	Version No./Date
N/A	N/A

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Table D: Monitoring Requirements for registered and claimed PBRs for the Application Area
Texas Commission on Environmental Quality

Date	Permit Number	Regulated Entity Number
October 2, 2024	O2213	RN100225945

Unit ID No.	PBR No.	Version No./Date Or Registration No.	Monitoring Requirement
B72L7FU1	106.261 106.262	152308	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1	106.261 106.262	154686	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1	106.261 106.262	156270	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1	106.261 106.262	157613	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1 B72L7F2	106.261 106.262	158547	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023). The small flare (B72F1) shall be maintained and operated in accordance with NSR Permit 144784 Special Condition 12 requirements (Permit Issue Date April 4, 2023).
B72L7FU1	106.261 106.262	159113	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1	106.261	160358	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).

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Table D: Monitoring Requirements for registered and claimed PBRs for the Application Area
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Unit ID No.	PBR No.	Version No./Date Or Registration No.	Monitoring Requirement
B72L7FU1	106.261 106.262	161923	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1	106.261 106.262	162615	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1	106.261 106.262	163041	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1	106.261 106.262	164116	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1	106.261 106.262	165274	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1	106.262	165805	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7D81	106.261 106.262	166260	Maintain records for tank throughput or use FS-2 (EPN B72F1) monitoring equipment requirements. The small flare (B72F1) shall be maintained and operated in accordance with NSR Permit 144784 Special Condition 12 requirements (Permit Issue Date April 4, 2023).

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Unit ID No.	PBR No.	Version No./Date Or Registration No.	Monitoring Requirement
B72L7FU1	106.261 106.262	167397	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1	106.261	169510	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
OC6L8FU01 ~~OC6L8FU11~~	106.261	161951	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).
OC6L8FU01 ~~OC6L8FU11~~ ~~OC6L8FU12~~	106.261 106.262	162922	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).
OC6L8FU01 OC6L8FU11	106.261 106.262	163968	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).
OC6L8FU01	106.261	164734	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).
OC6L8FU01	106.261 106.262	165416	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).
OC6L8FU01	106.261	166753	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).

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Unit ID No.	PBR No.	Version No./Date Or Registration No.	Monitoring Requirement
OC6L8FU01 ***OC6L8F1018***	106.261	170264	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024). Flare will continue to meet the monitoring and recordkeeping requirements of NSR 20432 SC 23 for minimum net heating value and exit velocity (Permit Issue Date September 9, 2024).
BSRSRFUBRK BSRSRFUDOW BSRSRFUSTV	106.261	152182	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28MID, as required by NSR 22072 SC 5 (Permit Issue Date May 7, 2021).
BSRSRFUSTV	106.261	154273	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28MID, as required by NSR 22072 SC 5 (Permit Issue Date May 7, 2021).
OC6L8FU11 OCNTFFU3 BSRSRFUBRK BSRSRST177	106.261 106.262 106.472	157214	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 20432 SC 19 (Permit Issue Date November 9, 2023). New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28MID, as required by NSR 22072 SC 5 (Permit Issue Date May 7, 2021). Maintain records of annual throughput.
BSRSRFUBRK BSRSRFUSTV	106.261	157724	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28MID, as required by NSR 22072 SC 5 (Permit Issue Date May 7, 2021).

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Unit ID No.	PBR No.	Version No./Date Or Registration No.	Monitoring Requirement
BSRSRFUSTV	106.261	163128	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28MID, as required by NSR 22072 SC 5 (Permit Issue Date May 7, 2021).
BSRSRFUSTV	106.261	170207	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28MID, as required by NSR 22072 SC 5 (Permit Issue Date May 7, 2021).
B56FU01	106.261 106.262	149923	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 83841 SC 17 (Permit Issue Date June 24, 2020).
B56FU01	106.261 106.262	150865	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 83841 SC 17 (Permit Issue Date June 24, 2020).
B56FU01	106.261 106.262	152663	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 83841 SC 17 (Permit Issue Date June 24, 2020).
B56FU01	106.261	158062	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 83841 SC 17 (Permit Issue Date June 24, 2020).
B56FU01	106.261 106.262	159863	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 83841 SC 17 (Permit Issue Date June 24, 2020).
B56FU01	106.261 106.262	161544	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 83841 SC 17 (Permit Issue Date June 24, 2020).

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Table D: Monitoring Requirements for registered and claimed PBRs for the Application Area
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Date	Permit Number	Regulated Entity Number
October 2, 2024	O2213	RN100225945

Unit ID No.	PBR No.	Version No./Date Or Registration No.	Monitoring Requirement
B56FU01	106.261 106.262	163650	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 83841 SC 17 (Permit Issue Date June 24, 2020).
B72L7CT1	106.371 106.472	09/04/2000	Cooling Tower (EPN B72CT1) shall be monitored in accordance with the requirements dictated in NSR Permit 144784, Special Condition 13.
B72L7GE02	106.511	09/04/2000	Record operating time with a non-resettable runtime meter.
OC6L8CT800	106.371 106.472	09/04/2000	Cooling Tower (EPN OC6CT800) shall be monitored in accordance with NSR Permit 20432, Special Condition No. 27 (Permit Issue Date September 9, 2024).
~~A25SIFU01~~	~~106.478~~	~~09/04/2000~~	~~Confirmation facility performs indicated function.~~
~~A25SILRT25~~	~~106.473~~	~~09/04/2000~~	~~Maintain records for loading rate.~~
~~A25SISTT25~~	~~106.478~~	~~09/04/2000~~	~~Maintain records for tank throughput.~~
~~B4SIFU01~~	~~106.478~~	~~09/04/2000~~	~~Confirmation facility performs indicated function.~~
~~B4SILRD500~~	~~106.473~~	~~09/04/2000~~	~~Maintain records for loading rate.~~
~~B4SISTD500~~	~~106.478~~	~~09/04/2000~~	~~Maintain records for tank throughput.~~
~~BM54SIFU01~~	~~106.478~~	~~09/04/2000~~	~~Confirmation facility performs indicated function.~~
~~BM54SILR30~~	~~106.473~~	~~09/04/2000~~	~~Maintain records for loading rate.~~
~~BM54SIST30~~	~~106.478~~	~~09/04/2000~~	~~Maintain records for tank throughput.~~

Permit By Rule Supplemental Table (Page 4)
Table D: Monitoring Requirements for registered and claimed PBRs for the Application Area
Texas Commission on Environmental Quality

Date	Permit Number	Regulated Entity Number
October 2, 2024	O2213	RN100225945

Unit ID No.	PBR No.	Version No./Date Or Registration No.	Monitoring Requirement
OC6L8FU01	*106.261* *106.262*	*171949*	*New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).*
OC6L8FU01 *OC6L8FU11*	*106.261* *106.262*	*172813*	*New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).*
OC6L8FU01	*106.261* *106.262*	*173020*	*New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).*
OC6L8FU01	*106.261*	*173885*	*New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).*
OC6L8FU01	*106.261* *106.262*	*176418*	*New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).*
BSRSRSC01 *BSRSRSC301*	*106.454*	*11/01/2001*	*Maintain monthly total solvent makeup.*
BSRSRTLT1	*106.263*	*11/01/2001*	*Track emissions on a rolling 12-month basis.*
BSRSRVSTV	*106.472*	*09/04/2000*	*Maintain records of tank service.*
B72L7FU1	*106.261* *106.262*	*171224*	*New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).*

Permit By Rule Supplemental Table (Page 4)
Table D: Monitoring Requirements for registered and claimed PBRs for the Application Area
Texas Commission on Environmental Quality

Date	Permit Number	Regulated Entity Number
October 2, 2024	O2213	RN100225945

Unit ID No.	PBR No.	Version No./Date Or Registration No.	Monitoring Requirement
B72L7FU1	***106.261 106.262***	***172555***	***New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).***
B72L7FU1	***106.261***	***177229***	***New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).***

October 2, 2024

E-MAIL RESPONSE
Texas Commission on Environmental Quality
ATTN: Mr. Mark McDonald
Air Permits Division, MC-163
P.O. Box 13087
Austin, TX 78711-3087

The Dow Chemical Company, CN600356976
Hydrocarbons, RN100225945
Title V Operating Permit NOD Response for Hydrocarbons Plant, O2213
TCEQ Project Number: 37218

Dear Mr. McDonald,

The Dow Chemical Company is providing a response to the Notice of Deficiency (NOD) provided on September 25, 2024. Dow is also providing an updated Form OP-PBRSUP.

Please do not hesitate to contact me at (979) 238-1742 or cschmidt6@dow.com if you require additional information regarding this submittal.

Sincerely,

Crystal Schmidt

Crystal Schmidt
Air Permit Manager

enclosure

cc:

US EPA Region 6	R6AirPermitsTX@epa.gov
TCEQ Air Section Manager, Region 12	R12apdmail@tceq.texas.gov
Brazoria County Environmental Health Director	jodiev@brazoria-county.com

Additional Information Request

Item 1	We are wrapping up the updates to your working draft permit (WDP) and have a request for final clarification. To ensure that we are capturing everything, we will need an updated OP-2 and OP-SUMR that includes <u>all requested</u> updates for project 35544.
Item 1 Response	**Please see the attached Form OP-2 and Form OP-SUMR for more information.** **Revisions #1-19 are from the August 28, 2023, submittal. The revisions requesting to add 40 CFR Part 63, Subpart YY citations have not been included since Dow has decided to keep the General High-Level Applicability.** **Revisions #20-23 are from the November 9, 2023, application update.** **Revisions #24-25 are from the July 30, 2024, application update.** **Revision #26 is from the May 23, 2024, Working Draft Permit response.**

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**October 2, 2024**
Permit No.:	**O2213**
Regulated Entity No.:	**RN100225945**
Company Name:	**The Dow Chemical Company**

I.Description of Revision

Revision No.	Revision Code	Unit/Group Process			NSR Authorization	Description of change and Provisional Terms and Conditions
		New Unit	ID No.	Applicable Form		
1	MS-C	NO	B60L7F1	OP-REQ3	N/A	Please update the 40 CFR Part 63, Subpart FFFF citations in order to remove the citations that are no longer applicable after August 12, 2023, and to include the new citations that are applicable after August 12, 2023. Dow is also requesting to remove any citations that reference daily averages since these citations do not apply to flares [63.998(b) and 63.999(c)]. Dow received an interpretation on these citations in 2020. This interpretation is available upon request from the TCEQ permit writer. Please see Form OP-REQ3 for the detailed citations.
2	MS-C	NO	N/A	OP-REQ1 (Page 78)	N/A	Please incorporate AMOC #62, dated September 21, 2022, into this Title V Permit. Question XI.D.4 on the Form OP-REQ1 has been changed to “YES”.
3	MS-C	NO	BSRSRLR615	OP-UA1 OP-REQ3	N/A	Please add 40 CFR Part 63, Subpart EEEE (OLD MACT) low-level positive applicability to this unit. Please see Form OP-REQ3 for detailed citations.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**October 2, 2024**
Permit No.:	**O2213**
Regulated Entity No.:	**RN100225945**
Company Name:	**The Dow Chemical Company**

I.Description of Revision

Revision No.	Revision Code	Unit/Group Process			NSR Authorization	Description of change and Provisional Terms and Conditions
		New Unit	ID No.	Applicable Form		
4	MS-C	NO	BSRSRST615 BSRSRST616 OC6L8D97	OP-UA1 OP-REQ3	N/A	Please remove 40 CFR Part 63, Subpart EEEE (OLD MACT) general high-level positive applicability from these units. Please add 40 CFR Part 63, Subpart EEEE (OLD MACT) low-level positive applicability to these units. Please see Form OP-REQ3 for detailed citations.
5	MS-C	NO	BSRHSBH	OP-SUMR	N/A	Please remove this unit from the entire Title V Permit. This unit is the vent stack for the Salt Bath Heater (BSRSRHSBH), which was removed in the last minor revision (Project #34140)
6	MS-C	NO	N/A	Major NSR Summary Table	N/A	Please update the 20432, PSDTX994M2, and N274 Major NSR Summary Table. This table has been provided in a separate Word document with track changes.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**October 2, 2024**					
Permit No.:	**O2213**					
Regulated Entity No.:	**RN100225945**					
Company Name:	**The Dow Chemical Company**					
I.Description of Revision						
Revision No.	**Revision Code**	**Unit/Group Process**			**NSR Authorization**	**Description of change and Provisional Terms and Conditions**
		New Unit	**ID No.**	**Applicable Form**		
7	MS-C	NO	OC2L8GF500 OC6L8F1 OC6L8F1018	N/A	N/A	Please remove reference to 60.18 in the 30 TAC Chapter 115, HRVOC Vent Gas "Textual Description" on the Applicable Requirements Summary Table for these units. Please add reference to 63.1103(e)(4) to the 30 TAC Chapter 115, HRVOC Vent Gas "Textual Description" for these units. Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart A for all units venting to a flare per AMOC #62, dated September 21, 2022.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
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Date:	**October 2, 2024**					
Permit No.:	**O2213**					
Regulated Entity No.:	**RN100225945**					
Company Name:	**The Dow Chemical Company**					
I.Description of Revision						
Revision No.	**Revision Code**	**Unit/Group Process**			**NSR Authorization**	**Description of change and Provisional Terms and Conditions**
		New Unit	**ID No.**	**Applicable Form**		
8	MS-C	NO	OC6L8D91 OC6L8D97 OC6L8ST916	OP-UA3 OP-REQ3	N/A	Please remove citation 60.18 from the 30 TAC Chapter 115, Storage of VOCs requirements for this unit. Please update the Alternate Control Requirement answer from “NO” to “YES” for operating scenario 1 (R5112-01) on Form OP-UA3/Table 4a. Please add citation 63.1103(e)(4)(xii)-(xiii) to the Standards for these units. Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart A for all units venting to a flare per AMOC #62, dated September 21, 2022. Please see Form OP-REQ3 for detailed citations.

Texas Commission on Environmental Quality
Federal Operating Permit Program
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Form OP-2 – Table 2

Date:	**October 2, 2024**
Permit No.:	**O2213**
Regulated Entity No.:	**RN100225945**
Company Name:	**The Dow Chemical Company**

I.Description of Revision

Revision No.	Revision Code	Unit/Group Process			NSR Authorization	Description of change and Provisional Terms and Conditions
		New Unit	ID No.	Applicable Form		
9	MS-C	NO	OC6L8RX1 OC6L8RX2 OC6L8RX3 OC6L8RX4	OP-UA15 OP-REQ3	N/A	Please remove citation 60.18 from the 30 TAC Chapter 115, Vent Gas Controls requirements for this unit. Please update the Alternate Control Requirement answer from "NONE" to "ALTED" on Form OP-UA15/Table 2b. Please add citation 63.1103(e)(4)(xii)-(xiii) to the Standards for these units. Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart A for all units venting to a flare per AMOC #62, dated September 21, 2022. Please see Form OP-REQ3 for detailed citations.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**October 2, 2024**
Permit No.:	**O2213**
Regulated Entity No.:	**RN100225945**
Company Name:	**The Dow Chemical Company**

I.Description of Revision

Revision No.	Revision Code	Unit/Group Process			NSR Authorization	Description of change and Provisional Terms and Conditions
		New Unit	ID No.	Applicable Form		
10	MS-C	NO	OC2L8D1181 OC6L8D169 OC6L8D280	OP-UA19 OP-REQ3	N/A	Please remove citation 60.18(b) from the 30 TAC Chapter 115, Industrial Wastewater requirements for this unit. Please update the Alternate Control Requirement answer from “NO” to “YES” on Form OP-UA19/Table 1a. Please add citation 63.1103(e)(4)(xii)-(xiii) to the Standards for these units. Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart A for all units venting to a flare per AMOC #62, dated September 21, 2022. Please see Form OP-REQ3 for detailed citations.
11	MS-C	NO	OC6L8H8 OC6L8H9 OC6L8H10 (GRP2L8PF)	OP-UA1 OP-UA48	N/A	Please remove 40 CFR Part 63, Subpart RRR positive applicability from these units. Please add 40 CFR Part 63, Subparts YY General High-Level positive applicability to these units. Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart RRR for all reactor processes per AMOC #62, dated September 21, 2022.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
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Date:	**October 2, 2024**
Permit No.:	**O2213**
Regulated Entity No.:	**RN100225945**
Company Name:	**The Dow Chemical Company**

I.Description of Revision

Revision No.	Revision Code	Unit/Group Process			NSR Authorization	Description of change and Provisional Terms and Conditions
		New Unit	ID No.	Applicable Form		
12	MS-C	NO	OC6L8H1 OC6L8H2 OC6L8H3 OC6L8H4 OC6L8H5 OC6L8H6 OC6L8H7 (GRP1L8PF)	OP-UA1	N/A	Please add 40 CFR Part 63, Subparts YY General High-Level positive applicability to these units. Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart RRR for all reactor processes per AMOC #62, dated September 21, 2022.
13	MS-C	NO	OC6L8T1251 OC6L8T160 OC6L8T19 OC6L8T201 OC6L8T20A OC6L8T20B OC6L8T251 OC6L8T252 OC6L8T301 OC6L8T350 OC6L8T40 OC6L8T41 OC6L8T50 OC6L8T51 OC6L8T52 OC6L8T54A OC6L8T54B OC6L8T60 OC6L8T64A OC6L8T64B OC6L8T72 (GRPL8DIST)	OP-SUMR	N/A	Please remove 40 CFR Part 63, Subpart NNN positive applicability from these units. Please remove these units from the entire Title V Permit; they no longer have any positive or negative applicability listed in the Title V Permit. Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart NNN for all distillation units per AMOC #62, dated September 21, 2022. All distillation units are routed to control devices (OC6L8H1 – OC6L8H10, OC6L8F1018, OC6L8F1, or OC2L8GF500). Therefore, all requirements will be found at these control devices.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**October 2, 2024**
Permit No.:	**O2213**
Regulated Entity No.:	**RN100225945**
Company Name:	**The Dow Chemical Company**

I. Description of Revision

Revision No.	Revision Code	Unit/Group Process			NSR Authorization	Description of change and Provisional Terms and Conditions
		New Unit	ID No.	Applicable Form		
14	MS-C	NO	OC2L8GF500 OC6L8F1 OC6L8F1018	OP-UA1 OP-UA7	N/A	Please add 40 CFR Part 63, Subparts YY General High-Level positive applicability to these units. Please remove 40 CFR Part 63, Subpart A negative applicability from these units. Please add 40 CFR Part 63, Subpart A positive applicability to these units.
15	MS-C	NO	OC6L8ST01A OC6L8ST01B OC6L8ST901 OC6L8V1905	OP-UA1 OP-UA3	N/A	Please add 40 CFR Part 63, Subparts YY General High-Level positive applicability to these units.
16	MS-C	NO	OC6L8D91	OP-UA3	N/A	Please update the 30 TAC Chapter 115, Storage of VOCs Control Device Type from “FLARE” to “DIRINC” in the second operating scenario (R5112-02). Also, please change the Control Device ID No. from “OC6L8F1” to “OC6L8TO”.

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Application for Permit Revision/Renewal
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Date:	**October 2, 2024**
Permit No.:	**O2213**
Regulated Entity No.:	**RN100225945**
Company Name:	**The Dow Chemical Company**

I.Description of Revision

Revision No.	Revision Code	Unit/Group Process			NSR Authorization	Description of change and Provisional Terms and Conditions
		New Unit	ID No.	Applicable Form		
17	MS-C	NO	OC6L8D97	OP-UA3	N/A	Please remove the 30 TAC Chapter 115, Storage of VOCs second operating scenario (R5112-02) from this unit. Both operating scenarios vent to the same control device type. Therefore, Dow would like to combine the two operating scenarios into one, listing both control devices in the same row.
18	MS-C	NO	OC6L8RX1	OP-UA15	N/A	Please remove the 30 TAC Chapter 115, Vent Gas Control second operating scenario (R5121-02) from this unit. Both operating scenarios vent to the same control device type. Therefore, Dow would like to combine the two operating scenarios into one, listing both control devices in the same row.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
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Date:	**October 2, 2024**					
Permit No.:	**O2213**					
Regulated Entity No.:	**RN100225945**					
Company Name:	**The Dow Chemical Company**					
I.Description of Revision						
Revision No.	**Revision Code**	**Unit/Group Process**			**NSR Authorization**	**Description of change and Provisional Terms and Conditions**
		New Unit	**ID No.**	**Applicable Form**		
19	MS-C	NO	OC6L8RX2	OP-UA15	N/A	Please update the Control Device ID No. from “OC6L8F902” to “OC6L8TO” in the 30 TAC Chapter 115, Vent Gas Control first operating scenario (R5121-01). Please update the Control Device ID No. from “OC6L8F902” to “OC6L8F1018” in the 30 TAC Chapter 115, Vent Gas Control second operating scenario (R5121-02).
20	MS-C	NO	B72L7D4 OC6L8D433	OP-UA14	N/A	Please update the Exemption answer from “ATVP” to “NONE” on OP-UA14/Table 1 for 30 TAC Chapter 115, Water Separation applicability.
21	MS-C	NO	OC6L8D91	OP-UA3	N/A	Please remove the first operating scenario (R5112-01) from this storage tank on OP-UA3/Table 4 for 30 TAC Chapter 115, Storage of VOCs applicability; emissions will no longer be sent to the flares (OC2L8GF500 and OC6L8F1).

Texas Commission on Environmental Quality
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Application for Permit Revision/Renewal
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Date:	**October 2, 2024**
Permit No.:	**O2213**
Regulated Entity No.:	**RN100225945**
Company Name:	**The Dow Chemical Company**

I.Description of Revision

Revision No.	Revision Code	Unit/Group Process			NSR Authorization	Description of change and Provisional Terms and Conditions
		New Unit	ID No.	Applicable Form		
22	MS-C	NO	OC6L8D97	OP-UA3	N/A	Please add a second operating scenario (R5112-02) to this storage tank on OP-UA3/Table 4 for 30 TAC Chapter 115, Storage of VOCs applicability. This storage tank can now vent to the ten LHC-8 furnaces (OC6L8H1, OC6L8H2, OC6L8H3, OC6L8H4, OC6L8H5, OC6L8H6, OC6L8H7, OC6L8H8, OC6L8H9, and OC6L8H10) and the ten LHC-9 furnaces (OC6L9H120, OC6L9H121, OC6L9H122, OC6L9H123, OC6L9H124, OC6L9H125, OC6L9H126, OC6L9H127, OC6L9H128, and OC6L9H129), which can be found in another Dow Title V Permit, O3949.
23	MS-C	NO	OC6L8RX1	OP-UA15	N/A	Please add a second operating scenario (R5121-02) to this process vent on OP-UA15/Table 2b for 30 TAC Chapter 115, Vent Gas Controls applicability. This process vent can now vent to the ten LHC-8 furnaces (OC6L8H1, OC6L8H2, OC6L8H3, OC6L8H4, OC6L8H5, OC6L8H6, OC6L8H7, OC6L8H8, OC6L8H9, and OC6L8H10) and the ten LHC-9 furnaces (OC6L9H120, OC6L9H121, OC6L9H122, OC6L9H123, OC6L9H124, OC6L9H125, OC6L9H126, OC6L9H127, OC6L9H128, and OC6L9H129), which can be found in another Dow Title V Permit, O3949.

Texas Commission on Environmental Quality
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Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**October 2, 2024**
Permit No.:	**O2213**
Regulated Entity No.:	**RN100225945**
Company Name:	**The Dow Chemical Company**

I. Description of Revision

Revision No.	Revision Code	Unit/Group Process			NSR Authorization	Description of change and Provisional Terms and Conditions
		New Unit	ID No.	Applicable Form		
24	MS-C	NO	A25SILRT25 A25SISTT25 B4SILRD500 B4SISTD500 BM54SILR30 BM54SIST30	OP-SUMR	N/A	Please remove these units from this Title V Permit. They are being moved to another Dow Title V Permit, O2697. A minor revision application for Title V Permit O2697 is being submitted concurrently with this application update.
25	MS-C	NO	A25SIFU01 B4ADFU01 B4SIFU01 BM54SIFU01	OP-SUMR	N/A	Please remove these units from this Title V Permit. They are being moved to another Dow Title V Permit, O2697. A minor revision application for Title V Permit O2697 is being submitted concurrently with this application update. These units were requested to be added to Title V Permit O2213 in the 2022 Minor Revision. However, these units only had negative applicability; therefore, they were included on the OP-2 for completeness purposes only.
26	MS-C	NO	OC6L8SC01	OP-SUMR	N/A	Please remove this unit from the entire Title V Permit; it has been removed.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Individual Unit Summary for Revisions
Form OP-SUMR
Table 1

Date	Permit No.	Regulated Entity No.
October 2, 2024	O2213	RN100225945

Unit/Process						Preconstruction Authorizations	
AI	Revision No.	ID No.	Applicable Form	Name/ Description	CAM	30 TAC Chapter 116/ 30 TAC Chapter 106	Title I
D	25	~~A25SIFU01~~	~~OP-REQ2~~	~~A-2500 DISTILLATE TANK FUGITIVES~~		~~106.478/09/04/2000~~	
D	24	~~A25SILRT25~~	~~OP-UA4~~	~~A-25 DISTILLATE LOADING~~		~~106.473/09/04/2000~~	
D	24	~~A25SISTT25~~	~~OP-UA3~~	~~A-2500 DISTILLATE TANK-25~~		~~106.478/09/04/2000~~	
D	25	~~B4ADFU01~~	~~OP-REQ2~~	~~AMMONIA DISTRIBUTION FUGITIVES~~		~~106.478/09/04/2000~~	
D	25	~~B4SIFU01~~	~~OP-REQ2~~	~~B-400 DISTILLATE TANK FUGITIVES~~		~~106.478/09/04/2000~~	
D	24	~~B4SILRD500~~	~~OP-UA4~~	~~B-400 DISTILLATE LOADING~~		~~106.473/09/04/2000~~	
D	24	~~B4SISTD500~~	~~OP-UA3~~	~~B-400 DISTILLATE TANK D-500~~		~~106.478/09/04/2000~~	
D	25	~~BM54SIFU01~~	~~OP-REQ2~~	~~A/B METER STATION DISTILLATE TANK FUGITIVES~~		~~106.478/09/04/2000~~	
D	24	~~BM54SILR30~~	~~OP-UA4~~	~~A/B METER STATION DISTILLATE LOADING~~		~~106.473/09/04/2000~~	
D	24	~~BM54SIST30~~	~~OP-UA3~~	~~A/B METER STATION DISTILLATE TANK D-301~~		~~106.478/09/04/2000~~	
	1	B60L7F1	OP-UA7 OP-UA15	FLARE FS-1		114784	PSDTX994M1
	20	B72L7D4	OP-UA14	D-4 OIL/WATER SEPARATOR		161913	
D	5	~~BSRHSBH~~	~~OP-UA5~~	~~SALT BATH HEATER STACK~~		~~22072~~	
	3	BSRSRLR615	***OP-UA1*** OP-UA4	DW 6 HC LOADING RACK		22072	

Texas Commission on Environmental Quality
Federal Operating Permit Program
Individual Unit Summary for Revisions
Form OP-SUMR
Table 1

Date	Permit No.	Regulated Entity No.
October 2, 2024	O2213	RN100225945

Unit/Process						Preconstruction Authorizations	
AI	Revision No.	ID No.	Applicable Form	Name/ Description	CAM	30 TAC Chapter 116/ 30 TAC Chapter 106	Title I
	4	BSRSRST615	OP-UA1 OP-UA3	DW 6 HC TANK		22072	
	4	BSRSRST616	OP-UA1 OP-UA3	DW 6 METHANOL TANK		22072	
	7, 14	OC2L8GF500	OP-UA7 OP-UA15	GROUND FLARE GF-500		20432	PSDTX994M2 N274
	10	OC6L8D1181	OP-UA14 OP-UA19	D-1181 (VERTICAL VESSEL) WASTE OIL WATER SEPARATOR		20432	PSDTX994M2 N274
	10	OC6L8D169	OP-UA14 OP-UA19	D-1169 (HORIZONTAL) LIGHT OIL/WATER SEPARATOR		20432	PSDTX994M2 N274
	10	OC6L8D280	OP-UA19	V-280 VESSEL		20432	PSDTX994M2 N274
	20	OC6L8D433	OP-UA14	D-433 OIL/WATER SEPARATOR		166672	
	8, 16, 21	OC6L8D91	OP-UA3	D-91 DIMETHYL DISULFIDE STOR. DRUM		20432	PSDTX994M2 N274
	4, 8, 17, 22	OC6L8D97	OP-UA1 OP-UA3	D-97 METHANOL STORAGE DRUM		20432	PSDTX994M2 N274
	7, 14	OC6L8F1	OP-UA7	FS-1 ELEVATED FLARE STACK		20432	PSDTX994M2 N274
	7, 14	OC6L8F1018	OP-UA7	FS-1018 VENT FLARE #1		20432	PSDTX994M2 N274

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Unit/Process						Preconstruction Authorizations	
AI	**Revision No.**	**ID No.**	**Applicable Form**	**Name/ Description**	**CAM**	**30 TAC Chapter 116/ 30 TAC Chapter 106**	**Title I**
	12	OC6L8H1	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-1		20432	PSDTX994M2 N274
	11	OC6L8H10	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-10		20432	PSDTX994M2 N274
	12	OC6L8H2	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-2		20432	PSDTX994M2 N274
	12	OC6L8H3	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-3		20432	PSDTX994M2 N274
	12	OC6L8H4	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-4		20432	PSDTX994M2 N274
	12	OC6L8H5	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-5		20432	PSDTX994M2 N274
	12	OC6L8H6	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-6		20432	PSDTX994M2 N274
	12	OC6L8H7	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-7		20432	PSDTX994M2 N274
	12	OC6L8H8	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-8		20432	PSDTX994M2 N274
	12	OC6L8H9	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-9		20432	PSDTX994M2 N274

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AI	Revision No.	ID No.	Applicable Form	Name/ Description	CAM	30 TAC Chapter 116/ 30 TAC Chapter 106	Title I
	9, 19, 23	OC6L8RX1	OP-UA15	PROCESS VENTS TO FLARES OC2F500 AND OC6F1		20432	PSDTX994M2 N274
	9, 20	OC6L8RX2	OP-UA15	PROCESS EPN FOR VENT TO TOX FX-2000		20432	PSDTX994M2 N274
	9	OC6L8RX3	OP-UA15	PROCESS FIN FOR VENT TO F-902 FLARE		20432	PSDTX994M2 N274
	9	OC6L8RX4	OP-UA15	PROCESS FIN FOR VENT TO FLARE FS-1018		20432	PSDTX994M2 N274
D	26	~~OC6L8SC01~~	~~OP-UA16~~	~~OC-602 DEGREASER~~		~~20432~~	~~PSDTX994M2~~ ~~N274~~
	15	OC6L8ST01A	***OP-UA1*** OP-UA3	PYGAS STORAGE TANK V-1101A		20432 106.261/11/01/2003 106.262/11/01/2003	PSDTX994M2 N274
	15	OC6L8ST01B	***OP-UA1*** OP-UA3	PYGAS STORAGE TANK V-1101B		20432 106.261/11/01/2003 106.262/11/01/2003	PSDTX994M2 N274
	15	OC6L8ST901	***OP-UA1*** OP-UA3	V-1901 NAPTHA OR CONDENSATE STORAGE TANK		20432	PSDTX994M2 N274
	8, 16	OC6L8ST916	OP-UA3	V-1916 FUEL OIL STORAGE		20432	PSDTX994M2 N274
D	13	~~OC6L8T1251~~	~~OP-UA17~~	~~T-1251 HEAVY FUEL OIL STRIPPER~~		~~20432~~	~~PSDTX994M2~~ ~~N274~~

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AI	Revision No.	ID No.	Applicable Form	Name/ Description	CAM	30 TAC Chapter 116/ 30 TAC Chapter 106	Title I
D	13	~~OC6L8T160~~	~~OP-UA17~~	~~T-160 DEBUTANIZER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T19~~	~~OP-UA17~~	~~T-19 LP DRIP STRIPPER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T201~~	~~OP-UA17~~	~~T-201 OIL QUENCH TOWER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T20A~~	~~OP-UA17~~	~~T-20A CAUSTIC TOWER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T20B~~	~~OP-UA17~~	~~T-20B CAUSTIC TOWER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T251~~	~~OP-UA17~~	~~T-251 HEAVY FUEL OIL STRIPPER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T252~~	~~OP-UA17~~	~~T-252 LIGHT FUEL OIL STRIPPER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T301~~	~~OP-UA17~~	~~T-301 WATER QUENCH TOWER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T350~~	~~OP-UA17~~	~~T-350 OILY WATER STRIPPER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T40~~	~~OP-UA17~~	~~T-40 HP DEPROPANIZER~~		~~20432~~	~~PSDTX994M2 N274~~

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Unit/Process						Preconstruction Authorizations	
AI	Revision No.	ID No.	Applicable Form	Name/ Description	CAM	30 TAC Chapter 116/ 30 TAC Chapter 106	Title I
D	13	~~OC6L8T41~~	~~OP-UA17~~	~~T-41 LP DEPROPANIZER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T50~~	~~OP-UA17~~	~~T-50 ETHYLENE RECOVERY TOWER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T51~~	~~OP-UA17~~	~~T-51 METHANE STRIPPER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T52~~	~~OP-UA17~~	~~T-52 DEETHANIZER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T54A~~	~~OP-UA17~~	~~T-54A C3 SPLITTER TOP SECTION~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T54B~~	~~OP-UA17~~	~~T-54B C3 SPLITTER BOTTOM SECTION~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T60~~	~~OP-UA17~~	~~T-60 DEBUTANIZER~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T64A~~	~~OP-UA17~~	~~T-64A C3 SPLITTER BOTTOM SECTION~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T64B~~	~~OP-UA17~~	~~T-64B C3 SPLITTER TOP SECTION~~		~~20432~~	~~PSDTX994M2 N274~~
D	13	~~OC6L8T72~~	~~OP-UA17~~	~~T-72 C2 SPLITTER~~		~~20432~~	~~PSDTX994M2 N274~~

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Unit/Process						Preconstruction Authorizations	
AI	Revision No.	ID No.	Applicable Form	Name/ Description	CAM	30 TAC Chapter 116/ 30 TAC Chapter 106	Title I
	15	OC6L8V1905	***OP-UA1*** OP-UA3	PROCESS WATER		20432	PSDTX994M2 N274

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Table A: Registered Permits by Rule (30 TAC Chapter 106) for the Application Area
Texas Commission on Environmental Quality

Date	Permit Number	Regulated Entity Number
October 2, 2024	O2213	RN100225945

Unit ID No.	Registration No.	PBR No.	Registration Date
B72L7FU1	152308	106.261 106.262	07/20/2018
B72L7FU1	154686	106.261 106.262	02/05/2019
B72L7FU1	156270	106.261 106.262	04/18/2019
B72L7FU1	157613	106.261 106.262	08/09/2019
B72L7FU1 B72L7F2	158547	106.261 106.262	10/29/2019
B72L7FU1	159113	106.261 106.262	11/18/2019
B72L7FU1	160358	106.261	03/10/2020
B72L7FU1	161923	106.261 106.262	08/27/2020
B72L7FU1	162615	106.261 106.262	10/06/2020
B72L7FU1	163041	106.261 106.262	11/02/2020
B72L7FU1	164116	106.261 106.262	03/09/2021

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Table A: Registered Permits by Rule (30 TAC Chapter 106) for the Application Area
Texas Commission on Environmental Quality

Date	Permit Number	Regulated Entity Number
October 2, 2024	O2213	RN100225945

Unit ID No.	Registration No.	PBR No.	Registration Date
B72L7FU1	165274	106.261 106.262	06/11/2021
B72L7FU1	165805	106.262	07/20/2021
B72L7D81	166260	106.261 106.262	09/08/2021
B72L7FU1	167397	106.261 106.262	12/22/2021
B72L7FU1	169510	106.261	07/28/2022
OC6L8FU01 ~~OC6L8FU11~~	161951	106.261	08/06/2020
OC6L8FU01 ~~OC6L8FU11~~ ~~OC6L8FU12~~	162922	106.261 106.262	10/14/2020
OC6L8FU01 OC6L8FU11	163968	106.261 106.262	02/11/2021
OC6L8FU01	164734	106.261	05/05/2021
OC6L8FU01	165416	106.261 106.262	06/25/2021
OC6L8FU01	166753	106.261	11/10/2021

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Table A: Registered Permits by Rule (30 TAC Chapter 106) for the Application Area
Texas Commission on Environmental Quality

Date	Permit Number	Regulated Entity Number
October 2, 2024	O2213	RN100225945

Unit ID No.	Registration No.	PBR No.	Registration Date
OC6L8FU01 ***OC6L8F1018***	170264	106.261	09/30/2022
BSRSRFUBRK BSRSRFUDOW BSRSRFUSTV	152182	106.261	07/13/2018
BSRSRFUSTV	154273	106.261	01/28/2019
OC6L8FU11 OCNTFFU3 BSRSRFUBRK BSRSRST177	157214	106.261 106.262 106.472	06/24/2019
BSRSRFUBRK BSRSRFUSTV	157724	106.261	08/05/2019
BSRSRFUSTV	163128	106.261	11/12/2020
BSRSRFUSTV	170207	106.261	09/19/2022
B56FU01	149923	106.261 106.262	02/02/2018
B56FU01	150865	106.261 106.262	04/17/2018
B56FU01	152663	106.261 106.262	08/22/2018
B56FU01	158062	106.261	09/10/2019

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Table A: Registered Permits by Rule (30 TAC Chapter 106) for the Application Area
Texas Commission on Environmental Quality

Date	Permit Number	Regulated Entity Number
October 2, 2024	O2213	RN100225945

Unit ID No.	Registration No.	PBR No.	Registration Date
B56FU01	159863	106.261 106.262	02/10/2020
B56FU01	161544	106.261 106.262	06/15/2020
B56FU01	163650	106.261 106.262	01/07/2021
OC6L8FU01	***171949***	***106.261 106.262***	***03/14/2023***
OC6L8FU01 OC6L8FU11	***172813***	***106.261 106.262***	***06/06/2023***
OC6L8FU01	***173020***	***106.261 106.262***	***06/16/2023***
OC6L8FU01	***173885***	***106.261***	***08/25/2023***
OC6L8FU01	***176418***	***106.261 106.262***	***07/01/2024***
B72L7FU1	***171224***	***106.261 106.262***	***12/19/2022***
B72L7FU1	***172555***	***106.261 106.262***	***05/02/2023***
B72L7FU1	***177229***	***106.261***	***08/27/2024***

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Table B: Claimed (not registered) Permits by Rule (30 TAC Chapter 106) for the Application Area
Texas Commission on Environmental Quality

Date	Permit Number	Regulated Entity Number
October 2, 2024	O2213	RN100225945

Unit ID No.	PBR No.	Version No./Date
B72L7CT1	106.371 106.472	09/04/2000
B72L7GE02	106.511	09/04/2000
OC6L8CT800	106.371 106.472	09/04/2000
~~A25SIFU01~~	~~106.478~~	~~09/04/2000~~
~~A25SILRT25~~	~~106.473~~	~~09/04/2000~~
~~A25SISTT25~~	~~106.478~~	~~09/04/2000~~
~~B4SIFU01~~	~~106.478~~	~~09/04/2000~~
~~B4SILRD500~~	~~106.473~~	~~09/04/2000~~
~~B4SISTD500~~	~~106.478~~	~~09/04/2000~~
~~BM54SIFU01~~	~~106.478~~	~~09/04/2000~~
~~BM54SILR30~~	~~106.473~~	~~09/04/2000~~
~~BM54SIST30~~	~~106.478~~	~~09/04/2000~~
BSRSRSC01 ***BSRSRSC301***	***106.454***	***11/01/2001***
BSRSRTLT1	***106.263***	***11/01/2001***

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Table B: Claimed (not registered) Permits by Rule (30 TAC Chapter 106) for the Application Area
Texas Commission on Environmental Quality

Date	Permit Number	Regulated Entity Number
October 2, 2024	O2213	RN100225945

Unit ID No.	PBR No.	Version No./Date
BSRSRVSTV	***106.472***	***09/04/2000***

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Table C: Claimed (not registered) Permits by Rule (30 TAC Chapter 106) for Insignificant Sources for the Application Area
Texas Commission on Environmental Quality

Date	Permit Number	Regulated Entity Number
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PBR No.	Version No./Date
N/A	N/A

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Table D: Monitoring Requirements for registered and claimed PBRs for the Application Area
Texas Commission on Environmental Quality

Date	Permit Number	Regulated Entity Number
October 2, 2024	O2213	RN100225945

Unit ID No.	PBR No.	Version No./Date Or Registration No.	Monitoring Requirement
B72L7FU1	106.261 106.262	152308	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1	106.261 106.262	154686	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1	106.261 106.262	156270	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1	106.261 106.262	157613	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1 B72L7F2	106.261 106.262	158547	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023). The small flare (B72F1) shall be maintained and operated in accordance with NSR Permit 144784 Special Condition 12 requirements (Permit Issue Date April 4, 2023).
B72L7FU1	106.261 106.262	159113	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1	106.261	160358	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).

Table D: Monitoring Requirements for registered and claimed PBRs for the Application Area

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Date	Permit Number	Regulated Entity Number
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Unit ID No.	PBR No.	Version No./Date Or Registration No.	Monitoring Requirement
B72L7FU1	106.261 106.262	161923	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1	106.261 106.262	162615	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1	106.261 106.262	163041	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1	106.261 106.262	164116	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1	106.261 106.262	165274	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1	106.262	165805	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7D81	106.261 106.262	166260	Maintain records for tank throughput or use FS-2 (EPN B72F1) monitoring equipment requirements. The small flare (B72F1) shall be maintained and operated in accordance with NSR Permit 144784 Special Condition 12 requirements (Permit Issue Date April 4, 2023).

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Table D: Monitoring Requirements for registered and claimed PBRs for the Application Area
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Unit ID No.	PBR No.	Version No./Date Or Registration No.	Monitoring Requirement
B72L7FU1	106.261 106.262	167397	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
B72L7FU1	106.261	169510	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).
OC6L8FU01 ~~OC6L8FU11~~	106.261	161951	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).
OC6L8FU01 ~~OC6L8FU11~~ ~~OC6L8FU12~~	106.261 106.262	162922	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).
OC6L8FU01 OC6L8FU11	106.261 106.262	163968	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).
OC6L8FU01	106.261	164734	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).
OC6L8FU01	106.261 106.262	165416	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).
OC6L8FU01	106.261	166753	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).

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Unit ID No.	PBR No.	Version No./Date Or Registration No.	Monitoring Requirement
OC6L8FU01 ***OC6L8F1018***	106.261	170264	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024). Flare will continue to meet the monitoring and recordkeeping requirements of NSR 20432 SC 23 for minimum net heating value and exit velocity (Permit Issue Date September 9, 2024).
BSRSRFUBRK BSRSRFUDOW BSRSRFUSTV	106.261	152182	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28MID, as required by NSR 22072 SC 5 (Permit Issue Date May 7, 2021).
BSRSRFUSTV	106.261	154273	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28MID, as required by NSR 22072 SC 5 (Permit Issue Date May 7, 2021).
OC6L8FU11 OCNTFFU3 BSRSRFUBRK BSRSRST177	106.261 106.262 106.472	157214	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 20432 SC 19 (Permit Issue Date November 9, 2023). New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28MID, as required by NSR 22072 SC 5 (Permit Issue Date May 7, 2021). Maintain records of annual throughput.
BSRSRFUBRK BSRSRFUSTV	106.261	157724	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28MID, as required by NSR 22072 SC 5 (Permit Issue Date May 7, 2021).

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Table D: Monitoring Requirements for registered and claimed PBRs for the Application Area
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Date	Permit Number	Regulated Entity Number
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Unit ID No.	PBR No.	Version No./Date Or Registration No.	Monitoring Requirement
BSRSRFUSTV	106.261	163128	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28MID, as required by NSR 22072 SC 5 (Permit Issue Date May 7, 2021).
BSRSRFUSTV	106.261	170207	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28MID, as required by NSR 22072 SC 5 (Permit Issue Date May 7, 2021).
B56FU01	106.261 106.262	149923	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 83841 SC 17 (Permit Issue Date June 24, 2020).
B56FU01	106.261 106.262	150865	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 83841 SC 17 (Permit Issue Date June 24, 2020).
B56FU01	106.261 106.262	152663	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 83841 SC 17 (Permit Issue Date June 24, 2020).
B56FU01	106.261	158062	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 83841 SC 17 (Permit Issue Date June 24, 2020).
B56FU01	106.261 106.262	159863	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 83841 SC 17 (Permit Issue Date June 24, 2020).
B56FU01	106.261 106.262	161544	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 83841 SC 17 (Permit Issue Date June 24, 2020).

Permit By Rule Supplemental Table (Page 4)
Table D: Monitoring Requirements for registered and claimed PBRs for the Application Area
Texas Commission on Environmental Quality

Date	Permit Number	Regulated Entity Number
October 2, 2024	O2213	RN100225945

Unit ID No.	PBR No.	Version No./Date Or Registration No.	Monitoring Requirement
B56FU01	106.261 106.262	163650	New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 83841 SC 17 (Permit Issue Date June 24, 2020).
B72L7CT1	106.371 106.472	09/04/2000	Cooling Tower (EPN B72CT1) shall be monitored in accordance with the requirements dictated in NSR Permit 144784, Special Condition 13.
B72L7GE02	106.511	09/04/2000	Record operating time with a non-resettable runtime meter.
OC6L8CT800	106.371 106.472	09/04/2000	Cooling Tower (EPN OC6CT800) shall be monitored in accordance with NSR Permit 20432, Special Condition No. 27 (Permit Issue Date September 9, 2024).
~~A25SIFU01~~	~~106.478~~	~~09/04/2000~~	~~Confirmation facility performs indicated function.~~
~~A25SILRT25~~	~~106.473~~	~~09/04/2000~~	~~Maintain records for loading rate.~~
~~A25SISTT25~~	~~106.478~~	~~09/04/2000~~	~~Maintain records for tank throughput.~~
~~B4SIFU01~~	~~106.478~~	~~09/04/2000~~	~~Confirmation facility performs indicated function.~~
~~B4SILRD500~~	~~106.473~~	~~09/04/2000~~	~~Maintain records for loading rate.~~
~~B4SISTD500~~	~~106.478~~	~~09/04/2000~~	~~Maintain records for tank throughput.~~
~~BM54SIFU01~~	~~106.478~~	~~09/04/2000~~	~~Confirmation facility performs indicated function.~~
~~BM54SILR30~~	~~106.473~~	~~09/04/2000~~	~~Maintain records for loading rate.~~
~~BM54SIST30~~	~~106.478~~	~~09/04/2000~~	~~Maintain records for tank throughput.~~

Permit By Rule Supplemental Table (Page 4)
Table D: Monitoring Requirements for registered and claimed PBRs for the Application Area
Texas Commission on Environmental Quality

Date	Permit Number	Regulated Entity Number
October 2, 2024	O2213	RN100225945

Unit ID No.	PBR No.	Version No./Date Or Registration No.	Monitoring Requirement
OC6L8FU01	*106.261* *106.262*	*171949*	*New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).*
OC6L8FU01 *OC6L8FU11*	*106.261* *106.262*	*172813*	*New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).*
OC6L8FU01	*106.261* *106.262*	*173020*	*New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).*
OC6L8FU01	*106.261*	*173885*	*New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).*
OC6L8FU01	*106.261* *106.262*	*176418*	*New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP or AVO, as required by NSR 20432 SCs 18-21 (Permit Issue Date September 9, 2024).*
BSRSRSC01 *BSRSRSC301*	*106.454*	*11/01/2001*	*Maintain monthly total solvent makeup.*
BSRSRTLT1	*106.263*	*11/01/2001*	*Track emissions on a rolling 12-month basis.*
BSRSRVSTV	*106.472*	*09/04/2000*	*Maintain records of tank service.*
B72L7FU1	*106.261* *106.262*	*171224*	*New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).*

Permit By Rule Supplemental Table (Page 4)
Table D: Monitoring Requirements for registered and claimed PBRs for the Application Area
Texas Commission on Environmental Quality

Date	Permit Number	Regulated Entity Number
October 2, 2024	O2213	RN100225945

Unit ID No.	PBR No.	Version No./Date Or Registration No.	Monitoring Requirement
B72L7FU1	***106.261*** ***106.262***	***172555***	***New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).***
B72L7FU1	***106.261***	***177229***	***New piping components are managed in accordance with the current Leak Detection and Repair (LDAR) fugitive monitoring program, 28VHP, as required by NSR 144784 SCs 14-17 (Permit Issue Date April 4, 2023).***

Mark McDonald

From:	Schmidt, Crystal (C) <cschmidt6@dow.com>
Sent:	Wednesday, October 2, 2024 3:14 PM
To:	Mark McDonald
Cc:	Rhyan Stone
Subject:	RE: Request - Title V Permit O2213 - The Dow Chemical Company - Project 35544
Attachments:	2024-10-02_NOD Response_O2213.pdf

Mark,

Please see the attached Form OP-2 and Form OP-SUMR and let me know if you have any questions. I also submitted our most recent version of the Form OP-PBRSUP. Thanks!

Crystal Schmidt

Crystal Schmidt
Air Permit Manager
The Dow Chemical Company
332 SH 332 E
cell phone: 409.392.5054
phone: 979.238.1742 | email: cschmidt6@dow.com

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General Business

From: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Sent: Wednesday, September 25, 2024 2:31 PM
To: Schmidt, Crystal (C) <cschmidt6@dow.com>
Cc: Rhyan Stone <Rhyan.Stone@tceq.texas.gov>
Subject: Request - Title V Permit O2213 - The Dow Chemical Company - Project 35544

Crystal,
We are wrapping up the updates to your working draft permit (WDP) and have a request for final clarification. To ensure that we are capturing everything, we will need an updated OP-2 and OP-SUMR that includes all requested updates for project 35544.

Please submit at your earliest convenience, but no later than **October 9, 2024**.

Thanks,

Mark

Mark McDonald
Operating Permits Section
Air Permits Division, Office of Air,
Texas Commission on Environmental Quality (TCEQ)
(512) 239-1357
mark.mcdonald@tceq.texas.gov

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How is our customer service?

Mark McDonald

From: Schmidt, Crystal (C) <cschmidt6@dow.com>
Sent: Wednesday, July 31, 2024 2:47 PM
To: Mark McDonald
Subject: The Dow Chemical Company - Title V Permit O2213 - Project #35544 - Application Update
Attachments: 2024-07-31_Application_Update.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Mark,

Please see our application update to Title V Permit O2213. We are requesting to remove several units and moving them to another Dow Title V Permit O2697. A minor revision application for O2697 was submitted via STEERS earlier today. Please let me know if you have any questions. Thanks!

Crystal Schmidt

Crystal Schmidt
Air Permit Manager
The Dow Chemical Company
332 SH 332 E
cell phone: 409.392.5054
phone: 979.238.1742 | email: cschmidt6@dow.com

Seek Together™

General Business

July 31, 2024

E-MAIL RESPONSE
Texas Commission on Environmental Quality
ATTN: Mr. Mark McDonald
Air Permits Division, MC-163
P.O. Box 13087
Austin, TX 78711-3087

The Dow Chemical Company, CN600356976
Hydrocarbons, RN100225945
Title V Operating Permit Application Update for Hydrocarbons, O2213
TCEQ Project Number: 35544

Dear Mr. McDonald,

The Dow Chemical Company is submitting an application update for the Hydrocarbons Title V Permit Minor Revision application that was received by TCEQ on August 28, 2023 (Project #35544). Please see Form OP-2 for more information.

Please do not hesitate to contact me at (979) 238-1742 or cschmidt6@dow.com if you require additional information regarding this submittal.

Sincerely,

Crystal Schmidt

Crystal Schmidt
Air Permit Manager

enclosure

cc:

US EPA Region 6	R6AirPermitsTX@epa.gov
TCEQ Air Section Manager, Region 12	R12apdmail@tceq.texas.gov
Brazoria County Environmental Health Director	jodiev@brazoria-county.com

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**July 31, 2024**					
Permit No.:	**O2213**					
Regulated Entity No.:	**RN100225945**					
Company Name:	**The Dow Chemical Company**					
I.Description of Revision						
Revision No.	**Revision Code**	**Unit/Group Process**			**NSR Authorization**	**Description of change and Provisional Terms and Conditions**
		New Unit	**ID No.**	**Applicable Form**		
1	MS-C	NO	A25SILRT25 A25SISTT25 B4SILRD500 B4SISTD500 BM54SILR30 BM54SIST30	OP-SUMR	N/A	Please remove these units from this Title V Permit. They are being moved to another Dow Title V Permit, O2697. A minor revision application for Title V Permit O2697 is being submitted concurrently with this application update.
2	MS-C	NO	A25SIFU01 B4ADFU01 B4SIFU01 BM54SIFU01	OP-SUMR	N/A	Please remove these units from this Title V Permit. They are being moved to another Dow Title V Permit, O2697. A minor revision application for Title V Permit O2697 is being submitted concurrently with this application update. These units were requested to be added to Title V Permit O2213 in the 2022 Minor Revision. However, these units only had negative applicability; therefore, they were included on the OP-2 for completeness purposes only.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Individual Unit Summary for Revisions
Form OP-SUMR
Table 1

Date	Permit No.	Regulated Entity No.
July 31, 2024	O2213	RN100225945

Unit/Process						Preconstruction Authorizations	
AI	Revision No.	ID No.	Applicable Form	Name/ Description	CAM	30 TAC Chapter 116/ 30 TAC Chapter 106	Title I
D	2	~~A25SIFU01~~	~~OP-REQ2~~	~~A-2500 DISTILLATE TANK FUGITIVES~~		~~106.478/09/04/2000~~	
D	1	~~A25SILRT25~~	~~OP-UA4~~	~~A-25 – DISTILLATE LOADING~~		~~106.473/09/04/2000~~	
D	1	~~A25SISTT25~~	~~OP-UA3~~	~~A-2500 DISTILLATE TANK-25~~		~~106.478/09/04/2000~~	
D	2	~~B4ADFU01~~	~~OP-REQ2~~	~~AMMONIA DISTRIBUTION FUGITIVES~~		~~106.478/09/04/2000~~	
D	2	~~B4SIFU01~~	~~OP-REQ2~~	~~B-400 DISTILLATE TANK FUGITIVES~~		~~106.478/09/04/2000~~	
D	1	~~B4SILRD500~~	~~OP-UA4~~	~~B-400 DISTILLATE LOADING~~		~~106.473/09/04/2000~~	
D	1	~~B4SISTD500~~	~~OP-UA3~~	~~B-400 DISTILLATE TANK D-500~~		~~106.478/09/04/2000~~	
D	2	~~BM54SIFU01~~	~~OP-REQ2~~	~~A/B METER STATION DISTILLATE TANK FUGITIVES~~		~~106.478/09/04/2000~~	
D	1	~~BM54SILR30~~	~~OP-UA4~~	~~A/B METER STATION DISTILLATE LOADING~~		~~106.473/09/04/2000~~	
D	1	~~BM54SIST30~~	~~OP-UA3~~	~~A/B METER STATION DISTILLATE TANK D-301~~		~~106.478/09/04/2000~~	

May 23, 2024

E-MAIL RESPONSE
Texas Commission on Environmental Quality
ATTN: Mr. Mark McDonald
Air Permits Division, MC-163
P.O. Box 13087
Austin, TX 78711-3087

The Dow Chemical Company, CN600356976
Specialty Chemicals 2, RN100225945
Title V Operating Permit WDP Response for Specialty Chemicals 2, O2221
TCEQ Project Number: 34826

Dear Mr. McDonald,

The Dow Chemical Company is providing an updated response to the Notice of Deficiency (NOD) items and comments on the Working Draft Permit (WDP) provided on April 12, 2024. Dow is requesting to keep the 40 CFR Part 63, Subpart YY General High-Level applicability instead of adding the detailed citations. Dow is also requesting one revision with this submittal. Please see Form OP-2 for more information.

Please do not hesitate to contact me at (979) 238-1742 or cschmidt6@dow.com if you require additional information regarding this submittal.

Sincerely,

Crystal Schmidt

Crystal Schmidt
Air Permit Manager

enclosure

cc:

US EPA Region 6	R6AirPermitsTX@epa.gov
TCEQ Air Section Manager, Region 12	R12apdmail@tceq.texas.gov
Brazoria County Environmental Health Director	jodiev@brazoria-county.com

Additional Information Request

Item 1	Confirm that there are separate operating scenarios for the ethylene process vent and decoking operation for the Pyrolysis Furnaces (GRP1L8PF and GRP2L8PF). On the WDP the 40 CFR part 63, Subpart YY ethylene process decoking operation scenario was added and recorded as index number 63YY-02.
Item 1 Response	**This is correct. Dow received permission to supersede 40 CFR Part 60, Subparts NNN and RRR with the process vent provisions in 40 CFR Part 63, Subpart YY [63.1103(e)(3)-Table 7(d)].**
Item 2	Dow submitted both §§ 63.1103(e)(3), Table 7(a), and Table 7(b), however the storage capacity must be determined for 40 CFR part 63, Subpart YY storage vessels: OC6L8ST01A, OC6L8ST01B, OC6L8ST901 and OC6L8V1905. Please confirm the storage capacity for all of these units.
Item 2 Response	**OC6L8ST01A → 5,250,000 gallons** **OC6L8ST01B → 5,250,000 gallons** **OC6L8ST901 → 2,520,000 gallons** **OC6L8V1905 → 4,000,000 gallons**
Item 3	Confirm 40 CFR Part 63, Subpart EEEE standards for the Loading Rack, unit BSRSRLR615.
Item 3 Response	**Please see the attached Applicable Requirements Summary that contains track changes for the suggested updates to the 40 CFR Part 63, Subpart EEEE citations.**

Working Draft Permit Comments

Unit Summary

1. BSRHSBH: Please remove this unit from the entire Title V Permit as requested in Revision #5 in the minor revision application received by TCEQ on 08/28/2023.
2. OC6L8D91: Please remove the first 30 TAC Chapter 115, Storage of VOCs operating scenario (R5112-01) form this storage tank as requested in Revision #2 in the application update submitted to TCEQ on November 9, 2023. The emissions from this tank will no longer be sent to the flares (OC2L8GF500 and OC6L8F1).

Applicable Requirements Summary

1. B60L7F1: Please update the 40 CFR Part 63, Subpart FFFF citations as requested in Revision #1 in the minor revision application received by TCEQ on 08/28/2023.
2. BSRHSBH: Please remove this unit from the entire Title V Permit as requested in Revision #5 in the minor revision application received by TCEQ on 08/28/2023.
3. OC2L8GF500; OC6L8F1; OC6L8F1018: Please remove reference to 60.18 in the 30 TAC Chapter 115, HRVOC Vent Gas “Textual Description” as requested in Revision #7 in the minor revision application received by TCEQ on 08/28/2023. (AMOC 62)
4. OC6L8D91; OC6L8D97; OC6L8ST916: Please add citations 63.1103(e)(4)(xii)-(xiii) to the first 30 TAC Chapter 115, Storage of VOCs operating scenario (R5112-01) as requested in Revision #8 in the minor revision application received by TCEQ on 08/28/2023. (AMOC 62)
5. OC6L8RX1; OC6L8RX2; OC6L8RX3; OC6L8RX4: Please make the changes to the 30 TAC Chapter 115, Vent Gas Control citations as requested in Revision #9 in the minor revision application received by TCEQ on 08/28/2023. (AMOC 62)
6. OC6L8D1181; OC6L8D169; OC6L8D280: Please add citations 63.1103(e)(4)(xii)-(xiii) to the second 30 TAC Chapter 115, Industrial Wastewater operating scenario (R5140-02) as requested in Revision #10 in the minor revision application received by TCEQ on 08/28/2023. (AMOC 62)
7. GRP2L8PF: Please remove 40 CFR Part 60, Subpart RRR applicability from these units as requested in Revision #12 in the minor revision application received by TCEQ on 08/28/2023.
8. OC6L8D97: Please remove the second 30 TAC Chapter 115, Storage of VOCs operating scenario (R5112-02) as requested in Revision #18 in the minor revision application received by TCEQ on 08/28/2023.
9. OC6L8D97: Please remove the second 30 TAC Chapter 115, Vent Gas Control operating scenario (R5121-02) as requested in Revision #19 in the minor revision application received by TCEQ on 08/28/2023.
10. B72L7D4; OC6L8D433: Please update the 30 TAC Chapter 115, Water Separation citations to match the changes requested in Revision #1 in the application update submitted to TCEQ on November 9, 2023. Dow requested to update the Exemption answer from “ATVP” to “NONE”.
11. OC6L8D91: Please remove the first 30 TAC Chapter 115, Storage of VOCs operating scenario (R5112-01) form this storage tank as requested in Revision #2 in the application update submitted to TCEQ on November 9, 2023. The emissions from this tank will no longer be sent to the flares (OC2L8GF500 and OC6L8F1).
12. OC6L8RX1: Please update the second 30 TAC Chapter 115, Vent Gas Control operating scenario (R5121-02) citations to match the changes requested in Revision #1 in the application update submitted to TCEQ on November 9, 2023. This operating scenario vents to direct flame incinerators, and not a flare.

New Source Review Authorization References by Emissions Unit

1. BSRHSBH: Please remove this unit from the entire Title V Permit as requested in Revision #5 in the minor revision application received by TCEQ on 08/28/2023.

Federal Operating Permit Program
Form OP-2 – Application for Permit Revision/Renewal
Table 2

Date: **May 23, 2024**
Permit No.: **O2213**
Regulated Entity No.: **RN100225945**
Company Name: **The Dow Chemical Company**

Using the table below, provide a description of the revision.

Revision No.	Revision Code	New Unit	Unit/Group	Process	NSR Authorization	Description of Change and Provisional Terms and Conditions
			ID No.	Applicable Form		
1	MS-C	NO	OC6L8SC01	OP-SUMR	N/A	Please remove this unit from the entire Title V Permit; it has been removed.

Federal Operating Permit Program
Form OP-SUMR – Individual Unit Summary for Revisions
Table 1

Date	Permit No.	Regulated Entity No.
May 23, 2024	O2213	RN100225945

Unit/Process AI	Unit/Process Revision No.	Unit/Process ID No.	Unit/Process Applicable Form	Unit/Process Name/ Description	Unit/ Process CAM	Preconstruction Authorizations 30 TAC Chapter 116/ 30 TAC Chapter 106	Preconstruction Authorizations Title I
D	1	~~OC6L8SC01~~	~~OP-UA16~~	~~OC-602 DEGREASER~~		~~20432~~	~~PSDTX994M2~~ ~~N274~~

Applicable Requirements Summary

Unit Group Process ID No.	Unit Group Process Type	SOP Index No.	Pollutant	State Rule or Federal Regulation Name	Emission Limitation, Standard or Equipment Specification Citation	Textual Description (See Special Term and Condition 1.B.)	Monitoring And Testing Requirements	Recordkeeping Requirements (30 TAC § 122.144)	Reporting Requirements (30 TAC § 122.145)
BSRSRLR615	EU	63EEEE-01	112(B) HAPS	40 CFR Part 63, Subpart EEEE	§63.2343(c)	For each transfer rack subject to this subpart that loads organic liquids but is not subject to control based on the criteria specified in Table 2 to this subpart, items 7 through 10, you must comply with the requirements specified in §63.2343(c)(1)-(3).	None	§63.2343(c)(3)	[G]§63.2343(c)(1) [G]§63.2343(c)(2) §63.2382(d)(2)(viii) §63.2386(b) §63.2386(c)(10)(i) §63.2386(d)(3)(ii) §63.2386(d)(4)(ii) §63.2343(d)(2) §63.2343(d)(3) §63.2343(d)(4)
BSRSRST615	EU	63EEEE-01	112(B) HAPS	40 CFR Part 63, Subpart EEEE	§63.2343(b)	Except as specified in §63.2343(b)(4), for each storage tank subject to this subpart having a capacity of 18.9 cubic meters (5,000 gallons) or more that is not subject to control based on the criteria specified in Table 2 to this subpart, items 3 through 6 or in Table 2b to this subpart, items 1 through 3, you must comply with the requirements specified in §63.2343(b)(1) through (3).	None	§63.2343(b)(3)	[G]§63.2343(b)(1) [G]§63.2343(b)(2) §63.2343(d)(1) §63.2343(d)(2) §63.2386(b)–Table 11.1.a [G]§63.2386(b)(1) [G]§63.2386(b)(2) [G]§63.2386(c) §63.2386(d)(3)(i) §63.2386(d)(4)(i) §63.2386(f)
BSRSRST616	EU	63EEEE-01	112(B) HAPS	40 CFR Part 63, Subpart EEEE	§63.2343(b)	Except as specified in §63.2343(b)(4), for each storage tank subject to this subpart having a capacity of 18.9 cubic meters (5,000 gallons) or more that is not subject to control based on the criteria specified in Table 2 to this subpart, items 3 through 6 or in Table 2b to this subpart, items 1	None	§63.2343(b)(3)	[G]§63.2343(b)(1) [G]§63.2343(b)(2) §63.2343(d)(1) §63.2343(d)(2) §63.2386(b)–Table 11.1.a [G]§63.2386(b)(1) [G]§63.2386(b)(2) [G]§63.2386(c) §63.2386(d)(3)(i) §63.2386(d)(4)(i) §63.2386(f)

Applicable Requirements Summary

Unit Group Process ID No.	Unit Group Process Type	SOP Index No.	Pollutant	State Rule or Federal Regulation Name	Emission Limitation, Standard or Equipment Specification Citation	Textual Description (See Special Term and Condition 1.B.)	Monitoring And Testing Requirements	Recordkeeping Requirements (30 TAC § 122.144)	Reporting Requirements (30 TAC § 122.145)
						through 3, you must comply with the requirements specified in §63.2343(b)(1) through (3).			
OC6L8D97	EU	63EEEE-01	112(B) HAPS	40 CFR Part 63, Subpart EEEE	§63.2343(b)	Except as specified in §63.2343(b)(4), for each storage tank subject to this subpart having a capacity of 18.9 cubic meters (5,000 gallons) or more that is not subject to control based on the criteria specified in Table 2 to this subpart, items 3 through 6 or in Table 2b to this subpart, items 1 through 3, you must comply with the requirements specified in §63.2343(b)(1) through (3).	None	§63.2343(b)(3)	[G]§63.2343(b)(1) [G]§63.2343(b)(2) §63.2343(d)(1) §63.2343(d)(2) §63.2386(b)–Table 11.1.a [G]§63.2386(b)(1) [G]§63.2386(b)(2) [G]§63.2386(c) §63.2386(d)(3)(i) §63.2386(d)(4)(i) §63.2386(f)

Mark McDonald

From:	Schmidt, Crystal (C) <cschmidt6@dow.com>
Sent:	Thursday, May 23, 2024 10:30 AM
To:	Mark McDonald
Cc:	Paige Cartwright
Subject:	RE: Working Draft Permit - O2213 Dow Chemical Company - Minor Revision 35544
Attachments:	2024-05-23_WDP Response_O2213.pdf

Mark,

Please see our O2213 response with the updates discussed during our call this morning. Please let me know if you have any questions. Thanks!

Crystal Schmidt

Crystal Schmidt
Air Permit Manager
The Dow Chemical Company
332 SH 332 E
cell phone: 409.392.5054
phone: 979.238.1742 | email: cschmidt6@dow.com

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General Business

From: Schmidt, Crystal (C) <cschmidt6@dow.com>
Sent: Friday, May 10, 2024 12:14 PM
To: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Cc: Paige Cartwright <Paige.Cartwright@tceq.texas.gov>
Subject: RE: Working Draft Permit - O2213 Dow Chemical Company - Minor Revision 35544

Mark,

Please see our attached response for the O2213 WDP and let me know if you have any questions. Thanks and have a great weekend!

Crystal Schmidt

Crystal Schmidt
Air Permit Manager
The Dow Chemical Company
332 SH 332 E
cell phone: 409.392.5054
phone: 979.238.1742 | email: cschmidt6@dow.com

From: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Sent: Tuesday, May 7, 2024 11:17 AM
To: Schmidt, Crystal (C) <cschmidt6@dow.com>
Cc: Paige Cartwright <Paige.Cartwright@tceq.texas.gov>
Subject: RE: Working Draft Permit - O2213 Dow Chemical Company - Minor Revision 35544

Crystal,
Yes, the 10th will be fine.

Thank you!
Mark

General Business

From: Schmidt, Crystal (C) <cschmidt6@dow.com>
Sent: Tuesday, May 7, 2024 11:09 AM
To: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Cc: Paige Cartwright <Paige.Cartwright@tceq.texas.gov>
Subject: RE: Working Draft Permit - O2213 Dow Chemical Company - Minor Revision 35544

Mark,

Can I submit all of my comments to you this Friday (May 10th)? I'm not feeling well this week, so I want to give myself a couple of extra days to go through all of the citations thoroughly. Please let me know. Thanks for your consideration!

Crystal Schmidt

Crystal Schmidt
Air Permit Manager
The Dow Chemical Company
332 SH 332 E
cell phone: 409.392.5054
phone: 979.238.1742 | email: cschmidt6@dow.com

From: Mark McDonald <Mark.McDonald@tceq.texas.gov>
Sent: Friday, April 12, 2024 5:38 PM
To: Schmidt, Crystal (C) <cschmidt6@dow.com>
Cc: Paige Cartwright <Paige.Cartwright@tceq.texas.gov>
Subject: Working Draft Permit - O2213 Dow Chemical Company - Minor Revision 35544

Ms. Schmidt:

We have completed the Working Draft Permit (WDP) for your Federal Operating Permit (FOP) Streamline Revision issuance permit application of Permit No. O2213 for Dow Chemical Company / Hydrocarbons Area.

Please review the WDP and submit any comments you have at your earliest opportunity, but no later than **May 7, 2024**.

In addition, the following issues must be addressed:

- Confirm that there are separate operating scenarios for the ethylene process vent and decoking operation for the Pyrolysis Furnaces (GRP1L8PF and GRP2L8PF). On the WDP the 40 CFR part 63, Subpart YY ethylene process decoking operation scenario was added and recorded as index number 63YY-02.

- Dow submitted both §§ 63.1103(e)(3), Table 7(a), and Table 7(b), however the storage capacity must be determined for 40 CFR part 63, Subpart YY storage vessels: OC6L8ST01A, OC6L8ST01B, OC6L8ST901 and OC6L8V1905. Please confirm the storage capacity for all of these units.

- Confirm 40 CFR Part 63, Subpart EEEE standards for the Loading Rack, unit BSRSRLR615.

**Please note that some of the citation symbol (§) is missing on some units in the Applicable Requirements Summary table. This will be corrected and is part of our system data entry process.*

Contact me if you have any questions or if you wish to discuss any other details or deadlines regarding your application or permit.

Regards,
Mark

Review the second portion of the "SOP Technical Review Fact Sheet" located at http://www.tceq.texas.gov/assets/public/permitting/air/Guidance/Title_V/sop_wdp_factsheet.pdf. This guidance contains important information regarding WDP review and comment procedures.

Note that a Certification by Responsible Official (Form OP-CRO1) for any uncertified application information, including application updates supporting the WDP comments, is required. After final review of the WDP, additional changes supported by application updates may require certification. I will advise you of these changes at a later date. Prior to transmittal of the Public Announcement Authorization Package, a duly signed OP-CRO1 form may be required which includes the specific dates or time-period of all submitted application documentation that was not previously certified. I will advise you of this requirement prior to sending the Public Announcement Authorization.

Mark McDonald
Operating Permits Section
Air Permits Division, Office of Air,
Texas Commission on Environmental Quality (TCEQ)
(512) 239-1357
mark.mcdonald@tceq.texas.gov

How is our customer service?

May 10, 2024

E-MAIL RESPONSE
Texas Commission on Environmental Quality
ATTN: Mr. Mark McDonald
Air Permits Division, MC-163
P.O. Box 13087
Austin, TX 78711-3087

The Dow Chemical Company, CN600356976
Specialty Chemicals 2, RN100225945
Title V Operating Permit WDP Response for Specialty Chemicals 2, O2221
TCEQ Project Number: 34826

Dear Mr. McDonald,

The Dow Chemical Company is providing a response to the Notice of Deficiency (NOD) items and comments on the Working Draft Permit (WDP) provided on April 12, 2024. Dow is also requesting one revision with this submittal. Please see Form OP-2 for more information.

Please do not hesitate to contact me at (979) 238-1742 or cschmidt6@dow.com if you require additional information regarding this submittal.

Sincerely,

Crystal Schmidt

Crystal Schmidt
Air Permit Manager

enclosure

cc:

US EPA Region 6	R6AirPermitsTX@epa.gov
TCEQ Air Section Manager, Region 12	R12apdmail@tceq.texas.gov
Brazoria County Environmental Health Director	jodiev@brazoria-county.com

Additional Information Request

Item 1	Confirm that there are separate operating scenarios for the ethylene process vent and decoking operation for the Pyrolysis Furnaces (GRP1L8PF and GRP2L8PF). On the WDP the 40 CFR part 63, Subpart YY ethylene process decoking operation scenario was added and recorded as index number 63YY-02.
Item 1 Response	**This is correct. Dow received permission to supersede 40 CFR Part 60, Subparts NNN and RRR with the process vent provisions in 40 CFR Part 63, Subpart YY [63.1103(e)(3)-Table 7(d)].**
Item 2	Dow submitted both §§ 63.1103(e)(3), Table 7(a), and Table 7(b), however the storage capacity must be determined for 40 CFR part 63, Subpart YY storage vessels: OC6L8ST01A, OC6L8ST01B, OC6L8ST901 and OC6L8V1905. Please confirm the storage capacity for all of these units.
Item 2 Response	**OC6L8ST01A → 5,250,000 gallons** **OC6L8ST01B → 5,250,000 gallons** **OC6L8ST901 → 2,520,000 gallons** **OC6L8V1905 → 4,000,000 gallons**
Item 3	Confirm 40 CFR Part 63, Subpart EEEE standards for the Loading Rack, unit BSRSRLR615.
Item 3 Response	**Please see the attached Applicable Requirements Summary that contains track changes for the suggested updates to the 40 CFR Part 63, Subpart EEEE citations.**

Working Draft Permit Comments

Unit Summary

1. BSRHSBH: Please remove this unit from the entire Title V Permit as requested in Revision #5 in the minor revision application received by TCEQ on 08/28/2023.
2. OC6L8D91: Please remove the first 30 TAC Chapter 115, Storage of VOCs operating scenario (R5112-01) form this storage tank as requested in Revision #2 in the application update submitted to TCEQ on November 9, 2023. The emissions from this tank will no longer be sent to the flares (OC2L8GF500 and OC6L8F1).

Applicable Requirements Summary

1. B60L7F1: Please update the 40 CFR Part 63, Subpart FFFF citations as requested in Revision #1 in the minor revision application received by TCEQ on 08/28/2023.
2. BSRHSBH: Please remove this unit from the entire Title V Permit as requested in Revision #5 in the minor revision application received by TCEQ on 08/28/2023.
3. OC2L8GF500; OC6L8F1; OC6L8F1018: Please remove reference to 60.18 in the 30 TAC Chapter 115, HRVOC Vent Gas "Textual Description" as requested in Revision #7 in the minor revision application received by TCEQ on 08/28/2023.
4. OC6L8D91; OC6L8D97; OC6L8ST916: Please add citations 63.1103(e)(4)(xii)-(xiii) to the first 30 TAC Chapter 115, Storage of VOCs operating scenario (R5112-01) as requested in Revision #8 in the minor revision application received by TCEQ on 08/28/2023.
5. OC6L8RX1; OC6L8RX2; OC6L8RX3; OC6L8RX4: Please make the changes to the 30 TAC Chapter 115, Vent Gas Control citations as requested in Revision #9 in the minor revision application received by TCEQ on 08/28/2023.
6. OC6L8D1181; OC6L8D169; OC6L8D280: Please add citations 63.1103(e)(4)(xii)-(xiii) to the second 30 TAC Chapter 115, Industrial Wastewater operating scenario (R5140-02) as requested in Revision #10 in the minor revision application received by TCEQ on 08/28/2023.
7. GRP2L8PF: Please remove 40 CFR Part 60, Subpart RRR applicability from these units as requested in Revision #12 in the minor revision application received by TCEQ on 08/28/2023.
8. OC6L8D97: Please remove the second 30 TAC Chapter 115, Storage of VOCs operating scenario (R5112-02) as requested in Revision #18 in the minor revision application received by TCEQ on 08/28/2023.
9. OC6L8D97: Please remove the second 30 TAC Chapter 115, Vent Gas Control operating scenario (R5121-02) as requested in Revision #19 in the minor revision application received by TCEQ on 08/28/2023.
10. B72L7D4; OC6L8D433: Please update the 30 TAC Chapter 115, Water Separation citations to match the changes requested in Revision #1 in the application update submitted to TCEQ on November 9, 2023. Dow requested to update the Exemption answer from "ATVP" to "NONE".
11. OC6L8D91: Please remove the first 30 TAC Chapter 115, Storage of VOCs operating scenario (R5112-01) form this storage tank as requested in Revision #2 in the application update submitted to TCEQ on November 9, 2023. The emissions from this tank will no longer be sent to the flares (OC2L8GF500 and OC6L8F1).
12. OC6L8RX1: Please update the second 30 TAC Chapter 115, Vent Gas Control operating scenario (R5121-02) citations to match the changes requested in Revision #1 in the application update submitted to TCEQ on November 9, 2023. This operating scenario vents to direct flame incinerators, and not a flare.
13. GRP1L8PF; GRP2L8PF: Please add Monitoring/Testing, Recordkeeping, and Reporting citations to both 40 CFR Part 63, Subpart YY operating scenarios (63YY-01 and 63YY-02). Please see the Form OP-REQ3 in the minor revision application received by TCEQ on 08/28/2023 for detailed citations.
14. OC2L8GF500; OC6L8F1; OC6L8F1018: Please remove "(viii)" in the following 40 CFR Part 63, Subpart YY citations:
    a. 63.1103(e)(4)(viii)(ix)
    b. 63.1103(e)(4)(viii)(x)
    c. 63.1103(e)(4)(viii)(xi)
    d. 63.1103(e)(4)(viii)(xii)
    e. 63.1103(e)(4)(viii)(xiii)
    f. 63.1103(e)(4)(viii)(xiv)

15. Multiple Units: Please move the “[G]” to the front of the 40 CFR Part 63, Subpart YY citations. There are several instances in all columns in which it appears at the end of the citation.
16. OC2L8GF500: Please add the following 40 CFR Part 63, Subpart YY citations to the Monitoring/Testing column:
    a. [G]63.671(a)-(e)
    b. 63.671 Table 13
17. B60L7FU1; B72L7FU1; OC6L8FU01; OC6L8FU11: Please change “pumps” to “pumps in light liquid service” in the 40 CFR Part 63, Subpart YY Textual Description (it is the first row of 40 CFR Part 63, Subpart YY citations for this unit).
18. B60L7FU1; B72L7FU1: Please change “pressure relief devices” to “pressure relief devices in light liquid service” in the 40 CFR Part 63, Subpart YY Textual Description (it is the sixth row of 40 CFR Part 63, Subpart YY citations for this unit).
19. B60L7FU1; B72L7FU1; OC6L8FU01:OC6L8FU11:
    a. Please add [G]63.1029(b) to the pumps in light liquid service monitoring/testing citations.
    b. Please add [G]63.1038(c)(2) to the pumps in light liquid service recordkeeping citations.
    c. Please add 63.1039(b)(8) to the pumps in light liquid service and compressors reporting citations.

New Source Review Authorization References by Emissions Unit

1. BSRHSBH: Please remove this unit from the entire Title V Permit as requested in Revision #5 in the minor revision application received by TCEQ on 08/28/2023.

Federal Operating Permit Program
Form OP-2 – Application for Permit Revision/Renewal
Table 2

Date: **May 10, 2024**
Permit No.: **O2213**
Regulated Entity No.: **RN100225945**
Company Name: **The Dow Chemical Company**

Using the table below, provide a description of the revision.

Revision No.	Revision Code	New Unit	Unit/Group ID No.	Process Applicable Form	NSR Authorization	Description of Change and Provisional Terms and Conditions
1	MS-C	NO	OC6L8SC01	OP-SUMR	N/A	Please remove this unit from the entire Title V Permit; it has been removed.

Federal Operating Permit Program
Form OP-SUMR – Individual Unit Summary for Revisions
Table 1

Date	Permit No.	Regulated Entity No.
May 10, 2024	O2213	RN100225945

Unit/Process AI	Unit/Process Revision No.	Unit/Process ID No.	Unit/Process Applicable Form	Unit/Process Name/ Description	Unit/ Process CAM	Preconstruction Authorizations 30 TAC Chapter 116/ 30 TAC Chapter 106	Preconstruction Authorizations Title I
D	1	~~OC6L8SC01~~	~~OP-UA16~~	~~OC-602 DEGREASER~~		~~20432~~	~~PSDTX994M2~~ ~~N274~~

Applicable Requirements Summary

Unit Group Process ID No.	Unit Group Process Type	SOP Index No.	Pollutant	State Rule or Federal Regulation Name	Emission Limitation, Standard or Equipment Specification Citation	Textual Description (See Special Term and Condition 1.B.)	Monitoring And Testing Requirements	Recordkeeping Requirements (30 TAC § 122.144)	Reporting Requirements (30 TAC § 122.145)
BSRSRLR615	EU	63EEEE-01	112(B) HAPS	40 CFR Part 63, Subpart EEEE	§63.2343(c)	For each transfer rack subject to this subpart that loads organic liquids but is not subject to control based on the criteria specified in Table 2 to this subpart, items 7 through 10, you must comply with the requirements specified in §63.2343(c)(1)-(3).	None	§63.2343(c)(3)	[G]§63.2343(c)(1) [G]§63.2343(c)(2) §63.2382(d)(2)(viii) §63.2386(b) §63.2386(c)(10)(i) §63.2386(d)(3)(ii) §63.2386(d)(4)(ii) §63.2343(d)(2) §63.2343(d)(3) §63.2343(d)(4)
BSRSRST615	EU	63EEEE-01	112(B) HAPS	40 CFR Part 63, Subpart EEEE	§63.2343(b)	Except as specified in §63.2343(b)(4), for each storage tank subject to this subpart having a capacity of 18.9 cubic meters (5,000 gallons) or more that is not subject to control based on the criteria specified in Table 2 to this subpart, items 3 through 6 or in Table 2b to this subpart, items 1 through 3, you must comply with the requirements specified in §63.2343(b)(1) through (3).	None	§63.2343(b)(3)	[G]§63.2343(b)(1) [G]§63.2343(b)(2) §63.2343(d)(1) §63.2343(d)(2) §63.2386(b)–Table 11.1.a [G]§63.2386(b)(1) [G]§63.2386(b)(2) [G]§63.2386(c) §63.2386(d)(3)(i) §63.2386(d)(4)(i) §63.2386(f)
BSRSRST616	EU	63EEEE-01	112(B) HAPS	40 CFR Part 63, Subpart EEEE	§63.2343(b)	Except as specified in §63.2343(b)(4), for each storage tank subject to this subpart having a capacity of 18.9 cubic meters (5,000 gallons) or more that is not subject to control based on the criteria specified in Table 2 to this subpart, items 3 through 6 or in Table 2b to this subpart, items 1	None	§63.2343(b)(3)	[G]§63.2343(b)(1) [G]§63.2343(b)(2) §63.2343(d)(1) §63.2343(d)(2) §63.2386(b)–Table 11.1.a [G]§63.2386(b)(1) [G]§63.2386(b)(2) [G]§63.2386(c) §63.2386(d)(3)(i) §63.2386(d)(4)(i) §63.2386(f)

Applicable Requirements Summary

Unit Group Process ID No.	Unit Group Process Type	SOP Index No.	Pollutant	State Rule or Federal Regulation Name	Emission Limitation, Standard or Equipment Specification Citation	Textual Description (See Special Term and Condition 1.B.)	Monitoring And Testing Requirements	Recordkeeping Requirements (30 TAC § 122.144)	Reporting Requirements (30 TAC § 122.145)
						through 3, you must comply with the requirements specified in §63.2343(b)(1) through (3).			
OC6L8D97	EU	63EEEE-01	112(B) HAPS	40 CFR Part 63, Subpart EEEE	§63.2343(b)	Except as specified in §63.2343(b)(4), for each storage tank subject to this subpart having a capacity of 18.9 cubic meters (5,000 gallons) or more that is not subject to control based on the criteria specified in Table 2 to this subpart, items 3 through 6 or in Table 2b to this subpart, items 1 through 3, you must comply with the requirements specified in §63.2343(b)(1) through (3).	None	§63.2343(b)(3)	[G]§63.2343(b)(1) [G]§63.2343(b)(2) §63.2343(d)(1) §63.2343(d)(2) §63.2386(b)–Table 11.1.a [G]§63.2386(b)(1) [G]§63.2386(b)(2) [G]§63.2386(c) §63.2386(d)(3)(i) §63.2386(d)(4)(i) §63.2386(f)

November 9, 2023

E-MAIL RESPONSE
Texas Commission on Environmental Quality
ATTN: Ms. Paige Cartwright
Air Permits Division, MC-163
P.O. Box 13087
Austin, TX 78711-3087

The Dow Chemical Company, CN600356976
Hydrocarbons, RN100225945
Title V Operating Permit Application Update for Hydrocarbons, O2213
TCEQ Project Number: 35544

Dear Ms. Cartwright,

The Dow Chemical Company is submitting an application update for the Hydrocarbons Title V Permit Minor Revision application that was received by TCEQ on August 28, 2023 (Project #35544). Please see Form OP-2 for more information.

Please do not hesitate to contact me at (979) 238-1742 or cschmidt6@dow.com if you require additional information regarding this submittal.

Sincerely,

Crystal Schmidt

Crystal Schmidt
Air Permit Manager

enclosure

cc:
US EPA Region 6 R6AirPermitsTX@epa.gov
TCEQ Air Section Manager, Region 12
Brazoria County Health Department Director

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**November 9, 2023**
Permit No.:	**O2213**
Regulated Entity No.:	**RN100225945**
Company Name:	**The Dow Chemical Company**

I.Description of Revision

Revision No.	Revision Code	Unit/Group Process			NSR Authorization	Description of change and Provisional Terms and Conditions
		New Unit	ID No.	Applicable Form		
1	MS-C	NO	B72L7D4 OC6L8D433	OP-UA14	N/A	Please update the Exemption answer from "ATVP" to "NONE" on OP-UA14/Table 1 for 30 TAC Chapter 115, Water Separation applicability.
2	MS-C	NO	OC6L8D91	OP-UA3	N/A	Please remove the first operating scenario (R5112-01) from this storage tank on OP-UA3/Table 4 for 30 TAC Chapter 115, Storage of VOCs applicability; emissions will no longer be sent to the flares (OC2L8GF500 and OC6L8F1).
3	MS-C	NO	OC6L8D97	OP-UA3	N/A	Please add a second operating scenario (R5112-02) to this storage tank on OP-UA3/Table 4 for 30 TAC Chapter 115, Storage of VOCs applicability. This storage tank can now vent to the ten LHC-8 furnaces (OC6L8H1, OC6L8H2, OC6L8H3, OC6L8H4, OC6L8H5, OC6L8H6, OC6L8H7, OC6L8H8, OC6L8H9, and OC6L8H10) and the ten LHC-9 furnaces (OC6L9H120, OC6L9H121, OC6L9H122, OC6L9H123, OC6L9H124, OC6L9H125, OC6L9H126, OC6L9H127, OC6L9H128, and OC6L9H129), which can be found in another Dow Title V Permit, O3949.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Application for Permit Revision/Renewal
Form OP-2 – Table 2

Date:	**November 9, 2023**					
Permit No.:	**O2213**					
Regulated Entity No.:	**RN100225945**					
Company Name:	**The Dow Chemical Company**					
I.Description of Revision						
Revision No.	**Revision Code**	**Unit/Group Process**			**NSR Authorization**	**Description of change and Provisional Terms and Conditions**
		New Unit	**ID No.**	**Applicable Form**		
4	MS-C	NO	OC6L8RX1	OP-UA15	N/A	Please add a second operating scenario (R5121-02) to this process vent on OP-UA15/Table 2b for 30 TAC Chapter 115, Vent Gas Controls applicability. This process vent can now vent to the ten LHC-8 furnaces (OC6L8H1, OC6L8H2, OC6L8H3, OC6L8H4, OC6L8H5, OC6L8H6, OC6L8H7, OC6L8H8, OC6L8H9, and OC6L8H10) and the ten LHC-9 furnaces (OC6L9H120, OC6L9H121, OC6L9H122, OC6L9H123, OC6L9H124, OC6L9H125, OC6L9H126, OC6L9H127, OC6L9H128, and OC6L9H129), which can be found in another Dow Title V Permit, O3949.

TCEQ 10059 (v26, Revised 03/22) Form OP-2
This form is for use by facilities subject to air quality permit requirements and may be revised periodically.

Texas Commission on Environmental Quality
Federal Operating Permit Program
Individual Unit Summary for Revisions
Form OP-SUMR
Table 1

Date	Permit No.	Regulated Entity No.
November 9, 2023	O2213	RN100225945

Unit/Process						Preconstruction Authorizations	
AI	Revision No.	ID No.	Applicable Form	Name/ Description	CAM	30 TAC Chapter 116/ 30 TAC Chapter 106	Title I
	1	B72L7D4	OP-UA14	D-4 OIL/WATER SEPARATOR		161913	
	1	OC6L8D433	OP-UA14	D-433 OIL/WATER SEPARATOR		166672	
	2	OC6L8D91	OP-UA3	D-91 DIMETHYL DISULFIDE STOR. DRUM		20432	PSDTX994M2 N274
	3	OC6L8D97	OP-UA3	D-97 METHANOL STORAGE DRUM		20432	PSDTX994M2 N274
	4	OC6L8RX1	OP-UA15	PROCESS VENTS TO FLARES OC2F500 AND OC6F1		20432	PSDTX994M2 N274

TCEQ-10344 (APDG 5767v7, Revised 05/20) OP-SUMR
This form is for use by facilities subject to air quality permit requirements and may be revised periodically.

Storage Tank/Vessel Attributes – Form OP-UA3 (Page 4)
Federal Operating Permit Program

Table 4a: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B: Storage of Volatile Organic Compounds (VOCs)

Date	Permit No.	Regulated Entity No.
November 9, 2023	O2213	RN100225945

Unit ID No.	SOP/GOP Index No.	Alternate Control Requirement	ACR ID No.	Product Stored	Storage Capacity	Throughput	Potential to Emit	Uncontrolled Emissions
~~OC6L8D91~~	~~R5112-01~~	~~YES~~	~~09/21/2022~~	~~VOC1~~	~~A1K-25K~~			
OC6L8D91	R5112-02	NO		VOC1	A1K-25K			
OC6L8D97	R5112-01	YES	09/21/2022	VOC1	A1K-25K			
OC6L8D97	***R5112-02***	***NO***		***VOC1***	***A1K-25K***			

Storage Tank/Vessel Attributes – Form OP-UA3 (Page 5)
Federal Operating Permit Program

Table 4b: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B: Storage of Volatile Organic Compounds (VOCs)

Date	Permit No.	Regulated Entity No.
November 9, 2023	O2213	RN100225945

Unit ID No.	SOP/GOP Index No.	Construction Date	Tank Description	True Vapor Pressure	Primary Seal	Secondary Seal	Control Device Type	Control Device ID No.
OC6L8D91	R5112-02		VRS1	1.5+A			DIRINC	OC6L8TO
OC6L8D97	***R5112-02***		***VRS1***	***1.5+A***			***DIRINC***	***OC6L8H1, OC6L8H2 OC6L8H3, OC6L8H4 OC6L8H5, OC6L8H6 OC6L8H7, OC6L8H8 OC6L8H9, OC6L8H10 OC6L9H120 (O3949) OC6L9H121 (O3949) OC6L9H122 (O3949) OC6L9H123 (O3949) OC6L9H124 (O3949) OC6L9H125 (O3949) OC6L9H126 (O3949) OC6L9H127 (O3949) OC6L9H128 (O3949) OC6L9H129 (O3949)***

Form OP-UA14 – Water Separator Attributes – (Page 11)
Federal Operating Permit Program

Table 1: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115) Water Separation

Date	Permit No.	Regulated Entity No.
November 9, 2023	O2213	RN100225945

Unit ID No.	SOP/GOP Index No.	Alternate Control Requirement (ACR)	ACR ID No.	Exemption	Emission Control Option	Control Device	Control Device ID No.
B72L7D4	R5131-01	NO		***NONE*** ~~ATVP~~	***ENCL***		
OC6L8D433	R5131-01	NO		***NONE*** ~~ATVP~~	***ENCL***		

Emission Point/Stationary Vent/Distillation Operation Vent/Process Vent Attributes – Form OP-UA15 (Page 3)
Federal Operating Permit Program

Table 2a: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B: Vent Gas Control

Date	Permit No.	Regulated Entity No.
November 9, 2023	O2213	RN100225945

Emission Point ID No.	SOP/GOP Index No.	Chapter 115 Division	Combustion Exhaust	Vent Type	Total Uncontrolled VOC Weight	Combined 24-Hour VOC Weight	VOC Concentration	VOC Concentration or Emission Rate at Maximum Operating Conditions
OC6L8RX1	R5121-01	NO	NO	DISTOPER				
OC6L8RX1	***R5121-02***	***NO***	***NO***	***DISTOPER***				

Emission Point/Stationary Vent/Distillation Operation Vent/Process Vent Attributes – Form OP-UA15 (Page 4)
Federal Operating Permit Program

Table 2b: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B: Vent Gas Control

Date	Permit No.	Regulated Entity No.
November 9, 2023	O2213	RN100225945

Emission Point ID No.	SOP Index No.	Alternate Control Requirement	ACR ID No.	Control Device Type	Control Device ID No.
OC6L8RX1	R5121-01	ALTED	09/21/2022	FLARE	OC2L8GF500 OC6L8F1
OC6L8RX1	***R5121-02***	***NONE***		***DIRFLM***	***OC6L8H1, OC6L8H2 OC6L8H3, OC6L8H4 OC6L8H5, OC6L8H6 OC6L8H7, OC6L8H8 OC6L8H9, OC6L8H10 OC6L9H120 (O3949) OC6L9H121 (O3949) OC6L9H122 (O3949) OC6L9H123 (O3949) OC6L9H124 (O3949) OC6L9H125 (O3949) OC6L9H126 (O3949) OC6L9H127 (O3949) OC6L9H128 (O3949) OC6L9H129 (O3949)***

Emission Point/Stationary Vent/Distillation Operation Vent/Process Vent Attributes – Form OP-UA15 (Page 5)
Federal Operating Permit Program

Table 2c: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B: Vent Gas Control

Date	Permit No.	Regulated Entity No.
November 9, 2023	O2213	RN100225945

Emission Point ID No.	SOP Index No.	Total Design Capacity	Flow Rate/Concentration	40 CFR Part 60, Subpart NNN Requirements	40 CFR Part 60, Subpart RRR Requirements
OC6L8RX1	R5121-01	1100+	500+	NO	NO
OC6L8RX1	***R5121-02***	***1100+***	***500+***	***NO***	***NO***

Applicable Requirements Summary
Form OP-REQ3 (Page 1)
Federal Operating Permit Program
Table 1a: Additions

Date: November 9, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	**Unit/Group/Process**		**SOP/GOP Index No.**	**Pollutant**	**Applicable Regulatory Requirement**	
	ID No.	**Applicable Form**			**Name**	**Standard(s)**
1	B72L7D4	OP-UA14	R5131-01	VOC	30 TAC Chapter 115, Water Separation	***115.132(a)(1)*** ~~115.137(a)(2), [G]115.132~~
1	OC6L8D433	OP-UA14	R5131-01	VOC	30 TAC Chapter 115, Water Separation	***115.132(a)(1)*** ~~115.137(a)(2), [G]115.132~~
2	~~OC6L8D91~~	~~OP-UA3~~	~~R5112-01~~	~~VOC~~	~~30 TAC Chapter 115, Storage of VOCs~~	~~115.113, 115.910, 63.1103(e)(4)(xii)-(xiii)~~
	OC6L8D91	OP-UA3	R5112-02	VOC	30 TAC Chapter 115, Storage of VOCs	115.112(e)(1), 115.112(e)(3), (e)(3)(A), (e)(3)(A)(ii)
	OC6L8D97	OP-UA3	R5112-01	VOC	30 TAC Chapter 115, Storage of VOCs	115.113, 115.910, 63.1103(e)(4)(xii)-(xiii)
3	***OC6L8D97***	***OP-UA3***	***R5112-02***	***VOC***	***30 TAC Chapter 115, Storage of VOCs***	***115.112(e)(1), 115.112(e)(3), (e)(3)(A), (e)(3)(A)(ii)***
4	***OC6L8RX1***	***OP-UA15***	***R5121-02***	***VOC***	***30 TAC Chapter 115, Vent Gas Controls***	***115.122(a)(2), 115.121(a)(2), 115.122(a)(2)(B)***

Applicable Requirements Summary
Form OP-REQ3 (Page 2)
Federal Operating Permit Program
Table 1b: Additions

Date: November 9, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/ Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
1	B72L7D4	R5131-01	VOC	***[G]115.135(a), 115.136(a)(3)-(4)*** ~~[G]115.135, 115.136(a)(1), 115.136(a)(3)-(4)~~	***115.136(a)(3)-(4)*** ~~115.136(a)(1), (a)(3)-(4)~~	NONE
1	OC6L8D433	R5131-01	VOC	***[G]115.135(a), 115.136(a)(3)-(4)*** ~~[G]115.135, 115.136(a)(1), 115.136(a)(3)-(4)~~	***115.136(a)(3)-(4)*** ~~115.136(a)(1), (a)(3)-(4)~~	NONE
2	~~OC6L8D91~~	~~R5112-01~~	~~VOC~~	~~NONE~~	~~NONE~~	~~NONE~~
	OC6L8D91	R5112-02	VOC	115.115(a), (a)(1), 115.116(a)(1), [G]115.117	115.118(a)(4), (a)(4)(A), 115.118(a)(5), (a)(7)	NONE
	OC6L8D97	R5112-01	VOC	NONE	NONE	NONE
3	***OC6L8D97***	***R5112-02***	***VOC***	***115.115(a), (a)(1), 115.116(a)(1), [G]115.117***	***115.118(a)(4), (a)(4)(A), 115.118(a)(5), (a)(7)***	***NONE***
4	***OC6L8RX1***	***R5121-02***	***VOC***	***[G]115.125, 115.126(1), (1)(A), 115.126(1)(A)(i), (2)***	***115.126, (1), (1)(A), (1)(A)(i), (2)***	***NONE***

Major NSR Summary Table

Permit Number: 20432, PSDTX994M2, and N274					Issuance Date: November 9, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
Routine Emissions							
OC6S1	Pyrolysis Furnace F1	CO	28.51	-	3, 5, 13, 28, 31, 32	3, 5, 13, 28, 32, 33	3, 5, 28, 32
		NO_x	38.54	-			
		SO_2	0.54	-			
		PM	2.27	-			
		PM_{10}	2.27	-			
		$PM_{2.5}$	2.27	-			
		VOC (6)	2.08	-			
		Ethylene	0.27	-			
OC6S2	Pyrolysis Furnace F2	CO	28.51	-	3, 5, 13, 28, 31, 32	3, 5, 13, 28, 32, 33	3, 5, 28, 32
		NOx	38.54	-			
		SO2	0.54	-			
		PM	2.27	-			
		PM_{10}	2.27	-			
		$PM_{2.5}$	2.27	-			
		VOC (6)	2.08	-			
		Ethylene	0.27	-			

Major NSR Summary Table

Permit Number: 20432, PSDTX994M2, and N274					Issuance Date: November 9, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
OC6S3	Pyrolysis Furnace F3	CO	28.51	-	3, 5, 13, 28, 31, 32	3, 5, 13, 28, 32, 33	3, 5, 28, 32
		NOx	38.54	-			
		SO2	0.54	-			
		PM	2.27	-			
		PM_{10}	2.27	-			
		$PM_{2.5}$	2.27	-			
		VOC (6)	2.08	-			
		Ethylene	0.27	-			
OC6S4	Pyrolysis Furnace F4	CO	28.51	-	3, 5, 13, 28, 31, 32	3, 5, 13, 28, 32, 33	3, 5, 28, 32
		NOx	38.54	-			
		SO2	0.54	-			
		PM	2.27	-			
		PM_{10}	2.27	-			
		$PM_{2.5}$	2.27	-			
		VOC (6)	2.08	-			
		Ethylene	0.27	-			
OC6S5	Pyrolysis	CO	28.51	-	3, 5, 13, 28, 31, 32	3, 5, 13, 28, 32, 33	3, 5, 28, 32

Major NSR Summary Table

Permit Number: 20432, PSDTX994M2, and N274					Issuance Date: November 9, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
	Furnace F5	NOx	38.54	-			
		SO2	0.54	-			
		PM	2.27	-			
		PM_{10}	2.27	-			
		$PM_{2.5}$	2.27	-			
		VOC (6)	2.08	-			
		Ethylene	0.27	-			
OC6S6	Pyrolysis Furnace F6	CO	28.51	-	3, 5, 13, 28, 31, 32	3, 5, 13, 28, 32, 33	3, 5, 28, 32
		NOx	38.54	-			
		SO2	0.54	-			
		PM	2.27	-			
		PM_{10}	2.27	-			
		$PM_{2.5}$	2.27	-			
		VOC (6)	2.08	-			
		Ethylene	0.27	-			
OC6S7	Pyrolysis Furnace F7	CO	28.51	-	3, 5, 13, 28, 31, 32	3, 5, 13, 28, 32, 33	3, 5, 28, 32
		NOx	38.54	-			

Major NSR Summary Table

Permit Number: 20432, PSDTX994M2, and N274					Issuance Date: November 9, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
		SO2	0.54	-			
		PM	2.27	-			
		PM_{10}	2.27	-			
		$PM_{2.5}$	2.27	-			
		VOC (6)	2.08	-			
		Ethylene	0.27	-			
OC6S8	Pyrolysis Furnace F8	CO	25.89	-	3, 5, 13, 28, 31, 32	3, 5, 13, 28, 32, 33	3, 5, 28, 32
		NOx	22.75	-			
		SO2	0.49	-			
		PM	2.10	-			
		PM_{10}	2.10	-			
		$PM_{2.5}$	2.10	-			
		VOC (6)	1.89	-			
		Ethylene	0.25	-			
OC6S9	Pyrolysis Furnace F9	CO	29.59	-	3, 5, 13, 28, 31, 32	3, 5, 13, 28, 32, 33	3, 5, 28, 32
		NOx	26.00	-			
		SO2	0.56	-			

Major NSR Summary Table

Permit Number: 20432, PSDTX994M2, and N274					Issuance Date: November 9, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
		PM	2.08	-			
		PM_{10}	2.08	-			
		$PM_{2.5}$	2.08	-			
		VOC (6)	2.16	-			
		Ethylene	0.28	-			
OC6S10	Pyrolysis Furnace F10	CO	25.89	--	3, 5, 13, 28, 31, 32	3, 5, 13, 28, 32, 33	3, 5, 28, 32
		NOx	22.75	--			
		SO2	0.49	--			
		PM	2.10	--			
		PM_{10}	2.10	--			
		$PM_{2.5}$	2.10	--			
		VOC (6)	1.89	--			
		Ethylene	0.25	-			
OC6S1, OC6S2, OC6S3, OC6S4, OC6S5, OC6S6, OC6S7,	Furnace Source Group Cap (Does not include F-9 decoking)	CO	--	195.82	3, 5, 13, 28, 31, 32	3, 5, 13, 28, 32, 33	3, 5, 28, 32
		NO_x	--	857.60			
		SO_2	--	4.50			
		PM	--	43.86			

Major NSR Summary Table

Permit Number: 20432, PSDTX994M2, and N274					Issuance Date: November 9, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
OC6S8, OC6S9, and OC6S10		PM_{10}	--	43.86			
		$PM_{2.5}$	--	43.86			
		VOC (6)	--	60.77			
		Ethylene	-	2.07			
OC6F902	FS-902 Tank Farm Vent Flare	CO	15.29	47.89	3, , 5, 13, 23, 24	3, , 5, 13, 23, 24, 33	3, 5
		NO_x	1.78	5.58			
		SO_2	0.39	0.05			
		VOC	1.64	5.15			
OC6F1	FS-1 Elevated Flare (8)	CO	272.27	-	3, , 5, 13, 23, 24	3, , 5, 13, 23, 24, 33	3, 5
		NO_x	53.43	-			
		SO_2	11.46	-			
		VOC (6)	148.14	-			
		Ethylene	143.90	-			
		Propylene	138.12	-			
OC6F1018	FS-1018 Vent Flare #1	CO	37.53	19.97	3, 4, 5, 13, 23, 24	3, 4, 5, 13, 23, 24, 33	3, 4, 5
		NO_x	7.37	3.92			
		SO_2	.027	0.07			

Major NSR Summary Table

Permit Number: 20432, PSDTX994M2, and N274					Issuance Date: November 9, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
		VOC (6)	17.55	2.44			
		Ethylene	2.06	0.63			
		Propylene	2.07	0.29			
OC2F500	GF-500 Multipoint Ground Flare (8)	CO	117.91	-	3, , 5, 13, 23, 24	3, , 5, 13, 23, 24, 33	3, 5
		NO_x	23.14	-			
		SO_2	10.68	-			
		VOC (6)	145.16	-			
		Ethylene	143.90	-			
		Propylene	138.12	-			
OC6F1, OC2F500	Flare Source Group Cap (7)	CO	-	187.47	3, 4, 5, 13, 22, 23, 24,	3, 4, 5, 13, 22, 23, 24, , 33	3, 4, 5,
		NO_x (NA)	-	36.79			
		SO_2	-	0.92			
		VOC (6)	-	25.18			
		Ethylene	-	8.65			
		Propylene	-	5.33			
OC6S2000	FX-2000 Thermal Oxidizer (8)	CO	1.00	4.38	3, 4, 5, 13, 22, , 24, 31, 32	3, 4, 5, 13, 22, 23, 24, 32, 33	3, 4, 5, 32
		NO_x	1.50	6.57			

Major NSR Summary Table

Permit Number: 20432, PSDTX994M2, and N274					Issuance Date: November 9, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
		SO_2	10.59	0.43			
		PM	0.07	0.33			
		PM_{10}	0.07	0.33			
		$PM_{2.5}$	0.07	0.33			
		VOC (6)	0.54	0.93			
		Ethylene	0.20	0.39			
		Propylene	0.20	0.20			
OC6ST1101A	Storage Tank V-1101A	VOC	3.61	-	3, 14, 43	3, 14, 33, 43, 44	3, 14
OC6ST1101B	Storage Tank V-1101B	VOC	3.61	-	3, 14, 43	3, 14, 33, 43, 44	3, 14
OC6ST1901	Storage Tank V-1901	VOC	2.25	-	3, 14, 43	3, 14, 33, 43, 44	3, 14
OC6ST1905	Storage Tank V-1905	VOC	1.84	-	3, 4, 14, 43	3, 4, 14, 33, 43, 44	3, 4, 14
OC6ST1101A, OC6ST1101B, OC6ST1901, OC6ST1905	Storage Tanks Source Group Cap	VOC	-	23.50	3, 4, 14, 43	3, 4, 14, 33, 43, 44	3, 4, 14
OC6V1005	Storage Tank V-1005	VOC	0.04	<0.01	3, 4	3, 4, 33	3, 4
OC6CT800	CT-800	VOC	4.54	15.90	5, 26, 27	5, 27, 33	5, 27

Major NSR Summary Table

Permit Number: 20432, PSDTX994M2, and N274					Issuance Date: November 9, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
	Cooling Tower	PM	3.65	6.74			
		PM_{10}	0.57	2.48			
		$PM_{2.5}$	<0.01	0.03			
OC6FU01	Process Area Fugitives (5)	VOC	9.05	-	3, 4, 5, 18, 19, 20, 21	3, 4, 5, 19, 21, 33	3, 4, 5, 19
		Cl_2	<0.01	-			
		HCl	<0.01	-			
OC6FU11	South Tank Farm #1 Fugitives (5)	VOC	0.65	-	3, 4, 5, 18, 19, 20, 21	3, 4, 5, 19, 21, 33	3, 4, 5, 19
OC6FU01, OC6FU11,	Fugitive Source Group Cap (5)	VOC	-	42.46	3, 4, 5, 17, 18, 19, 20, 21	3, 4, 5, 19, 21, 33	3, 4, 5, 19
		Cl_2	-	0.04			
		HCl	-	0.01			
OC6GE03	Emergency Diesel Generator	CO	2.34	0.12		33	
		NO_x	10.85	0.54			
		SO_2	0.72	0.04			
		PM	0.77	0.04			

Major NSR Summary Table

Permit Number: 20432, PSDTX994M2, and N274					Issuance Date: November 9, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
		PM_{10}	0.77	0.04			
		$PM_{2.5}$	0.77	0.04			
		VOC	0.86	0.04			
OC6SC01	OC-602 Degreasing	VOC	0.31	1.34		33	
OC6V1	Decoking vent F-9	CO	94.50	2.55		33	
		PM	21.00	0.54			
		PM_{10}	21.00	0.54			
		$PM_{2.5}$	21.00	0.54			
Furnace Source Group Cap, Flare Source Group Cap, Storage Tanks Source Group Cap, Fugitive Source Group Cap, OC6F902, OC6F1018, OC6S2000,	Routine Emissions Compliance Cap	CO	396.94	263.20		33	
		NO_x	277.82	877.40			
		SO_2	7.20	5.17			
		PM	48.23	50.27			
		PM_{10}	48.23	50.27			
		$PM_{2.5}$	48.23	50.27			

Major NSR Summary Table

Permit Number: 20432, PSDTX994M2, and N274					Issuance Date: November 9, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
OC6V1005, OC6CT800, OC6GE03, OC6SC01 and OC6V1		VOC	66.74	129.60			
		Cl_2	0.01	0.04			
		HCl	0.01	0.05			
Maintenance, Startup, and Shutdown Emissions							
OC6S1	Pyrolysis Furnace F1 MSS	CO	224.42	-			-
OC6S2	Pyrolysis Furnace F2 MSS	CO	224.42	-			-
OC6S3	Pyrolysis Furnace F3 MSS	CO	224.42	-			-
OC6S4	Pyrolysis Furnace F4 MSS	CO	224.42	-			-
OC6S5	Pyrolysis Furnace F5 MSS	CO	224.42	-			-
OC6S6	Pyrolysis Furnace F6 MSS	CO	224.42	-			-
OC6S7	Pyrolysis Furnace F7 MSS	CO	224.42	-			-

Major NSR Summary Table

Permit Number: 20432, PSDTX994M2, and N274					Issuance Date: November 9, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
OC6S8	Pyrolysis Furnace F8 MSS	CO	224.42	-			-
OC6S9	Pyrolysis Furnace F9 MSS	CO	224.42	-			-
OC6S10	Pyrolysis Furnace F10 MSS	CO	224.42	-			-
OC6F1	Flare MSS (FS-1)	CO	4927.07	-	23, , 46	23, 39, 40, 41, 46	-
		NO_x	956.35	-			
		SO_2	0.45	-			
		VOC (6)	8467.00	-			
		Ethylene	3120.00	-			
		Propylene	1200.00	-			
OC2F500	Flare MSS (GF-500)	CO	1168.39	-	23, 39, 40, 41, 46	23, 39, 40, 41, 46	-
		NO_x	225.75	-			
		SO_2	0.45	-			

Major NSR Summary Table

Permit Number: 20432, PSDTX994M2, and N274					Issuance Date: November 9, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
		VOC (6)	1432.05	-			
		Ethylene	834.95	-			
		Propylene	660.00	-			
OC6F1, OC2F500	Flare MSS Emissions Annual Cap	CO	-	78.90	23, 39, 40, 41, 46	23, 39, 40, 41, 46	-
		NO_x	-	15.32			
		SO_2	-	<0.01			
		VOC (6)	-	74.74			
		Ethylene	-	37.11			
		Propylene	-	22.15			
OC6S9	Furnace Purge, H-9	CO	0.01	0.01			-
		VOC	0.04	0.01			
OC6MEFU1	Attachment A Activities	VOC	0.09	0.01	39, 40, 41, 42	39, 40, 41, 42	-
	Attachment B Activities	VOC	3.65	0.11			
	Equipment Opening (Attachment C)	VOC	283.73	0.49			

Major NSR Summary Table

Permit Number: 20432, PSDTX994M2, and N274					Issuance Date: November 9, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
OC6TOT	Portable Thermal Oxidizer	CO	1.00	0.20	39, , 46	39, 40, 41, 46	-
		NO_x	1.20	0.24			
		PM	0.08	0.02			
		PM_{10}	0.08	0.02			
		$PM_{2.5}$	0.08	0.02			
		SO_2	0.07	0.04			
		VOC	1.64	0.12			

(1) Emission point identification - either specific equipment designation or emission point number from plot plan.
(2) Specific point source name. For fugitive sources, use area name or fugitive source name.
(3) VOC - volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1
NO_x - total oxides of nitrogen
SO_2 - sulfur dioxide
PM - total particulate matter, suspended in the atmosphere, including PM_{10} and $PM_{2.5}$, as represented
PM10 - total particulate matter equal to or less than 10 microns in diameter, including PM2.5, as represented
PM2.5 - particulate matter equal to or less than 2.5 microns in diameter
CO carbon monoxide
Cl_2 - Chlorine
HCl - Hydrogen Chloride
(4) Compliance with annual emission limits (tons per year) is based on a 12-month rolling period.
(5) Emission rate is an estimate and is enforceable through compliance with the applicable special condition(s) and permit application representations.
(6) VOC emission rates include the ethylene and/or propylene HRVOC emissions.
(7) The flare emissions authorized through this Permit are only the emissions from The Dow Chemical Company's Light Hydrocarbons (LHC)-8 Unit. Emissions resulting from the waste stream from Braskem America, Inc.'s NSR Permit 37884 controlled by any of the flares are authorized and reported by Braskem America, Inc.
(8) The flare emissions authorized under project 342900 are in effect until the implementation of the Flare Gas Recovery project. Once this project is implemented, these emissions

(DMDS emissions from D-91) should only be routed to Thermal Oxidizer (EPN OC6S2000).

Major NSR Summary Table

Permit Number: 144784 and PSDTX994M1					Issuance Date: April 4, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
B72SH1	Pyrolysis Furnace H1	CO	45.27	-	3, 5, 11, 18, 20	3, 5, 9, 11, 18, 20,	3, 5, 18, 20,
		CO (Decoking)	181.08	-			
		NO_x	30.86	-			
		SO_2	0.72	-			
		SO_2 (Decoking)	65.90	-			
		PM	3.83	-			
		PM_{10}	3.83	-			
		$PM_{2.5}$	3.83	-			
		VOC	2.77	-			
		Ethylene	0.80	-			
B72SH2	Pyrolysis Furnace H_2	CO	45.27	-	3, 5, 11, 18, 20	3, 5, 9, 11, 18, 20,	3, 5, 18, 20,
		CO (Decoking)	181.08	-			
		NO_x	30.86	-			
		SO_2	0.72	-			
		SO_2 (Decoking)	65.90	-			

Major NSR Summary Table

Permit Number: 144784 and PSDTX994M1					Issuance Date: April 4, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
		PM	3.83	-			
		PM_{10}	3.83	-			
		$PM_{2.5}$	3.83	-			
		VOC	2.77	-			
		Ethylene	0.80	-			
B72SH3	Pyrolysis Furnace H3	CO	45.27	-	3, 5, 11, 18, 20	3, 5, 9, 11, 18, 20,	3, 5, 18, 20,
		CO (Decoking)	181.08	-			
		NO_x	30.86	-			
		SO_2	0.72	-			
		SO_2 (Decoking)	65.90	-			
		PM	3.83	-			
		PM_{10}	3.83	-			
		$PM_{2.5}$	3.83	-			
		VOC	2.77	-			
		Ethylene	0.80	-			
B72SH4	Pyrolysis Furnace	CO	45.27	-	3, 5, 11, 18, 20	3, 5, 9, 11, 18, 20,	3, 5, 18, 20,

Major NSR Summary Table

Permit Number: 144784 and PSDTX994M1					Issuance Date: April 4, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
	H4	CO (Decoking)	181.08	-			
		NO_x	30.86	-			
		SO_2	0.72	-			
		SO_2 (Decoking)	65.90	-			
		PM	3.83	-			
		PM_{10}	3.83	-			
		$PM_{2.5}$	3.83	-			
		VOC	2.77	-			
		Ethylene	0.80	-			
B72SH5	Pyrolysis Furnace H5	CO	45.27	-	3, 5, 11, 18, 20	3, 5, 9, 11, 18, 20,	3, 5, 18, 20,
		CO (Decoking)	181.08	-			
		NO_x	30.86	-			
		SO_2	0.72	-			
		SO_2 (Decoking)	65.90	-			
		PM	3.83	-			
		PM_{10}	3.83	-			

Major NSR Summary Table

Permit Number: 144784 and PSDTX994M1					Issuance Date: April 4, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
		$PM_{2.5}$	3.83	-			
		VOC	2.77	-			
		Ethylene	0.80	-			
B72SH1, B72SH2, B72SH3, B72SH4, B72SH5	Furnace Source Group Cap	CO	-	158.65	11, 18, 20	11, 18, 20	18, 20
		NO_x	-	469.26			
		SO_2	-	2.59			
		PM	-	58.63			
		PM_{10}	-	58.63			
		$PM_{2.5}$	-	58.63			
		VOC	-	49.36			
		Ethylene	-	6.93			
B72CT1	CT-1 Cooling Tower	VOC	3.25	13.71	5, 13	5, 13	5
		Ethylene	2.05	4.51			
		Propylene	3.25	11.03			
		PM	4.02	5.87			
		PM_{10}	0.69	3.03			

Major NSR Summary Table

Permit Number: 144784 and PSDTX994M1					Issuance Date: April 4, 2023		
Emission Point No. (1)	**Source Name (2)**	**Air Contaminant Name (3)**	**Emission Rates**		**Monitoring and Testing Requirements**	**Recordkeeping Requirements**	**Reporting Requirements**
			lbs/hour	**TPY (4)**	**Special Condition/Application Information**	**Special Condition/Application Information**	**Special Condition/Application Information**
		$PM_{2.5}$	<0.01	0.03			
B72FU1	B-7200 Process Area Fugitives (5)	VOC	11.45	49.99	3, 4, 5, 14, 15, 16. 17	3, 4, 5, 14, 17	3, 4, 5, 14
		Ethylene	6.20	26.99			
		Propylene	2.45	10.71			
		Cl_2	0.01	0.05			
		HCl	0.08	0.35			
B72GE01	Emergency Generator	CO	1.14	0.05		10	
		NO_x	2.87	0.14			
		SO_2	0.35	0.02			
		PM	0.37	0.02			
		PM_{10}	0.37	0.02			
		$PM_{2.5}$	0.37	0.02			
		VOC	0.42	0.02			
B72SC02	B-7202 Degreasing	VOC	0.31	1.34			
B72SH1, B72SH2, B72SH3,	Compliance Cap (includes Furnaces, Cooling	CO	227.49	150.17			
		NOx	157.15	467.80			

Major NSR Summary Table

Permit Number: 144784 and PSDTX994M1					Issuance Date: April 4, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
B72SH4, B72SH5, B72CT1, B72FU1, B72GE01, B72SC02	Tower, Fugitives, Emergency Degreaser and Degreasing)	SO2	95.17	7.64			
		PM	22.05	73.62			
		PM10	22.05	73.62			
		PM2.5	22.05	73.62			
		VOC	17.92	73.53			
		Cl2	0.01	0.05			
		HCl	0.08	0.35			
B72SH1	Furnace Purge (MSS), H-1	VOC	0.01	<0.01		21	
B72SH2	Furnace Purge (MSS), H-2	VOC	0.01	<0.01		21	
B72SH3	Furnace Purge (MSS), H-3	VOC	0.01	<0.01		21	
B72SH4	Furnace Purge (MSS), H-4	VOC	0.01	<0.01		21	
B72SH5	Furnace Purge (MSS), H-5	VOC	0.01	<0.01		21	
B60F3	FS-1 Large Elevated Flare (Routine Emissions)	CO	207.59	178.22	3, 4, 5, 11, 12	3, 4, 5, 12	3, 4, 5
		NO_x	40.74	34.98			
		SO_2	0.60	0.25			

Major NSR Summary Table

Permit Number: 144784 and PSDTX994M1					Issuance Date: April 4, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
		VOC	202.29	29.98			
		Ethylene	95.00	13.14			
		Propylene	75.00	6.57			
	FS-1 Large Elevated Flare (MSS Emissions)	CO	2602.53	100.10	3, 4, 5, 11, 12	3, 4, 5, 12	3, 4, 5
		NO_x	360.30	15.90			
		SO_2	6.40	0.20			
		VOC	2168.77	76.93			
		Ethylene	1820.00	30.88			
		Propylene	1284.28	20.46			
B72F1	FS-2 Small Elevated Flare (operating as unassisted) B72F1	CO	8.73	38.25	3, 4, 5, 11, 12	3, 4, 5, 12	3, 4, 5
		NO_x	1.02	4.46			
		SO_2	0.09	0.08			
		VOC	0.21	0.88			
B72MEFU1	Attachment A	VOC	2.06	0.23	22, 23	21, 22, 23	
	Attachments B	VOC	3.65	0.11			
	Equipment Opening (MSS)	VOC	271.11	0.27			

Major NSR Summary Table

Permit Number: 144784 and PSDTX994M1					Issuance Date: April 4, 2023		
Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates		Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
			lbs/hour	TPY (4)	Special Condition/Application Information	Special Condition/Application Information	Special Condition/Application Information
	Attachments C						

(1) Emission point identification - either specific equipment designation or emission point number from plot plan.
(2) Specific point source name. For fugitive sources, use area name or fugitive source name.
(3) VOC volatile organic compounds as defined in Title 30 Texas Administrative Code § 101.1
CO carbon monoxide
NO_x total oxides of nitrogen
SO_2 sulfur dioxide
PM total particulate matter, suspended in the atmosphere, including PM_{10} and $PM_{2.5}$, as represented
PM_{10} total particulate matter equal to or less than 10 microns in diameter, including $PM_{2.5}$, as represented
$PM_{2.5}$ particulate matter equal to or less than 2.5 microns in diameter
Cl_2 chlorine
HCl hydrogen chloride
(4) Compliance with annual emission limits (tons per year) is based on a 12-month rolling period.
(5) Emission rate is an estimate and is enforceable through compliance with the applicable special condition(s) and permit application representations

Miscellaneous Unit Attributes – Form OP-UA1 (Page 1)
Federal Operating Permit Program

Date	Permit No.	Regulated Entity No.
August 28, 2023	O2213	RN100225945

Unit ID No.	SOP/GOP Index No.	Unit Type	Date Constructed/Placed in Service	Functionally Identical Replacement	Maximum Rated Capacity	Technical Information and Unit Description
B60L7FU1	63YY-01	EP				Please add 40 CFR Part 63, Subpart YY ***low-level applicability*** ~~general high-level applicability~~ to this unit. ***Please see Form OP-REQ3 for detailed citations.***
B72L7FU1	63YY-01	EP				Please add 40 CFR Part 63, Subpart YY ***low-level applicability*** ~~general high-level applicability~~ to this unit. ***Please see Form OP-REQ3 for detailed citations.***
BSRSRLR615	***63EEEE-01***	***EU***				***Please add 40 CFR Part 63, Subpart EEEE (OLD MACT) low-level applicability to this unit. Please see Form OP-REQ3 for detailed citations.***
BSRSRST615	63EEEE-01	EU				Please add 40 CFR Part 63, Subpart EEEE (OLD MACT) ***low-level applicability*** ~~general high-level applicability~~ to this unit. ***Please see Form OP-REQ3 for detailed citations.***
BSRSRST616	63EEEE-01	EU				Please add 40 CFR Part 63, Subpart EEEE (OLD MACT) ***low-level applicability*** ~~general high-level applicability~~ to this unit. ***Please see Form OP-REQ3 for detailed citations.***
GRP1L8PF	***63YY-01***	***EU***				***Please add 40 CFR Part 63, Subpart YY low-level applicability to this unit. Please see Form OP-REQ3 for detailed citations.***
GRP2L8PF	***63YY-01***	***EU***				***Please add 40 CFR Part 63, Subpart YY low-level applicability to this unit. Please see Form OP-REQ3 for detailed citations.***

Miscellaneous Unit Attributes – Form OP-UA1 (Page 1)
Federal Operating Permit Program

Date	Permit No.	Regulated Entity No.
August 28, 2023	O2213	RN100225945

Unit ID No.	SOP/GOP Index No.	Unit Type	Date Constructed/Placed in Service	Functionally Identical Replacement	Maximum Rated Capacity	Technical Information and Unit Description
OC2L8GF500	***63YY-01***	***EU***				***Please add 40 CFR Part 63, Subpart YY low-level applicability to this unit. Please see Form OP-REQ3 for detailed citations.***
OC6L8D97	63EEEE-01	EU				Please add 40 CFR Part 63, Subpart EEEE (OLD MACT) ***low-level applicability*** ~~general high-level applicability~~ to this unit. ***Please see Form OP-REQ3 for detailed citations.***
OC6L8F1	***63YY-01***	***EU***				***Please add 40 CFR Part 63, Subpart YY low-level applicability to this unit. Please see Form OP-REQ3 for detailed citations.***
OC6L8F1018	***63YY-01***	***EU***				***Please add 40 CFR Part 63, Subpart YY low-level applicability to this unit. Please see Form OP-REQ3 for detailed citations.***
OC6L8FU01	63YY-01	EP				Please add 40 CFR Part 63, Subpart YY ***low-level applicability*** ~~general high-level applicability~~ to this unit. ***Please see Form OP-REQ3 for detailed citations.***
OC6L8FU11	63YY-01	EP				Please add 40 CFR Part 63, Subpart YY ***low-level applicability*** ~~general high-level applicability~~ to this unit. ***Please see Form OP-REQ3 for detailed citations.***
OC6L8ST01A	***63YY-01***	***EU***				***Please add 40 CFR Part 63, Subparts YY and WW low-level applicability to this unit. Please see Form OP-REQ3 for detailed citations.***
OC6L8ST01B	***63YY-01***	***EU***				***Please add 40 CFR Part 63, Subparts YY and WW low-level applicability to this unit. Please see Form OP-REQ3 for detailed citations.***

Miscellaneous Unit Attributes – Form OP-UA1 (Page 1)
Federal Operating Permit Program

Date	Permit No.	Regulated Entity No.
August 28, 2023	O2213	RN100225945

Unit ID No.	SOP/GOP Index No.	Unit Type	Date Constructed/Placed in Service	Functionally Identical Replacement	Maximum Rated Capacity	Technical Information and Unit Description
OC6L8ST901	***63YY-01***	***EU***				***Please add 40 CFR Part 63, Subparts YY and WW low-level applicability to this unit. Please see Form OP-REQ3 for detailed citations.***
OC6L8V1905	***63YY-01***	***EU***				***Please add 40 CFR Part 63, Subparts YY and WW low-level applicability to this unit. Please see Form OP-REQ3 for detailed citations.***

TCEQ 10044 (APDG 5756v2 Revised08/21) OP-UA1
This form for use by facilities subject to air quality permit requirements and may be revised periodically. (Title V Release 10/98)

Storage Tank/Vessel Attributes – Form OP-UA3 (Page 4)
Federal Operating Permit Program

Table 4a: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B: Storage of Volatile Organic Compounds (VOCs)

Date	Permit No.	Regulated Entity No.
August 28, 2023	O2213	RN100225945

Unit ID No.	SOP/GOP Index No.	Alternate Control Requirement	ACR ID No.	Product Stored	Storage Capacity	Throughput	Potential to Emit	Uncontrolled Emissions
OC6L8D91	R5112-01	***YES*** ~~NO~~	***09/21/2022***	~~VOC1~~	~~A1K-25K~~			
OC6L8D91	R5112-02	NO		VOC1	A1K-25K			
OC6L8D97	R5112-01	***YES*** ~~NO~~	***09/21/2022***	~~VOC1~~	~~A1K-25K~~			
~~OC6L8D97~~	~~R5112-02~~	~~NO~~		~~VOC1~~	~~A1K-25K~~			
OC6L8ST916	R5112-01	***YES*** ~~NO~~	***09/21/2022***	~~VOC1~~	~~A40K+~~			

Storage Tank/Vessel Attributes – Form OP-UA3 (Page 5)
Federal Operating Permit Program

Table 4b: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B: Storage of Volatile Organic Compounds (VOCs)

Date	Permit No.	Regulated Entity No.
August 28, 2023	O2213	RN100225945

Unit ID No.	SOP/GOP Index No.	Construction Date	Tank Description	True Vapor Pressure	Primary Seal	Secondary Seal	Control Device Type	Control Device ID No.
~~OC6L8D91~~	~~R5112-01~~		~~VRS1~~	~~1.5+A~~			~~FLARE~~	~~OC6L8F1~~ ~~OC2L8GF500~~ ~~OC6L8F1000~~
OC6L8D91	R5112-02		VRS1	1.5+A			***DIRINC*** ~~FLARE~~	***OC6L8TO*** ~~OC6L8F1~~
~~OC6L8D97~~	~~R5112-01~~		~~VRS1~~	~~1.5+A~~			~~FLARE~~	~~OC6L8F1~~ ~~OC2L8GF500~~ ~~OC6L8F1000~~
~~OC6L8D97~~	~~R5112-02~~		~~VRS1~~	~~1.5+A~~			~~FLARE~~	~~OC6L8F1~~
~~OC6L8ST916~~	~~R5112-01~~		~~VRS1~~	~~1.5+A~~			~~FLARE~~	~~OC6L8F902~~

TCEQ - 10008 (APD-ID37v3, Revised 11/22) OP-UA3
This form is for use by facilities subject to air quality permit requirements and may be revised periodically. (Title V Release 11/22)

Flare Attributes – Form OP-UA7 (Page 4)
Federal Operating Permit Program

Table 4: Title 40 Code of Federal Regulations Part 63
Subpart A: General Provisions of National Emission Standards for Hazardous Air Pollutants for Source Categories

Date	Permit No.	Regulated Entity No.
August 28, 2023	O2213	RN100225945

Unit ID No.	SOP/GOP Index No.	Required Under 40 CFR Part 63	Heat Content Specification	Flare Assist Type	Flare Exit Velocity	Heating Value of Gas
OC2L8GF500	*63A-01*	*YES*	*YES*	*STEAM*	*60-*	
OC6L8F1	*63A-01*	*YES*	*YES*	*STEAM*	*60-*	
OC6L8F1018	*63A-01*	*YES*	*YES*	*STEAM*	*60-*	

TCEQ - 10022 (APDG 5070v12, Revised 11/21) OP-UA7
This form is for use by facilities subject to air quality permit requirements and may be revised periodically. (Title V Release 11/21)

Emission Point/Stationary Vent/Distillation Operation Vent/Process Vent Attributes – Form OP-UA15 (Page 3)
Federal Operating Permit Program

Table 2a: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B: Vent Gas Control

Date	Permit No.:	Regulated Entity No.
August 28, 2023	O2213	RN100225945

Emission Point ID No.	SOP/GOP Index No.	Chapter 115 Division	Combustion Exhaust	Vent Type	Total Uncontrolled VOC Weight	Combined 24-Hour VOC Weight	VOC Concentration	VOC Concentration or Emission Rate at Maximum Operating Conditions
OC6L8RX1	R5121-01	NO	NO	DISTOPER				
~~OC6L8RX1~~	~~R5121-02~~	~~NO~~	~~NO~~	~~DISTOPER~~				
OC6L8RX2	R5121-01	NO	NO	DISTOPER				
OC6L8RX2	R5121-02	NO	NO	DISTOPER				
OC6L8RX3	R5121-01	NO	NO	DISTOPER				
OC6L8RX4	R5121-01	NO	NO	REGVAPPL				

Emission Point/Stationary Vent/Distillation Operation Vent/Process Vent Attributes – Form OP-UA15 (Page 4)
Federal Operating Permit Program

Table 2b: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B: Vent Gas Control

Date	Permit No.:	Regulated Entity No.
August 28, 2023	O2213	RN100225945

Emission Point ID No.	SOP Index No.	Alternate Control Requirement	ACR ID No.	Control Device Type	Control Device ID No.
OC6L8RX1	R5121-01	***ALTED*** ~~NONE~~	***09/21/2022***	FLARE	***OC2L8GF500*** ***OC6L8F1*** ~~OC6L8F1018~~
~~OC6L8RX1~~	~~R5121-02~~	~~NONE~~	~~***09/21/2022***~~	~~FLARE~~	~~OC6L8F1~~
OC6L8RX2	R5121-01	***ALTED*** ~~NONE~~	***09/21/2022***	DIRFLM	***OC6L8TO*** ~~OC6L8F1018~~
OC6L8RX2	R5121-02	***ALTED*** ~~NONE~~	***09/21/2022***	FLARE	***OC6L8F1018*** ~~OC6L8F902~~
OC6L8RX3	R5121-01	***ALTED*** ~~NONE~~	***09/21/2022***	FLARE	OC6L8F902
OC6L8RX4	R5121-01	***ALTED*** ~~NONE~~	***09/21/2022***	FLARE	OC6L8F1018

Emission Point/Stationary Vent/Distillation Operation Vent/Process Vent Attributes – Form OP-UA15 (Page 4)
Federal Operating Permit Program

Table 2b: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B: Vent Gas Control

Date	Permit No.:	Regulated Entity No.
August 28, 2023	O2213	RN100225945

Emission Point ID No.	SOP Index No.	Total Design Capacity	Flow Rate/Concentration	40 CFR Part 60, Subpart NNN Requirements	40 CFR Part 60, Subpart RRR Requirements
OC6L8RX1	*R5121-01*	*1100+*	*500+*	*NO*	*NO*
OC6L8RX2	*R5121-01*	*1100+*	*500+*	*NO*	*NO*
OC6L8RX2	*R5121-02*	*1100+*	*500+*	*NO*	*NO*
OC6L8RX3	*R5121-01*	*1100+*	*500+*	*NO*	*NO*

TCEQ - 10046 (APD-ID50v2, Revised 11/22) OP-UA15
This form is for use by facilities subject to air quality permit requirements and may be revised periodically. (Title V Release 11/22)

Wastewater Unit Attributes – Form OP-UA19 (Page 1)
Federal Operating Permit Program

Table 1a: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B: Industrial Wastewater

Date	Permit No.:	Regulated Entity No.
August 28, 2023	O2213	RN100225945

Unit ID No.	SOP Index No.	Petroleum Refinery	Alternate Control Requirement	ACR ID No.	90% Overall Control Option	Safety Hazard Exemption	Safety Hazard Exemption ID No.
OC6L8D1181	R5140-02	NO	***YES*** ~~NO~~	***09/21/2022***	~~NO~~	~~NO~~	
OC6L8D169	R5140-02	NO	***YES*** ~~NO~~	***09/21/2022***	~~NO~~	~~NO~~	
OC6L8D280	R5140-02	NO	***YES*** ~~NO~~	***09/21/2022***	~~NO~~	~~NO~~	

Wastewater Unit Attributes – Form OP-UA19 (Page 2)
Federal Operating Permit Program

Table 1b: Title 30 Texas Administrative Code Chapter 115 (30 TAC Chapter 115)
Subchapter B: Industrial Wastewater

Date	Permit No.:	Regulated Entity No.
August 28, 2023	O2213	RN100225945

Unit ID No.	SOP Index No.	Wastewater Component Type	Roof or Seal Type	Control Devices	Control Device ID No.	Monitoring Type
~~OC6L8D1181~~	~~R5140-02~~	~~OTHER~~	~~NONE~~	~~FLARE~~	~~OC6L8F1018~~	~~NO~~
~~OC6L8D169~~	~~R5140-02~~	~~OTHER~~	~~NONE~~	~~FLARE~~	~~OC6L8F1018~~	~~NO~~
~~OC6L8D280~~	~~R5140-02~~	~~OTHER~~	~~NONE~~	~~FLARE~~	~~OC6L8F1018~~	~~NO~~

TCEQ - 10034 (APDG 5808v4, Revised 12/15) OP-UA19
This form is for use by facilities subject to air quality permit requirements and may be revised periodically. (Title V Release 12/00)

Federal Operating Permit Program
Individual Unit Summary for Revisions – Form OP-SUMR
Table 1

Date	Permit No.	Regulated Entity No.
August 28, 2023	O2213	RN100225945

Unit/Process AI	Unit/Process Revision No.	Unit/Process ID No.	Unit/Process Applicable Form	Unit/Process Name/ Description	Unit/Process CAM	Preconstruction Authorizations 30 TAC Chapter 116/ 30 TAC Chapter 106	Preconstruction Authorizations Title I
	1	B60L7F1	OP-UA7 OP-UA15	FLARE FS-1		114784	PSDTX994M1
	11	B60L7FU1	OP-UA1	FUGITIVES AREA B-6000		114784	PSDTX994M1
	11	B72L7FU1	OP-UA1 OP-UA12	B-7200 FUGITIVE AREA		114784 106.261/11/01/2003 [152308, 154686, 156270, 157613, 158547, 159113, 160358, 161923, 162615, 163041, 164116, 165274, 167397, 169510] 106.262/11/01/2003 [152308, 154686, 156270, 157613, 158547, 159113, 161923, 162615, 163041, 164116, 165274, 167397, 165805]	PSDTX994M1
D	5	~~BSRHSBH~~	~~OP-UA5~~	~~SALT BATH HEATER STACK~~		~~22072~~	
	3	BSRSRLR615	***OP-UA1*** OP-UA4	DW 6 HC LOADING RACK		22072	
	4	BSRSRST615	OP-UA1 OP-UA3	DW 6 HC TANK		22072	
	4	BSRSRST616	OP-UA1 OP-UA3	DW 6 METHANOL TANK		22072	

Federal Operating Permit Program
Individual Unit Summary for Revisions – Form OP-SUMR
Table 1

Date	Permit No.	Regulated Entity No.
August 28, 2023	O2213	RN100225945

Unit/Process AI	Unit/Process Revision No.	Unit/Process ID No.	Unit/Process Applicable Form	Unit/Process Name/ Description	Unit/Process CAM	Preconstruction Authorizations 30 TAC Chapter 116/ 30 TAC Chapter 106	Preconstruction Authorizations Title I
	7, 15	OC2L8GF500	OP-UA7 OP-UA15	GROUND FLARE GF-500		20432	PSDTX994M2 N274
	10	OC6L8D1181	OP-UA14 OP-UA19	D-1181 (VERTICAL VESSEL) WASTE OIL WATER SEPARATOR		20432	PSDTX994M2 N274
	10	OC6L8D169	OP-UA14 OP-UA19	D-1169 (HORIZONTAL) LIGHT OIL/WATER SEPARATOR		20432	PSDTX994M2 N274
	10	OC6L8D280	OP-UA19	V-280 VESSEL		20432	PSDTX994M2 N274
	8, 17	OC6L8D91	OP-UA3	D-91 DIMETHYL DISULFIDE STOR. DRUM		20432	PSDTX994M2 N274
	4, 8, 18	OC6L8D97	OP-UA1 OP-UA3	D-97 METHANOL STORAGE DRUM		20432	PSDTX994M2 N274
	7, 15	OC6L8F1	OP-UA7	FS-1 ELEVATED FLARE STACK		20432	PSDTX994M2 N274
	7, 15	OC6L8F1018	OP-UA7	FS-1018 VENT FLARE #1		20432	PSDTX994M2 N274
	11	OC6L8FU01	OP-UA1 OP-UA12	ETHYLENE PROCESS AREA FUGITIVES		20432 106.261/11/01/2003 [162922, 163968, 164734, 165416, 166753, 170264] 106.262/11/01/2003 [162922, 163968, 165416]	PSDTX994M2 N274

Federal Operating Permit Program
Individual Unit Summary for Revisions – Form OP-SUMR
Table 1

Date	Permit No.	Regulated Entity No.
August 28, 2023	O2213	RN100225945

Unit/Process AI	Unit/Process Revision No.	Unit/Process ID No.	Unit/Process Applicable Form	Unit/Process Name/ Description	Unit/Process CAM	Preconstruction Authorizations 30 TAC Chapter 116/ 30 TAC Chapter 106	Preconstruction Authorizations Title I
	11	OC6L8FU11	OP-UA1 OP-UA12	SOUTH TANK FARM FUGITIVES 1		20432 106.261/11/01/2003 [157214, 161951, 163968] 106.262/11/01/2003 [157214, 163968], 106.472/09/04/2000 [157214]	PSDTX994M2 N274
	13	OC6L8H1	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-1		20432	PSDTX994M2 N274
	12	OC6L8H10	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-10		20432	PSDTX994M2 N274
	13	OC6L8H2	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-2		20432	PSDTX994M2 N274
	13	OC6L8H3	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-3		20432	PSDTX994M2 N274
	13	OC6L8H4	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-4		20432	PSDTX994M2 N274
	13	OC6L8H5	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-5		20432	PSDTX994M2 N274
	13	OC6L8H6	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-6		20432	PSDTX994M2 N274
	13	OC6L8H7	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-7		20432	PSDTX994M2 N274

Federal Operating Permit Program
Individual Unit Summary for Revisions – Form OP-SUMR
Table 1

Date	Permit No.	Regulated Entity No.
August 28, 2023	O2213	RN100225945

Unit/Process AI	Unit/Process Revision No.	Unit/Process ID No.	Unit/Process Applicable Form	Unit/Process Name/ Description	Unit/Process CAM	Preconstruction Authorizations 30 TAC Chapter 116/ 30 TAC Chapter 106	Preconstruction Authorizations Title I
	12	OC6L8H8	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-8		20432	PSDTX994M2 N274
	12	OC6L8H9	***OP-UA1*** OP-UA5	PYROLYSIS FURNACE F-9		20432	PSDTX994M2 N274
	9, 19	OC6L8RX1	OP-UA15	PROCESS VENTS TO FLARES OC2F500 AND OC6F1		20432	PSDTX994M2 N274
	9, 20	OC6L8RX2	OP-UA15	PROCESS EPN FOR VENT TO TOX FX-2000		20432	PSDTX994M2 N274
	9	OC6L8RX3	OP-UA15	PROCESS FIN FOR VENT TO F-902 FLARE		20432	PSDTX994M2 N274
	9	OC6L8RX4	OP-UA15	PROCESS FIN FOR VENT TO FLARE FS-1018		20432	PSDTX994M2 N274
	16	OC6L8ST01A	***OP-UA1*** OP-UA3	PYGAS STORAGE TANK V-1101A		20432 106.261/11/01/2003 106.262/11/01/2003	PSDTX994M2 N274
	16	OC6L8ST01B	***OP-UA1*** OP-UA3	PYGAS STORAGE TANK V-1101B		20432 106.261/11/01/2003 106.262/11/01/2003	PSDTX994M2 N274
	16	OC6L8ST901	***OP-UA1*** OP-UA3	V-1901 NAPTHA OR CONDENSATE STORAGE TANK		20432	PSDTX994M2 N274
	8, 17	OC6L8ST916	OP-UA3	V-1916 FUEL OIL STORAGE		20432	PSDTX994M2 N274

Federal Operating Permit Program
Individual Unit Summary for Revisions – Form OP-SUMR
Table 1

Date	Permit No.	Regulated Entity No.
August 28, 2023	O2213	RN100225945

Unit/Process AI	Unit/Process Revision No.	Unit/Process ID No.	Unit/Process Applicable Form	Unit/Process Name/ Description	Unit/Process CAM	Preconstruction Authorizations 30 TAC Chapter 116/ 30 TAC Chapter 106	Preconstruction Authorizations Title I
D	14	~~OC6L8T1251~~	~~OP-UA17~~	~~T-1251 HEAVY FUEL OIL STRIPPER~~		~~20432~~	~~PSDTX994M2 N274~~
D	14	~~OC6L8T160~~	~~OP-UA17~~	~~T-160 DEBUTANIZER~~		~~20432~~	~~PSDTX994M2 N274~~
D	14	~~OC6L8T19~~	~~OP-UA17~~	~~T-19 LP DRIP STRIPPER~~		~~20432~~	~~PSDTX994M2 N274~~
D	14	~~OC6L8T201~~	~~OP-UA17~~	~~T-201 OIL QUENCH TOWER~~		~~20432~~	~~PSDTX994M2 N274~~
D	14	~~OC6L8T20A~~	~~OP-UA17~~	~~T-20A CAUSTIC TOWER~~		~~20432~~	~~PSDTX994M2 N274~~
D	14	~~OC6L8T20B~~	~~OP-UA17~~	~~T-20B CAUSTIC TOWER~~		~~20432~~	~~PSDTX994M2 N274~~
D	14	~~OC6L8T251~~	~~OP-UA17~~	~~T-251 HEAVY FUEL OIL STRIPPER~~		~~20432~~	~~PSDTX994M2 N274~~
D	14	~~OC6L8T252~~	~~OP-UA17~~	~~T-252 LIGHT FUEL OIL STRIPPER~~		~~20432~~	~~PSDTX994M2 N274~~
D	14	~~OC6L8T301~~	~~OP-UA17~~	~~T-301 WATER QUENCH TOWER~~		~~20432~~	~~PSDTX994M2 N274~~
D	14	~~OC6L8T350~~	~~OP-UA17~~	~~T-350 OILY WATER STRIPPER~~		~~20432~~	~~PSDTX994M2 N274~~
D	14	~~OC6L8T40~~	~~OP-UA17~~	~~T-40 HP DEPROPANIZER~~		~~20432~~	~~PSDTX994M2 N274~~

Federal Operating Permit Program
Individual Unit Summary for Revisions – Form OP-SUMR
Table 1

Date	Permit No.	Regulated Entity No.
August 28, 2023	O2213	RN100225945

Unit/Process AI	Unit/Process Revision No.	Unit/Process ID No.	Unit/Process Applicable Form	Unit/Process Name/ Description	Unit/Process CAM	Preconstruction Authorizations 30 TAC Chapter 116/ 30 TAC Chapter 106	Preconstruction Authorizations Title I
D	14	~~OC6L8T41~~	~~OP-UA17~~	~~T-41 LP DEPROPANIZER~~		~~20432~~	~~PSDTX994M2 N274~~
D	14	~~OC6L8T50~~	~~OP-UA17~~	~~T-50 ETHYLENE RECOVERY TOWER~~		~~20432~~	~~PSDTX994M2 N274~~
D	14	~~OC6L8T51~~	~~OP-UA17~~	~~T-51 METHANE STRIPPER~~		~~20432~~	~~PSDTX994M2 N274~~
D	14	~~OC6L8T52~~	~~OP-UA17~~	~~T-52 DEETHANIZER~~		~~20432~~	~~PSDTX994M2 N274~~
D	14	~~OC6L8T54A~~	~~OP-UA17~~	~~T-54A C3 SPLITTER TOP SECTION~~		~~20432~~	~~PSDTX994M2 N274~~
D	14	~~OC6L8T54B~~	~~OP-UA17~~	~~T-54B C3 SPLITTER BOTTOM SECTION~~		~~20432~~	~~PSDTX994M2 N274~~
D	14	~~OC6L8T60~~	~~OP-UA17~~	~~T-60 DEBUTANIZER~~		~~20432~~	~~PSDTX994M2 N274~~
D	14	~~OC6L8T64A~~	~~OP-UA17~~	~~T-64A C3 SPLITTER BOTTOM SECTION~~		~~20432~~	~~PSDTX994M2 N274~~
D	14	~~OC6L8T64B~~	~~OP-UA17~~	~~T-64B C3 SPLITTER TOP SECTION~~		~~20432~~	~~PSDTX994M2 N274~~
D	14	~~OC6L8T72~~	~~OP-UA17~~	~~T-72 C2 SPLITTER~~		~~20432~~	~~PSDTX994M2 N274~~
	16	OC6L8V1905	***OP-UA1*** OP-UA3	PROCESS WATER		20432	PSDTX994M2 N274

Federal Operating Permit Program
Individual Unit Summary for Revisions – Form OP-SUMR
Table 2

Date	Permit No.	Regulated Entity No.
August 28, 2023	O2213	RN100225945

Revision No.	ID No.	Applicable Form	Group AI	Group ID No.
13	OC6L8H1	***OP-UA1*** OP-UA5 OP-UA15		GRP1L8PF
12	OC6L8H10	***OP-UA1*** OP-UA15 ~~OP-UA48~~		GRP2L8PF
13	OC6L8H2	***OP-UA1*** OP-UA5 OP-UA15		GRP1L8PF
13	OC6L8H3	***OP-UA1*** OP-UA5 OP-UA15		GRP1L8PF
13	OC6L8H4	***OP-UA1*** OP-UA5 OP-UA15		GRP1L8PF
13	OC6L8H5	***OP-UA1*** OP-UA5 OP-UA15		GRP1L8PF
13	OC6L8H6	***OP-UA1*** OP-UA5 OP-UA15		GRP1L8PF
13	OC6L8H7	***OP-UA1*** OP-UA5 OP-UA15		GRP1L8PF

Federal Operating Permit Program
Individual Unit Summary for Revisions – Form OP-SUMR
Table 2

Date	Permit No.	Regulated Entity No.
August 28, 2023	O2213	RN100225945

Revision No.	ID No.	Applicable Form	Group AI	Group ID No.
12	OC6L8H8	***OP-UA1*** OP-UA15 ~~OP-UA48~~		GRP2L8PF
12	OC6L8H9	***OP-UA1*** OP-UA15 ~~OP-UA48~~		GRP2L8PF
14	~~OC6L8T1251~~	~~OP-UA17~~	D	~~GRPL8DIST~~
14	~~OC6L8T160~~	~~OP-UA17~~	D	~~GRPL8DIST~~
14	~~OC6L8T19~~	~~OP-UA17~~	D	~~GRPL8DIST~~
14	~~OC6L8T201~~	~~OP-UA17~~	D	~~GRPL8DIST~~
14	~~OC6L8T20A~~	~~OP-UA17~~	D	~~GRPL8DIST~~
14	~~OC6L8T20B~~	~~OP-UA17~~	D	~~GRPL8DIST~~
14	~~OC6L8T251~~	~~OP-UA17~~	D	~~GRPL8DIST~~
14	~~OC6L8T252~~	~~OP-UA17~~	D	~~GRPL8DIST~~
14	~~OC6L8T301~~	~~OP-UA17~~	D	~~GRPL8DIST~~
14	~~OC6L8T350~~	~~OP-UA17~~	D	~~GRPL8DIST~~
14	~~OC6L8T40~~	~~OP-UA17~~	D	~~GRPL8DIST~~

Federal Operating Permit Program
Individual Unit Summary for Revisions – Form OP-SUMR
Table 2

Date	Permit No.	Regulated Entity No.
August 28, 2023	O2213	RN100225945

Revision No.	ID No.	Applicable Form	Group AI	Group ID No.
14	~~OC6L8T41~~	~~OP-UA17~~	D	~~GRPL8DIST~~
14	~~OC6L8T50~~	~~OP-UA17~~	D	~~GRPL8DIST~~
14	~~OC6L8T51~~	~~OP-UA17~~	D	~~GRPL8DIST~~
14	~~OC6L8T52~~	~~OP-UA17~~	D	~~GRPL8DIST~~
14	~~OC6L8T54A~~	~~OP-UA17~~	D	~~GRPL8DIST~~
14	~~OC6L8T54B~~	~~OP-UA17~~	D	~~GRPL8DIST~~
14	~~OC6L8T60~~	~~OP-UA17~~	D	~~GRPL8DIST~~
14	~~OC6L8T64A~~	~~OP-UA17~~	D	~~GRPL8DIST~~
14	~~OC6L8T64B~~	~~OP-UA17~~	D	~~GRPL8DIST~~
14	~~OC6L8T72~~	~~OP-UA17~~	D	~~GRPL8DIST~~

TCEQ-10344 (APDG 5767v7, Revised 05/20) OP-SUMR
This form is for use by facilities subject to air quality permit requirements and may be revised periodically.

Applicable Requirements Summary – Form OP-REQ3 (Page 1)
Federal Operating Permit Program
Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
1	B60L7F1	OP-UA15	63FFFF-01	HAPS	40 CFR Part 63, Subpart FFFF	63.2455(a)-Table 1.1.a.ii, ~~63.11(b),~~ ***63.2450(a)(2),*** (b), 63.2455(a)-(b), (b)(1), ***63.2450(e)(4)-(6), (k)(8), 63.2450(u), 63.2535(m)(1)-(2),*** ~~63.982(b),~~ 63.983(a)(1)-(3), (a)(3)(ii), (d)(1), (d)(1)(i), [G]63.983(d)(2), (d)(3), ~~63.987(a), (b)(1), 63.987(b)(3), [G]63.997(c)(1), (c)(3)~~
11	B60L7FU1	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Pumps in Light Liquid Service)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1026(a)-(b), (b)(1), [G](b)(2), (b)(3), [G](b)(4), [G]63.1026(c), (d), [G](e), 63.1022(a)-(b), (c)(1), 63.1022(c)(3), [G](c)(4), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), (d)(1)-(2), [G](d)(4), [G](f)*** ~~63.1103~~

Applicable Requirements Summary – Form OP-REQ3 (Page 1)
Federal Operating Permit Program
Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	B60L7FU1	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Compressors)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1031(a), [G](b), (e), (f)(1)-(2), 63.1022(a)-(b), 63.1022(c)(3), [G](c)(4), (e), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), (d)(1)-(2), [G](f)*** ~~63.1103~~

Applicable Requirements Summary – Form OP-REQ3 (Page 1)
Federal Operating Permit Program
Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	B60L7FU1	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Pressure Relief Devices in Gas/Vapor Service)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1021(b), (d), [G](d)(1), 63.1022(a), (b), (b)(3), 63.1022(c)(3), [G](c)(4), [G]63.1023(b), [G](c), (d), 63.1024(a), (c)(2), 63.1024(d), (d)(1)-(2), [G](d)(3), [G]63.1024(f), 63.1022(a)-(b), (b)(3), (c)(3), [G]63.1022(c)(4), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), (d)(1)-(2), [G](f)*** ~~63.1103~~

Applicable Requirements Summary – Form OP-REQ3 (Page 1)
Federal Operating Permit Program
Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	B60L7FU1	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Valves in Gas/Vapor or Light Liquid Service)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1022(a)-(b), (c)(1), [G](c)(2), (c)(3), [G](c)(4), [G]63.1023(b), [G](c), (d), 63.1024(a), (c)(1), 63.1024(d), (d)(1)-(2), [G](d)(3), (d)(5), [G](f), 63.1025(a)(1), (b), (b)(1)-(2), [G](b)(3), [G](c), 63.1025(d)(1), [G](d)(2), (e)(1)-(2)*** ~~63.1103~~

Applicable Requirements Summary – Form OP-REQ3 (Page 1)
Federal Operating Permit Program
Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	B60L7FU1	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Instrumentation Systems)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1029(a), (c), 63.1022(a)-(b), (b)(4), (c)(3), [G]63.1022(c)(4), (e), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), 63.1024(d)(1)-(2), [G](f)*** ~~63.1103~~

Applicable Requirements Summary – Form OP-REQ3 (Page 1)
Federal Operating Permit Program
Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	B60L7FU1	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Pressure Relief Devices in Liquid Service)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1029(a), (c), 63.1022(a)-(b), (b)(3), (c)(3), [G]63.1029(c)(4), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), (d)(1)-(2), [G](f)*** ~~63.1103~~

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Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	B60L7FU1	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Closed Vent Systems and Control Devices)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1034(a), (b)(1), [G](b)(2) 63.1022(a)-(b), (b)(2), (c)(3), [G](c)(4), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), 63.1024(d)(1)-(2), [G](f)*** ~~63.1103~~

Applicable Requirements Summary – Form OP-REQ3 (Page 1)
Federal Operating Permit Program
Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	B72L7FU1	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Pumps in Light Liquid Service)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1026(a)-(b), (b)(1), [G](b)(2), (b)(3), [G](b)(4), [G]63.1026(c), (d), [G](e), 63.1022(a)-(b), (c)(1), 63.1022(c)(3), [G](c)(4), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), (d)(1)-(2), [G](d)(4), [G](f)*** ~~63.1103~~

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Federal Operating Permit Program
Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	B72L7FU1	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Compressors)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1031(a), [G](b), (e), (f)(1)-(2), 63.1022(a)-(b), 63.1022(c)(3), [G](c)(4), (e), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), (d)(1)-(2), [G](f)*** ~~63.1103~~

Applicable Requirements Summary – Form OP-REQ3 (Page 1)
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Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	B72L7FU1	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Pressure Relief Devices in Gas/Vapor Service)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1021(b), (d), [G](d)(1), 63.1022(a), (b), (b)(3), 63.1022(c)(3), [G](c)(4), [G]63.1023(b), [G](c), (d), 63.1024(a), (c)(2), 63.1024(d), (d)(1)-(2), [G](d)(3), [G]63.1024(f), 63.1022(a)-(b), (b)(3), (c)(3), [G]63.1022(c)(4), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), (d)(1)-(2), [G](f)*** ~~63.1103~~

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Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	B72L7FU1	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Valves in Gas/Vapor or Light Liquid Service)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1022(a)-(b), (c)(1), [G](c)(2), (c)(3), [G](c)(4), [G]63.1023(b), [G](c), (d), 63.1024(a), (c)(1), 63.1024(d), (d)(1)-(2), [G](d)(3), (d)(5), [G](f), 63.1025(a)(1), (b), (b)(1)-(2), [G](b)(3), [G](c), 63.1025(d)(1), [G](d)(2), (e)(1)-(2)*** ~~63.1103~~

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Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	B72L7FU1	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Instrumentation Systems)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1029(a), (c), 63.1022(a)-(b), (b)(4), (c)(3), [G]63.1022(c)(4), (e), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), 63.1024(d)(1)-(2), [G](f)*** ~~63.1103~~

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Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	B72L7FU1	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Pressure Relief Devices in Liquid Service)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1029(a), (c), 63.1022(a)-(b), (b)(3), (c)(3), [G]63.1029(c)(4), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), (d)(1)-(2), [G](f)*** ~~63.1103~~

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Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	B72L7FU1	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Closed Vent Systems and Control Devices)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1034(a), (b)(1), [G](b)(2) 63.1022(a)-(b), (b)(2), (c)(3), [G](c)(4), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), 63.1024(d)(1)-(2), [G](f)*** ~~63.1103~~

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Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
3	***BSRSRLR615***	***OP-UA1***	***63EEEE-01***	***HAPS***	***40 CFR Part 63, Subpart EEEE***	***63.2338(b)(2), 63.2343(c)(1), 63.2350(d)***
4	BSRSRST615	OP-UA1	63EEEE-01	HAPS	40 CFR Part 63, Subpart EEEE	***63.2338(b)(1), 63.2350(d)*** ~~63.2338(b)~~
4	BSRSRST616	OP-UA1	63EEEE-01	HAPS	40 CFR Part 63, Subpart EEEE	***63.2338(b)(1), 63.2350(d)*** ~~63.2338(b)~~
13	***GRP1L8PF***	***OP-UA1***	***63YY-01***	***HAPS***	***40 CFR Part 63, Subpart YY***	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), (f)(3), 63.1100(f)(7), 63.1102, (a)(1), (a)(1)(i), (c), 63.1102(c)(1)-(11), 63.1103(e)(1), (e)(1)(i), 63.1103(e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(d), Table 7(j), (e)(7), 63.1103(e)(7)(i), (e)(7)(i)(A)-(B), (e)(7)(ii)-(v), 63.1103(e)(8), (e)(8)(i)-(ii), (e)(10), (e)(10)(i)-(ii), 63.1103(e)(10)(ii)(A)-(C), (e)(10)(iii), 63.1107(b)-(d), 63.1108(a), 63.1108(a)(1), 63.1108(a)(4)(i)-(ii), (a)(5)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), (d)(3), 63.1111(a)(1), (a)(1)(i)-(ii), (a)(2)-(4), (a)(4)(i)-(iv), 63.1111(a)(5), 63.980, 63.981, 63.982(a)(2), (b)-(c), 63.982(c)(2), (d), (f)(2)(i), 63.983(a)(1)-(2), 63.983(d)(1), (d)(3), 63.988(a)(1)-(3), 63.9920***

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Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
12	***GRP2L8PF***	***OP-UA1***	***63YY-01***	***HAPS***	***40 CFR Part 63, Subpart YY***	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), (f)(3), 63.1100(f)(7), 63.1102, (a)(1), (a)(1)(i), (c), 63.1102(c)(1)-(11), 63.1103(e)(1), (e)(1)(i), 63.1103(e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(d), Table 7(j), (e)(7), 63.1103(e)(7)(i), (e)(7)(i)(A)-(B), (e)(7)(ii)-(v), 63.1103(e)(8), (e)(8)(i)-(ii), (e)(10), (e)(10)(i)-(ii), 63.1103(e)(10)(ii)(A)-(C), (e)(10)(iii), 63.1107(b)-(d), 63.1108(a), 63.1108(a)(1), 63.1108(a)(4)(i)-(ii), (a)(5)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), (d)(3), 63.1111(a)(1), (a)(1)(i)-(ii), (a)(2)-(4), (a)(4)(i)-(iv), 63.1111(a)(5), 63.980, 63.981, 63.982(a)(2), (b)-(c), 63.982(c)(2), (d), (f)(2)(i), 63.983(a)(1)-(2), 63.983(d)(1), (d)(3), 63.988(a)(1)-(3), 63.9920***
12	~~GRP2L8PF~~	~~OP-UA5~~	~~60RRR-01~~	~~VOC/TOC~~	~~40 CFR Part 60, Subpart RRR~~	~~60.700(c)(5)~~

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Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
15	***OC2L8GF500***	***OP-UA1***	***63YY-01***	***HAPS***	***40 CFR Part 63, Subpart YY***	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), (g)(7), 63.1100(g)(7)(i)-(iii), 63.1102, (a)(1), (a)(1)(i), (c), 63.1102(c)(1)-(11), 63.1103(e)(1), (e)(1)(i), (e)(1)(i)(A)-(G), 63.1103(e)(1)(ii), (e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(d), (e)(4), (e)(4)(i)-(vii), (e)(4)(vii)(G), 63.1103(e)(4)(viii), (e)(4)(viii)(A)-(G), (e)(4), (ix-xiv), 63.1103(e)(10), (e)(10)(i)-(ii), (e)(10)(ii)(A)-(C), (e)(10)(iii), 63.1104(a), 63.1107(b)-(d), 63.1108(a), (a)(1), (a)(4)(i)-(ii), 63.1108(a)(5)-(7), (b)(3), (b)(5), (c)-(d), (d)(1)-(2), 63.1108(d)(2)(i)-(ii), (d)(3), 63.1111(a)(1), (a)(1)(i)-(ii), 63.1111(a)(2)-(4), (a)(4)(i)-(iv), (a)(5), 63.1113(a), (a)(1)-(2) 63.670(b)-(f), (m)(1), (o), [G](r)(1)-(2), [G](r)(4), Table 12, Table 13, 63.980, 63.981, 63.982(a)(2), (a)(4), (b), (f)(2)(i), 63.983(a)(1)-(2), (d)(1), (d)(3), 63.987(a)***
15	***OC2L8GF500***	***OP-UA7***	***63A-01***	***HAPS***	***40 CFR Part 63, Subpart A***	***63.11(b)(4), 63.11(b)(1)-(3), (b)(5), (b)(6)(ii), 63.11(b)(7)(i)***
10	OC6L8D1181	OP-UA19	R5140-02	VOC	30 TAC Chapter 115, Industrial Wastewater	***115.143(a), 115.910, [G]115.148, 63.1103(e)(4)(xii)-(xiii)*** ~~115.142(1), 115.142, (1)(A)-(C), (1)(E), 115.142(1)(G), [G](1)(H), 115.148, 60.18(b)~~
10	OC6L8D169	OP-UA19	R5140-02	VOC	30 TAC Chapter 115, Industrial Wastewater	***115.143(a), 115.910, [G]115.148, 63.1103(e)(4)(xii)-(xiii)*** ~~115.142(1), 115.142, (1)(A)-(C), (1)(E), 115.142(1)(G), [G](1)(H), 115.148, 60.18(b)~~

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Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
10	OC6L8D280	OP-UA19	R5140-02	VOC	30 TAC Chapter 115, Industrial Wastewater	***115.143(a), 115.910, [G]115.148, 63.1103(e)(4)(xii)-(xiii)*** ~~115.142(1), 115.142, (1)(A)-(C), (1)(E), 115.142(1)(G), [G](1)(H), 115.148, 60.18(b)~~
8	OC6L8D91	OP-UA3	R5112-01	VOC	30 TAC Chapter 115, Storage of VOCs	***115.113, 115.910, 63.1103(e)(4)(xii)-(xiii)*** ~~115.112(e)(1), 115.112(e)(3), (e)(3)(C), 60.18~~
17	OC6L8D91	OP-UA3	R5112-02	VOC	30 TAC Chapter 115, Storage of VOCs	***115.112(e)(1), 115.112(e)(3), (e)(3)(A), (e)(3)(A)(ii)*** ~~115.112(e)(1), 115.112(e)(3), (e)(3)(C), 60.18~~
4	OC6L8D97	OP-UA1	63EEEE-01	HAPS	40 CFR Part 63, Subpart EEEE	***63.2338(b)(1), 63.2350(d)*** ~~63.2338(b)~~
8	OC6L8D97	OP-UA3	R5112-01	VOC	30 TAC Chapter 115, Storage of VOCs	***115.113, 115.910, 63.1103(e)(4)(xii)-(xiii)*** ~~115.112(e)(1), 115.112(e)(3), (e)(3)(C), 60.18~~
18	~~OC6L8D97~~	~~OP-UA3~~	~~R5112-02~~	~~VOC~~	~~30 TAC Chapter 115, Storage of VOCs~~	~~115.112(e)(1), 115.112(e)(3), (e)(3)(C), 60.18~~

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Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
15	***OC6L8F1***	***OP-UA1***	***63YY-01***	***HAPS***	***40 CFR Part 63, Subpart YY***	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), (g)(7), 63.1100(g)(7)(i)-(iii), 63.1102, (a)(1), (a)(1)(i), (c), 63.1102(c)(1)-(11), 63.1103(e)(1), (e)(1)(i), (e)(1)(i)(A)-(G), 63.1103(e)(1)(ii), (e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(d), (e)(4), (e)(4)(i)-(vii), (e)(4)(vii)(G), 63.1103(e)(4)(viii), (e)(4)(viii)(A)-(G), (e)(4), (ix-xiv), 63.1103(e)(10), (e)(10)(i)-(ii), (e)(10)(ii)(A)-(C), (e)(10)(iii), 63.1104(a), 63.1107(b)-(d), 63.1108(a), (a)(1), (a)(4)(i)-(ii), 63.1108(a)(5)-(7), (b)(3), (b)(5), (c)-(d), (d)(1)-(2), 63.1108(d)(2)(i)-(ii), (d)(3), 63.1111(a)(1), (a)(1)(i)-(ii), 63.1111(a)(2)-(4), (a)(4)(i)-(iv), (a)(5), 63.1113(a), (a)(1)-(2) 63.670(b)-(f), (m)(1), (o), [G](r)(1)-(2), [G](r)(4), Table 12, Table 13, 63.980, 63.981, 63.982(a)(2), (a)(4), (b), (f)(2)(i), 63.983(a)(1)-(2), (d)(1), (d)(3), 63.987(a)***
15	***OC6L8F1***	***OP-UA7***	***63A-01***	***HAPS***	***40 CFR Part 63, Subpart A***	***63.11(b)(4), 63.11(b)(1)-(3), (b)(5), (b)(6)(ii), 63.11(b)(7)(i)***

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Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
15	***OC6L8F1018***	***OP-UA1***	***63YY-01***	***HAPS***	***40 CFR Part 63, Subpart YY***	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), (g)(7), 63.1100(g)(7)(i)-(iii), 63.1102, (a)(1), (a)(1)(i), (c), 63.1102(c)(1)-(11), 63.1103(e)(1), (e)(1)(i), (e)(1)(i)(A)-(G), 63.1103(e)(1)(ii), (e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(d), (e)(4), (e)(4)(i)-(vii), (e)(4)(vii)(G), 63.1103(e)(4)(viii), (e)(4)(viii)(A)-(G), (e)(4), (ix-xiv), 63.1103(e)(10), (e)(10)(i)-(ii), (e)(10)(ii)(A)-(C), (e)(10)(iii), 63.1104(a), 63.1107(b)-(d), 63.1108(a), (a)(1), (a)(4)(i)-(ii), 63.1108(a)(5)-(7), (b)(3), (b)(5), (c)-(d), (d)(1)-(2), 63.1108(d)(2)(i)-(ii), (d)(3), 63.1111(a)(1), (a)(1)(i)-(ii), 63.1111(a)(2)-(4), (a)(4)(i)-(iv), (a)(5), 63.1113(a), (a)(1)-(2) 63.670(b)-(f), (m)(1), (o), [G](r)(1)-(2), [G](r)(4), Table 12, Table 13, 63.980, 63.981, 63.982(a)(2), (a)(4), (b), (f)(2)(i), 63.983(a)(1)-(2), (d)(1), (d)(3), 63.987(a)***
15	***OC6L8F1018***	***OP-UA7***	***63A-01***	***HAPS***	***40 CFR Part 63, Subpart A***	***63.11(b)(4), 63.11(b)(1)-(3), (b)(5), (b)(6)(ii), 63.11(b)(7)(i)***

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Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	OC6L8FU01	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Pumps in Light Liquid Service)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1026(a)-(b), (b)(1), [G](b)(2), (b)(3), [G](b)(4), [G]63.1026(c), (d), [G](e), 63.1022(a)-(b), (c)(1), 63.1022(c)(3), [G](c)(4), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), (d)(1)-(2), [G](d)(4), [G](f)*** ~~63.1103~~

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Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	OC6L8FU01	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Compressors)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1031(a), [G](b), (e), (f)(1)-(2), 63.1022(a)-(b), 63.1022(c)(3), [G](c)(4), (e), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), (d)(1)-(2), [G](f)*** ~~63.1103~~

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Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	OC6L8FU01	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Pressure Relief Devices in Gas/Vapor Service)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1021(b), (d), [G](d)(1), 63.1022(a), (b), (b)(3), 63.1022(c)(3), [G](c)(4), [G]63.1023(b), [G](c), (d), 63.1024(a), (c)(2), 63.1024(d), (d)(1)-(2), [G](d)(3), [G]63.1024(f), 63.1022(a)-(b), (b)(3), (c)(3), [G]63.1022(c)(4), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), (d)(1)-(2), [G](f)*** ~~63.1103~~

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Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	OC6L8FU01	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Valves in Gas/Vapor Service)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1022(a)-(b), (c)(1), [G](c)(2), (c)(3), [G](c)(4), [G]63.1023(b), [G](c), (d), 63.1024(a), (c)(1), 63.1024(d), (d)(1)-(2), [G](d)(3), (d)(5), [G](f), 63.1025(a)(1), (b), (b)(1)-(2), [G](b)(3), [G](c), 63.1025(d)(1), [G](d)(2), (e)(1)-(2)*** ~~63.1103~~

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Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	OC6L8FU01	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Pressure Relief Devices in Liquid Service)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1029(a), (c), 63.1022(a)-(b), (b)(3), (c)(3), [G]63.1029(c)(4), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), (d)(1)-(2), [G](f)*** ~~63.1103~~

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Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	OC6L8FU01	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Closed Vent Systems and Control Devices)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1034(a), (b)(1), [G](b)(2) 63.1022(a)-(b), (b)(2), (c)(3), [G](c)(4), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), 63.1024(d)(1)-(2), [G](f)*** ~~63.1103~~

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Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	OC6L8FU01	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Connectors in Gas/Vapor or Light Liquid Service)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1021(a)-(b), (d), [G](d)(1), 63.1022(a), (b), 63.1022(b)(1), (c)(1), (c)(3), [G](c)(4), [G](d), [G]63.1023(b), [G](c), (d), 63.1024(a), (c)(1), 63.1024(d), (d)(1)-(2), [G](d)(3), (e), [G](f), 63.1027(a), [G](b), (c)-(d), [G](e)*** ~~63.1103~~

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Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	OC6L8FU11	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Pumps in Light Liquid Service)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1026(a)-(b), (b)(1), [G](b)(2), (b)(3), [G](b)(4), [G]63.1026(c), (d), [G](e), 63.1022(a)-(b), (c)(1), 63.1022(c)(3), [G](c)(4), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), (d)(1)-(2), [G](d)(4), [G](f)*** ~~63.1103~~

Applicable Requirements Summary – Form OP-REQ3 (Page 1)
Federal Operating Permit Program
Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	OC6L8FU11	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Compressors)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1031(a), [G](b), (e), (f)(1)-(2), 63.1022(a)-(b), 63.1022(c)(3), [G](c)(4), (e), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), (d)(1)-(2), [G](f)*** ~~63.1103~~

Applicable Requirements Summary – Form OP-REQ3 (Page 1)
Federal Operating Permit Program
Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	OC6L8FU11	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Pressure Relief Devices in Gas/Vapor Service)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1021(b), (d), [G](d)(1), 63.1022(a), (b), (b)(3), 63.1022(c)(3), [G](c)(4), [G]63.1023(b), [G](c), (d), 63.1024(a), (c)(2), 63.1024(d), (d)(1)-(2), [G](d)(3), [G]63.1024(f), 63.1022(a)-(b), (b)(3), (c)(3), [G]63.1022(c)(4), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), (d)(1)-(2), [G](f)*** ~~63.1103~~

Applicable Requirements Summary – Form OP-REQ3 (Page 1)
Federal Operating Permit Program
Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	OC6L8FU11	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Valves in Gas/Vapor Service)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1022(a)-(b), (c)(1), [G](c)(2), (c)(3), [G](c)(4), [G]63.1023(b), [G](c), (d), 63.1024(a), (c)(1), 63.1024(d), (d)(1)-(2), [G](d)(3), (d)(5), [G](f), 63.1025(a)(1), (b), (b)(1)-(2), [G](b)(3), [G](c), 63.1025(d)(1), [G](d)(2), (e)(1)-(2)*** ~~63.1103~~

Applicable Requirements Summary – Form OP-REQ3 (Page 1)
Federal Operating Permit Program
Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	OC6L8FU11	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Pressure Relief Devices in Liquid Service)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1029(a), (c), 63.1022(a)-(b), (b)(3), (c)(3), [G]63.1029(c)(4), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), (d)(1)-(2), [G](f)*** ~~63.1103~~

Applicable Requirements Summary – Form OP-REQ3 (Page 1)
Federal Operating Permit Program
Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	OC6L8FU11	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Closed Vent Systems and Control Devices)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1034(a), (b)(1), [G](b)(2) 63.1022(a)-(b), (b)(2), (c)(3), [G](c)(4), [G]63.1023(b)-(c), (d), 63.1024(a), (c)(2), (d), 63.1024(d)(1)-(2), [G](f)*** ~~63.1103~~

Applicable Requirements Summary – Form OP-REQ3 (Page 1)
Federal Operating Permit Program
Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
11	OC6L8FU11	OP-UA1	63YY-01	HAPS	40 CFR Part 63, Subpart YY (Connectors in Gas/Vapor or Light Liquid Service)	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), 63.1100(g)(4)(iii), 63.1102, 63.1102(a)(2), (a)(2)(i), 63.1102(c), (c)(5), (10), (11), 63.1103(e)(1), 63.1103(e)(1)(i), (e)(1)(i)(A)-(G), (e)(1)(ii), 63.1103(e)(1)(ii)(A)-(L), (e)(1)(iii)-(iv), (e)(2)-(3), 63.1103(e)(3), Table 7(f), 63.1107(a)-(d), (h), 63.1107(h)(1), (h)(3)(ii), (h)(3)(ii)(A)-(E), 63.1107(h)(3)(iii)-(v), (h)(3)(v)(A)-(C), (h)(4), 63.1107(h)(4)(i)-(iii), (h)(5), (h)(5)(i)-(v), (h)(6), 63.1107(h)(6)(i)-(iii), (h)(7), (h)(7)(i)-(iii), (h)(8), 63.1108(a), (a)(4)(i)-(ii), (a)(6)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), 63.1108(d)(3), 63.1021(a)-(b), (d), [G](d)(1), 63.1021(a)-(b), (d), [G](d)(1), 63.1022(a), (b), 63.1022(b)(1), (c)(1), (c)(3), [G](c)(4), [G](d), [G]63.1023(b), [G](c), (d), 63.1024(a), (c)(1), 63.1024(d), (d)(1)-(2), [G](d)(3), (e), [G](f), 63.1027(a), [G](b), (c)-(d), [G](e)*** ~~63.1103~~

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Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
9	OC6L8RX1	OP-UA15	R5121-02	VOC	30 TAC Chapter 115, Vent Gas Controls	***115.123(a)(1), 115.910, 63.1103(e)(4)(xii)-(xiii)*** ~~115.122(a)(2), 115.121(a)(2), 115.122(a)(2)(A), 60.18~~
9	OC6L8RX2	OP-UA15	R5121-02	VOC	30 TAC Chapter 115, Vent Gas Controls	***115.123(a)(1), 115.910, 63.1103(e)(4)(xii)-(xiii)*** ~~115.122(a)(2), 115.121(a)(2), 115.122(a)(2)(A), 60.18~~
9	OC6L8RX3	OP-UA15	R5121-01	VOC	30 TAC Chapter 115, Vent Gas Controls	***115.123(a)(1), 115.910, 63.1103(e)(4)(xii)-(xiii)*** ~~115.122(a)(2), 115.121(a)(2), 115.122(a)(2)(A), 60.18~~
9	OC6L8RX4	OP-UA15	R5121-01	VOC	30 TAC Chapter 115, Vent Gas Controls	***115.123(a)(1), 115.910, 63.1103(e)(4)(xii)-(xiii)*** ~~115.122(a)(2), 115.121(a)(2), 115.122(a)(2)(A), 60.18~~

Applicable Requirements Summary – Form OP-REQ3 (Page 1)
Federal Operating Permit Program
Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
16	*OC6L8ST01A*	*OP-UA1*	*63YY-01*	*HAPS*	*40 CFR Part 63, Subpart YY*	*63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), (e), 63.1100(e)(2), (g)(1), (g)(1)(ii), 63.1102, (a)(1), 63.1102(a)(1)(i), (c), (c)(1)-(11), 63.1103(e)(1), (e)(1)(i), 63.1103(e)(1)(i)(A)-(G), (e)(1)(ii), (e)(1)(ii)(A)-(L), 63.1103(e)(1)(iii)-(iv), (e)(2)-(3), (e)(3)-Table 7(a)-(b), 63.1103(e)(10), (e)(10)(i)-(ii), (e)(10)(ii)(A)-(C), 63.1103(e)(10)(iii), 63.1107(b)-(d), 63.1108(a), 63.1108(a)(1), (a)(4)(i)-(ii), (a)(5)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), (d)(3), 63.1111(a)(1), (a)(1)(i)-(ii), (a)(2)-(4), (a)(4)(i)-(iv), 63.1111(a)(5), 63.1060, 63.1062(a)(2), [G]63.1063(a)(1)(ii), [G]63.1063(a)(2), [G](b)*
16	*OC6L8ST01B*	*OP-UA1*	*63YY-01*	*HAPS*	*40 CFR Part 63, Subpart YY*	*63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), (e), 63.1100(e)(2), (g)(1), (g)(1)(ii), 63.1102, (a)(1), 63.1102(a)(1)(i), (c), (c)(1)-(11), 63.1103(e)(1), (e)(1)(i), 63.1103(e)(1)(i)(A)-(G), (e)(1)(ii), (e)(1)(ii)(A)-(L), 63.1103(e)(1)(iii)-(iv), (e)(2)-(3), (e)(3)-Table 7(a)-(b), 63.1103(e)(10), (e)(10)(i)-(ii), (e)(10)(ii)(A)-(C), 63.1103(e)(10)(iii), 63.1107(b)-(d), 63.1108(a), 63.1108(a)(1), (a)(4)(i)-(ii), (a)(5)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), (d)(3), 63.1111(a)(1), (a)(1)(i)-(ii), (a)(2)-(4), (a)(4)(i)-(iv), 63.1111(a)(5), 63.1060, 63.1062(a)(2), [G]63.1063(a)(1)(ii), [G]63.1063(a)(2), [G](b)*

Applicable Requirements Summary – Form OP-REQ3 (Page 1)
Federal Operating Permit Program
Table 1a: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	Unit/Group/Process Applicable Form	SOP/GOP Index No	Pollutant	Applicable Regulatory Requirement Name	Applicable Regulatory Requirement Standard(s)
16	***OC6L8ST901***	***OP-UA1***	***63YY-01***	***HAPS***	***40 CFR Part 63, Subpart YY***	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), (e), 63.1100(e)(2), (g)(1), (g)(1)(ii), 63.1102, (a)(1), 63.1102(a)(1)(i), (c), (c)(1)-(11), 63.1103(e)(1), (e)(1)(i), 63.1103(e)(1)(i)(A)-(G), (e)(1)(ii), (e)(1)(ii)(A)-(L), 63.1103(e)(1)(iii)-(iv), (e)(2)-(3), (e)(3)-Table 7(a)-(b), 63.1103(e)(10), (e)(10)(i)-(ii), (e)(10)(ii)(A)-(C), 63.1103(e)(10)(iii), 63.1107(b)-(d), 63.1108(a), 63.1108(a)(1), (a)(4)(i)-(ii), (a)(5)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), (d)(3), 63.1111(a)(1), (a)(1)(i)-(ii), (a)(2)-(4), (a)(4)(i)-(iv), 63.1111(a)(5), 63.1060, 63.1062(a)(2), [G]63.1063(a)(1)(ii), [G]63.1063(a)(2), [G](b)***
8	OC6L8ST916	OP-UA3	R5112-01	VOC	30 TAC Chapter 115, Storage of VOCs	***115.113, 115.910, 63.1103(e)(4)(xii)-(xiii)*** ~~115.112(e)(1), 115.112(e)(3), (e)(3)(C), 60.18~~
16	***OC6L8V1905***	***OP-UA1***	***63YY-01***	***HAPS***	***40 CFR Part 63, Subpart YY***	***63.1100(a)-(b), (d)(1), (d)(3)-(4), (d)(4)(i), (e), 63.1100(e)(2), (g)(1), (g)(1)(ii), 63.1102, (a)(1), 63.1102(a)(1)(i), (c), (c)(1)-(11), 63.1103(e)(1), (e)(1)(i), 63.1103(e)(1)(i)(A)-(G), (e)(1)(ii), (e)(1)(ii)(A)-(L), 63.1103(e)(1)(iii)-(iv), (e)(2)-(3), (e)(3)-Table 7(a)-(b), 63.1103(e)(10), (e)(10)(i)-(ii), (e)(10)(ii)(A)-(C), 63.1103(e)(10)(iii), 63.1107(b)-(d), 63.1108(a), 63.1108(a)(1), (a)(4)(i)-(ii), (a)(5)-(7), (b)(3), (b)(5), 63.1108(c)-(d), (d)(1)-(2), (d)(2)(i)-(ii), (d)(3), 63.1111(a)(1), (a)(1)(i)-(ii), (a)(2)-(4), (a)(4)(i)-(iv), 63.1111(a)(5), 63.1060, 63.1062(a)(2), [G]63.1063(a)(1)(ii), [G]63.1063(a)(2), [G](b)***

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Federal Operating Permit Program
Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
1	B60L7F1	63FFFF-01	HAPS	[G]63.115(d)(2)(v), ~~(d)(3)(iii),~~ 63.983(a)(3), (a)(3)(ii), (b), [G]63.983(b)(1)-(4), [G](c)(1), 63.983(c)(2)-(3), (d)(1), 63.983(d)(1)(ii), [G]~~63.987(b)(3)(i), (b)(3)(ii)-(iv) 63.987(c), 63.997(a), [G](c)(1), 63.997(c)(2)-(3), (c)(3)(i)-(ii)~~	~~63.2450(f)(2), (f)(2)(i)-(ii),~~ ***63.2450(k)(1)(ii), (k)(7), [G]63.2525(m), (n)***, 63.983(a)(3)(ii), ***(b)(3)(ii),*** [G](d)(2) ~~63.987(b)(1), (c), 63.998(a)(1), [G]63.998(a)(1)(i), (a)(1)(ii), § 63.998(a)(1)(iii)(A)-(B),~~ [G]63.998(b)(1), ~~[G](b)(2),~~ 63.998(b)(2)(i)-(ii), [~~G](b)(3), [G]63.998(b)(5),~~ [G](d)(1), ~~63.998(d)(3)(i)-(ii), (d)(5)~~	***63.25250(d)(3), (e)(11)-(12),*** ~~63.2450(f)(2)(ii), (q), 63.987(b)(1), 63.997(c)(3), 63.998(a)(1)(iii)(A), [G]63.998(b)(3),~~ [G]63.999(a)(1)-(2), 63.999(b)(5), 63.999(c)(1), (c)(2)(i), (c)(2)(iii), ~~63.999(c)(3), (c)(6), [G](c)(6)(i), 63.999(c)(6)(iv),~~ [G](d)(1)-(2)
11	B60L7FU1 (Pumps in Light Liquid Service)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G]63.1107(h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), 63.1023(a)(1)(ii), (a)(2)(i), 63.1029(a), [G](b)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023, 63.1038(a), (b)(1)-(2), 63.1038(b)(6)-(7), [G](c)(2)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(i)(ii), 63.1039(b)(2), (b)(8)*** ~~General High-Level Applicability~~

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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
11	B60L7FU1 (Compressors)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G]63.1107(h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), 63.1023(a)(1)(vi), 63.1031(c)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), [G]63.1031(d), 63.1038(a), (b)(1)-(2), (b)(6)-(7), [G]63.1038(c)(6)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(1)(v), 63.1039(b)(2), (b)(8)*** ~~General High-Level Applicability~~
11	B60L7FU1 (Pressure Relief Devices in Gas/Vapor Service)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G]63.1107(h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), 63.1023(a)(1)(v)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), 63.1038(a), (b)(1)-(2), (b)(6)-(7), 63.1038(c)(5)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(2), 63.1039(b)(4)-(5), (b)(8)*** ~~General High-Level Applicability~~

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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
11	B60L7FU1 (Valves in Gas/Vapor or Light Liquid Service)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G]63.1107(h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), 63.1023(a)(1)(i)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), 63.1038(a), (b)(1)-(2), (b)(6)-(7), [G]63.1038(c)(1)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(1), 63.1039(b)(1)(i), (b)(2), (b)(5), (b)(8)*** ~~General High-Level Applicability~~
11	B60L7FU1 (Instrumentation Systems)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G]63.1107(h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), [G]63.1029(b)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), 63.1038(a), 63.1038(b)(1)-(2), (b)(6)-(7)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(2), 63.1039(b)(8)*** ~~General High-Level Applicability~~

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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
11	B60L7FU1 (Pressure Relief Devices in Liquid Service)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G]63.1107(h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), [G]63.1029(b)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), 63.1038(a), (b)(1)-(2), (b)(6)-(7), 63.1038(c)(5)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(2), 63.1039(b)(8)*** ~~General High-Level Applicability~~
11	B60L7FU1 (Closed Vent Systems and Control Devices)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G]63.1107(h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), 63.1038(a), (b)(1)-(2), (b)(6)-(7)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(2), 63.1039(b)(8)*** ~~General High-Level Applicability~~

Applicable Requirements Summary – Form OP-REQ3 (Page 2)
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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
11	B72L7FU1 (Pumps in Light Liquid Service)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G]63.1107(h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), 63.1023(a)(1)(ii), (a)(2)(i), 63.1029(a), [G](b)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023, 63.1038(a), (b)(1)-(2), 63.1038(b)(6)-(7), [G](c)(2)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(i)(ii), 63.1039(b)(2), (b)(8)*** ~~General High-Level Applicability~~
11	B72L7FU1 (Compressors)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G]63.1107(h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), 63.1023(a)(1)(vi), 63.1031(c)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), [G]63.1031(d), 63.1038(a), (b)(1)-(2), (b)(6)-(7), [G]63.1038(c)(6)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(1)(v), 63.1039(b)(2), (b)(8)*** ~~General High-Level Applicability~~

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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
11	B72L7FU1 (Pressure Relief Devices in Gas/Vapor Service)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G]63.1107(h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), 63.1023(a)(1)(v)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), 63.1038(a), (b)(1)-(2), (b)(6)-(7), 63.1038(c)(5)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(2), 63.1039(b)(4)-(5), (b)(8)*** ~~General High-Level Applicability~~
11	B72L7FU1 (Valves in Gas/Vapor or Light Liquid Service)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G]63.1107(h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), 63.1023(a)(1)(i)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), 63.1038(a), (b)(1)-(2), (b)(6)-(7), [G]63.1038(c)(1)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(1), 63.1039(b)(1)(i), (b)(2), (b)(5), (b)(8)*** ~~General High-Level Applicability~~

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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
11	B72L7FU1 (Instrumentation Systems)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G]63.1107(h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), [G]63.1029(b)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), 63.1038(a), 63.1038(b)(1)-(2), (b)(6)-(7)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(2), 63.1039(b)(8)*** ~~General High-Level Applicability~~
11	B72L7FU1 (Pressure Relief Devices in Liquid Service)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G]63.1107(h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), [G]63.1029(b)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), 63.1038(a), (b)(1)-(2), (b)(6)-(7), 63.1038(c)(5)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(2), 63.1039(b)(8)*** ~~General High-Level Applicability~~

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Federal Operating Permit Program
Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
11	B72L7FU1 (Closed Vent Systems and Control Devices)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G]63.1107(h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), 63.1038(a), (b)(1)-(2), (b)(6)-(7)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(2), 63.1039(b)(8)*** ~~General High-Level Applicability~~
3	***BSRSRLR615***	***63EEEE-01***	***HAPS***	***NONE***	***63.2390(a)***	***63.2343(c)(1), [G](c)(1)(ii), (d)(3), 63.2386(c)(10)(i), (d)(3)(ii), 63.2386(d)(4)(ii), 63.2382(d)(2)(viii)***
4	BSRSRST615	63EEEE-01	HAPS	***NONE*** ~~General High-Level Applicability~~	***63.2390(a)*** ~~General High-Level Applicability~~	***[G]63.2343(b)(1)(ii), (d)(1)-(2), 63.2386(d)(3)(i), (d)(4)(i)*** ~~General High-Level Applicability~~
4	BSRSRST616	63EEEE-01	HAPS	***NONE*** ~~General High-Level Applicability~~	***63.2390(a)*** ~~General High-Level Applicability~~	***[G]63.2343(b)(1)(ii), (d)(1)-(2), 63.2386(d)(3)(i), (d)(4)(i)*** ~~General High-Level Applicability~~

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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
15	***OC2L8GF500***	***63YY-01***	***HAPS***	***63.1103(e)(4)(viii)-(ix), (xii), 63.1108(b)(1), (b)(1)(i)-(ii), 63.1108(b)(2), (b)(2)(i)-(ii), (b)(4), 63.1108(b)(4)(ii)(A)-(B), (b)(4)(iii), 63.1112(b)(1)-(3), (b)(3)(i)-(iii), 63.1113(b)(1)-(2), (b)(4), 63.655(g)(11)(ii), 63.670, 63.670(b)-(c), [G](d), (e), [G](f), 63.670(g), [G](h)-(n), [G]63.671(a)-(e), Table 13, 63.987(b)(3)(i), (b)(3)(iv), 63.996(b)(2), (c)(1), (c)(2)(i)-(iii), 63.996(c)(3)-(6), 63.997(a), 63.997(b)(1)-(3), (c)(1)(ii), 63.997(c)(2), (c)(3)(i), (c)(3)(iii), 63.997(d), (e)(1)(i), (e)(1)(v), 63.997(e)(2)(i)(A)-(B), (e)(2)(ii), 63.997(e)(2)(iii)(A)-(H)***	***63.1102(c)(12), 63.1103(e)(4)(x), 63.1104(l)(4), 63.1109(a), (c), (e), (e)(1)-(2), 63.1109(e)(2)(i)-(iv), (e)(3)-(15), [G]63.670(o)(1), (o)(2),(o)(2)(ii), 63.670(o)(3), (o)(3)(i), [G]63.670(o)(4)-(5), (o)(6), [G]63.670(o)(7) 63.983(a)(3)(i)-(ii), (b)(1)(i)-(ii), 63.983(b)(2)-(4), (c)(1)-(3), 63.983(d)(2), 63.987(b)(1), (c), 63.998(a)(1)(i)-(iii), 63.998(d)(1)(i)-(iv), (d)(3), 63.998(d)(3)(i)***	***63.1110(a)(10)(i), (a)(10)(i)(A)-(C), 63.1110(d)(1)(iv), (e)(4), (e)(4)(i)-(iv), 63.1110(e)(4)(iv)(A)-(C), (e)(4)(v)-(vi), 63.1100(g), (g)(2)(ii), 63.1102(c)(13), 63.1104(m)(2)(i), (m)(2)(i)(A)-(C), 63.1104(m)(2)(ii)-(iii), 63.1109(b), 63.1110(a), (a)(1)-(2), (a)(4)-(5), 63.1110(a)(7)-(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), (a)(10)(iii), 63.1110(a)(10)(iii)(A)-(E), 63.1110(a)(10)(iii)(E)(1)-(4), 63.1110(a)(10)(iii)(F)-(G), (a)(10)(iv), 63.1110(a)(10)(iv), (a)(10)(iv)(A)-(C), 63.1110(a)(10)(iv)(C)(1)-(4), 63.1110(a)(10)(iv)(D)-(E), (b)(1)-(2), 63.1110(c), (c)(1)-(7), (d)(1), (d)(1)(i)-(ii) 63.1110(e), (e)(1)-(3), (f), (f)(1)-(4), 63.1110(g)(1)-(4), (h)(1)-(7), 63.1111(b), 63.1111(b)(1), (b)(1)(i)-(ii), 63.1111(b)(1)(ii)(A)-(B), (b)(1)(iii)-(iv), 63.1111(b)(2), 63.655(g), (g)(11), 63.655(g)(11)(ii), [G]63.670(o)(1), (o)(2), 63.670(o)(2)(ii), (o)(3), (o)(3)(i), [G]63.670(o)(4)-(5), (o)(6), [G](o)(7) 63.999(a)(1)(i), (a)(1)(iii)-(iv), (a)(2), 63.999(c)(1)-(3)***

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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
15	***OC2L8GF500***	***63A-01***	***HAPS***	***63.11(b)(4)-(5), (b)(7)(i)***	***NONE***	***NONE***
10	OC6L8D1181	R5140-02	VOC	~~[G]115.142(1)(H),~~ ~~[G]115.144(1), (3)(E), (5),~~ 115.145, (1), [G](2)(3), (4)-(7), 115.145(9)-(10), [G]115.148	~~[G]115.142(1)(H),~~ 115.146(1)-(4)	***115.143(a)*** ~~NONE~~
10	OC6L8D169	R5140-02	VOC	~~[G]115.142(1)(H),~~ ~~[G]115.144(1), (3)(E), (5),~~ 115.145, (1), [G](2)(3), (4)-(7), 115.145(9)-(10), [G]115.148	~~[G]115.142(1)(H),~~ 115.146(1)-(4)	***115.143(a)*** ~~NONE~~
10	OC6L8D280	R5140-02	VOC	~~[G]115.142(1)(H),~~ ~~[G]115.144(1), (3)(E), (5),~~ 115.145, (1), [G](2)(3), (4)-(7), 115.145(9)-(10), [G]115.148	~~[G]115.142(1)(H),~~ 115.146(1)-(4)	***115.143(a)*** ~~NONE~~
8	OC6L8D91	R5112-01	VOC	***NONE*** ~~115.115(a), (a)(6),~~ ~~115.116(a)(2), [G]115.117~~	***NONE*** ~~115.118(a)(4), (a)(4)(F), (a)(5),~~ ~~115.118(a)(7)~~	NONE
17	OC6L8D91	R5112-02	VOC	115.115(a), ***(a)(1),*** ~~(a)(6),~~ 115.116(a)***(1),*** ~~(a)(2),~~[G]115.117	115.118(a)(4), ***(a)(4)(A),*** ~~115.118(a)(4)(F),~~ (a)(5), (a)(7)	NONE
4	OC6L8D97	63EEEE-01	HAPS	***NONE*** ~~General High-Level Applicability~~	***63.2390(a)*** ~~General High-Level Applicability~~	***[G]63.2343(b)(1)(ii), (d)(1)-(2), 63.2386(d)(3)(i), (d)(4)(i)*** ~~General High-Level Applicability~~
8	OC6L8D97	R5112-01	VOC	***NONE*** ~~115.115(a), (a)(6),~~ ~~115.116(a)(2), [G]115.117~~	***NONE*** ~~115.118(a)(4), (a)(4)(F), (a)(5),~~ ~~115.118(a)(7)~~	NONE

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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
18	~~OC6L8D97~~	~~R5112-02~~	~~VOC~~	~~115.115(a), (a)(6), 115.116(a)(2), [G]115.117~~	~~115.118(a)(4), (a)(4)(F), (a)(5), 115.118(a)(7)~~	~~NONE~~
15	***OC6L8F1***	***63YY-01***	***HAPS***	***63.1103(e)(4)(viii)-(ix), (xii), 63.1108(b)(1), (b)(1)(i)-(ii), 63.1108(b)(2), (b)(2)(i)-(ii), (b)(4), 63.1108(b)(4)(ii)(A)-(B), (b)(4)(iii), 63.1112(b)(1)-(3), (b)(3)(i)-(iii), 63.1113(b)(1)-(2), (b)(4), 63.655(g)(11)(ii), 63.670, 63.670(b)-(c), [G](d), (e), [G](f), 63.670(g), [G](h)-(n), [G]63.671(a)-(e), Table 13, 63.987(b)(3)(i), (b)(3)(iv), 63.996(b)(2), (c)(1), (c)(2)(i)-(iii), 63.996(c)(3)-(6), 63.997(a), 63.997(b)(1)-(3), (c)(1)(ii), 63.997(c)(2), (c)(3)(i), (c)(3)(iii), 63.997(d), (e)(1)(i), (e)(1)(v), 63.997(e)(2)(i)(A)-(B), (e)(2)(ii), 63.997(e)(2)(iii)(A)-(H)***	***63.1102(c)(12), 63.1103(e)(4)(x), 63.1104(l)(4), 63.1109(a), (c), (e), (e)(1)-(2), 63.1109(e)(2)(i)-(iv), (e)(3)-(15), [G]63.670(o)(1), (o)(2),(o)(2)(ii), 63.670(o)(3), (o)(3)(i), [G]63.670(o)(4)-(5), (o)(6), [G]63.670(o)(7) 63.983(a)(3)(i)-(ii), (b)(1)(i)-(ii), 63.983(b)(2)-(4), (c)(1)-(3), 63.983(d)(2), 63.987(b)(1), (c), 63.998(a)(1)(i)-(iii), 63.998(d)(1)(i)-(iv), (d)(3), 63.998(d)(3)(i)***	***63.1110(a)(10)(i), (a)(10)(i)(A)-(C), 63.1110(d)(1)(iv), (e)(4), (e)(4)(i)-(iv), 63.1110(e)(4)(iv)(A)-(C), (e)(4)(v)-(vi), 63.1100(g), (g)(2)(ii), 63.1102(c)(13), 63.1104(m)(2)(i), (m)(2)(i)(A)-(C), 63.1104(m)(2)(ii)-(iii), 63.1109(b), 63.1110(a), (a)(1)-(2), (a)(4)-(5), 63.1110(a)(7)-(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), (a)(10)(iii), 63.1110(a)(10)(iii)(A)-(E), 63.1110(a)(10)(iii)(E)(1)-(4), 63.1110(a)(10)(iii)(F)-(G), (a)(10)(iv), 63.1110(a)(10)(iv), (a)(10)(iv)(A)-(C), 63.1110(a)(10)(iv)(C)(1)-(4), 63.1110(a)(10)(iv)(D)-(E), (b)(1)-(2), 63.1110(c), (c)(1)-(7), (d)(1), (d)(1)(i)-(ii) 63.1110(e), (e)(1)-(3), (f), (f)(1)-(4), 63.1110(g)(1)-(4), (h)(1)-(7), 63.1111(b), 63.1111(b)(1), (b)(1)(i)-(ii), 63.1111(b)(1)(ii)(A)-(B), (b)(1)(iii)-(iv), 63.1111(b)(2), 63.655(g), (g)(11), 63.655(g)(11)(ii), [G]63.670(o)(1), (o)(2), 63.670(o)(2)(ii), (o)(3), (o)(3)(i), [G]63.670(o)(4)-(5), (o)(6), [G](o)(7) 63.999(a)(1)(i), (a)(1)(iii)-(iv), (a)(2), 63.999(c)(1)-(3)***

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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
15	***OC6L8F1018***	***63YY-01***	***HAPS***	***63.1103(e)(4)(viii)-(ix), (xii), 63.1108(b)(1), (b)(1)(i)-(ii), 63.1108(b)(2), (b)(2)(i)-(ii), (b)(4), 63.1108(b)(4)(ii)(A)-(B), (b)(4)(iii), 63.1112(b)(1)-(3), (b)(3)(i)-(iii), 63.1113(b)(1)-(2), (b)(4), 63.655(g)(11)(ii), 63.670, 63.670(b)-(c), [G](d), (e), [G](f), 63.670(g), [G](h)-(n), [G]63.671(a)-(e), Table 13, 63.987(b)(3)(i), (b)(3)(iv), 63.996(b)(2), (c)(1), (c)(2)(i)-(iii), 63.996(c)(3)-(6), 63.997(a), 63.997(b)(1)-(3), (c)(1)(ii), 63.997(c)(2), (c)(3)(i), (c)(3)(iii), 63.997(d), (e)(1)(i), (e)(1)(v), 63.997(e)(2)(i)(A)-(B), (e)(2)(ii), 63.997(e)(2)(iii)(A)-(H)***	***63.1102(c)(12), 63.1103(e)(4)(x), 63.1104(l)(4), 63.1109(a), (c), (e), (e)(1)-(2), 63.1109(e)(2)(i)-(iv), (e)(3)-(15), [G]63.670(o)(1), (o)(2),(o)(2)(ii), 63.670(o)(3), (o)(3)(i), [G]63.670(o)(4)-(5), (o)(6), [G]63.670(o)(7) 63.983(a)(3)(i)-(ii), (b)(1)(i)-(ii), 63.983(b)(2)-(4), (c)(1)-(3), 63.983(d)(2), 63.987(b)(1), (c), 63.998(a)(1)(i)-(iii), 63.998(d)(1)(i)-(iv), (d)(3), 63.998(d)(3)(i)***	***63.1110(a)(10)(i), (a)(10)(i)(A)-(C), 63.1110(d)(1)(iv), (e)(4), (e)(4)(i)-(iv), 63.1110(e)(4)(iv)(A)-(C), (e)(4)(v)-(vi), 63.1100(g), (g)(2)(ii), 63.1102(c)(13), 63.1104(m)(2)(i), (m)(2)(i)(A)-(C), 63.1104(m)(2)(ii)-(iii), 63.1109(b), 63.1110(a), (a)(1)-(2), (a)(4)-(5), 63.1110(a)(7)-(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), (a)(10)(iii), 63.1110(a)(10)(iii)(A)-(E), 63.1110(a)(10)(iii)(E)(1)-(4), 63.1110(a)(10)(iii)(F)-(G), (a)(10)(iv), 63.1110(a)(10)(iv), (a)(10)(iv)(A)-(C), 63.1110(a)(10)(iv)(C)(1)-(4), 63.1110(a)(10)(iv)(D)-(E), (b)(1)-(2), 63.1110(c), (c)(1)-(7), (d)(1), (d)(1)(i)-(ii) 63.1110(e), (e)(1)-(3), (f), (f)(1)-(4), 63.1110(g)(1)-(4), (h)(1)-(7), 63.1111(b), 63.1111(b)(1), (b)(1)(i)-(ii), 63.1111(b)(1)(ii)(A)-(B), (b)(1)(iii)-(iv), 63.1111(b)(2), 63.655(g), (g)(11), 63.655(g)(11)(ii), [G]63.670(o)(1), (o)(2), 63.670(o)(2)(ii), (o)(3), (o)(3)(i), [G]63.670(o)(4)-(5), (o)(6), [G](o)(7) 63.999(a)(1)(i), (a)(1)(iii)-(iv), (a)(2), 63.999(c)(1)-(3)***

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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
18	~~OC6L8D97~~	~~R5112-02~~	~~VOC~~	~~115.115(a), (a)(6), 115.116(a)(2), [G]115.117~~	~~115.118(a)(4), (a)(4)(F), (a)(5), 115.118(a)(7)~~	~~NONE~~
11	OC6L8FU01 (Pumps in Light Liquid Service)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G](h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), 63.1023(a)(1)(ii), (a)(2)(i), 63.1029(a), [G](b)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023, 63.1038(a), 63.1038(b)(1)-(2), (b)(6)-(7), [G]63.1038(c)(2)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(i)(ii), 63.1039(b)(2), (b)(8)*** ~~General High-Level Applicability~~
11	OC6L8FU01 (Compressors)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G](h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), 63.1023(a)(1)(vi), 63.1031(c)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), [G]63.1031(d), 63.1038(a), 63.1038(b)(1)-(2), (b)(6)-(7), [G]63.1038(c)(6)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(1)(v), 63.1039(b)(2), (b)(8)*** ~~General High-Level Applicability~~

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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
11	OC6L8FU01 (Pressure Relief Devices in Gas/Vapor Service)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G](h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), 63.1023(a)(1)(v)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), 63.1038(a), (b)(1)-(2), 63.1038(b)(6)-(7), (c)(5)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(2), 63.1039(b)(4)-(5), (b)(8)*** ~~General High-Level Applicability~~
11	OC6L8FU01 (Valves in Gas/Vapor Service)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G](h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), 63.1023(a)(1)(i)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), 63.1038(a), (b)(1)-(2), 63.1038(b)(6)-(7), [G](c)(1)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(1), 63.1039(b)(1)(i), (b)(2), (b)(5), (b)(8)*** ~~General High-Level Applicability~~

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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
11	OC6L8FU01 (Pressure Relief Devices in Liquid Service)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G](h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), [G]63.1029(b)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), 63.1038(a), (b)(1)-(2), 63.1038(b)(6)-(7), (c)(5)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(2), 63.1039(b)(8)*** ~~General High-Level Applicability~~
11	OC6L8FU01 (Closed Vent Systems and Control Devices)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G](h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), 63.1038(a), (b)(1)-(2), 63.1038(b)(6)-(7)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(2), 63.1039(b)(8)*** ~~General High-Level Applicability~~

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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
11	OC6L8FU01 (Connectors in Gas/Vapor or Light Liquid Service)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G](h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), 63.1023(a)(1)(iii)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), 63.1038(a), (b)(1)-(2), 63.1038(b)(6)-(7), (c)(3)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), (a)(4)-(5), 63.1110(a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G](f), [G]63.1110(g), [G](h), 63.1111(b), 63.1111(c)(2), 63.1039(a), [G](a)(1), (b), 63.1039(b)(1), (b)(1)(iii), (b)(2), (b)(5), 63.1039(b)(8)*** ~~General High-Level Applicability~~
11	OC6L8FU11 (Pumps in Light Liquid Service)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G](h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), 63.1023(a)(1)(ii), (a)(2)(i), 63.1029(a), [G](b)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023, 63.1038(a), 63.1038(b)(1)-(2), (b)(6)-(7), [G]63.1038(c)(2)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(i)(ii), 63.1039(b)(2), (b)(8)*** ~~General High-Level Applicability~~

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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
11	OC6L8FU11 (Compressors)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G](h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), 63.1023(a)(1)(vi), 63.1031(c)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), [G]63.1031(d), 63.1038(a), 63.1038(b)(1)-(2), (b)(6)-(7), [G]63.1038(c)(6)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(1)(v), 63.1039(b)(2), (b)(8)*** ~~General High-Level Applicability~~
11	OC6L8FU11 (Pressure Relief Devices in Gas/Vapor Service)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G](h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), 63.1023(a)(1)(v)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), 63.1038(a), (b)(1)-(2), 63.1038(b)(6)-(7), (c)(5)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(2), 63.1039(b)(4)-(5), (b)(8)*** ~~General High-Level Applicability~~

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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
11	OC6L8FU11 (Valves in Gas/Vapor Service)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G](h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), 63.1023(a)(1)(i)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), 63.1038(a), (b)(1)-(2), 63.1038(b)(6)-(7), [G](c)(1)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(1), 63.1039(b)(1)(i), (b)(2), (b)(5), (b)(8)*** ~~General High-Level Applicability~~
11	OC6L8FU11 (Pressure Relief Devices in Liquid Service)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G](h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), [G]63.1029(b)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), 63.1038(a), (b)(1)-(2), 63.1038(b)(6)-(7), (c)(5)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(2), 63.1039(b)(8)*** ~~General High-Level Applicability~~

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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
11	OC6L8FU11 (Closed Vent Systems and Control Devices)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G](h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), 63.1038(a), (b)(1)-(2), 63.1038(b)(6)-(7)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), 63.1110(a)(4)-(5), (a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G]63.1110(f)-(h), 63.1111(b), (c)(2), 63.1039(a), [G](a)(1), (b), (b)(2), 63.1039(b)(8)*** ~~General High-Level Applicability~~
11	OC6L8FU11 (Connectors in Gas/Vapor or Light Liquid Service)	63YY-01	HAPS	***63.1107(a), (h)(2), (h)(2)(i)-(iii), 63.1107(h)(3), [G](h)(3)(i), 63.1108(b)(4)(iii), 63.1023(a), 63.1023(a)(1)(iii)*** ~~General High-Level Applicability~~	***63.1102(c)(12), 63.1104(l)(4), 63.1107(h)(3), [G](h)(3)(i), 63.1109(a), (c), [G](i), 63.1111(c)(1), [G]63.1023(e), 63.1038(a), (b)(1)-(2), 63.1038(b)(6)-(7), (c)(3)*** ~~General High-Level Applicability~~	***63.1100(g), (g)(4)(i), 63.1102(c)(13), 63.1109(b), 63.1110(a), (a)(2), (a)(4)-(5), 63.1110(a)(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), [G](a)(10)(iii), [G]63.1110(a)(10)(iv), (c), (c)(1)-(7), 63.1110(d)(1), (d)(1)(i)-(ii) 63.1110(d)(1)(v), (d)(1)(v)(A)-(B), 63.1110(e), (e)(1)-(3), [G](e)(8), [G](f), [G]63.1110(g), [G](h), 63.1111(b), 63.1111(c)(2), 63.1039(a), [G](a)(1), (b), 63.1039(b)(1), (b)(1)(iii), (b)(2), (b)(5), 63.1039(b)(8)*** ~~General High-Level Applicability~~

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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
9	OC6L8RX1	R5121-02	VOC	[G]115.125, ~~115.126(1), (1)(B),~~ 115.126(2)	115.126, ~~(1), (1)(B),~~ (2)	NONE
9	OC6L8RX2	R5121-02	VOC	[G]115.125, ~~115.126(1), (1)(B),~~ 115.126(2)	115.126, ~~(1), (1)(B),~~ (2)	NONE
9	OC6L8RX3	R5121-01	VOC	[G]115.125, ~~115.126(1), (1)(B),~~ 115.126(2)	115.126, ~~(1), (1)(B),~~ (2)	NONE
9	OC6L8RX4	R5121-01	VOC	[G]115.125, ~~115.126(1), (1)(B),~~ 115.126(2)	115.126, ~~(1), (1)(B),~~ (2)	NONE
16	***OC6L8ST01A***	***63YY-01***	***HAPS***	***63.1108(b)(4)(iii), [G]63.1063(c)(2), [G](d)(1), [G]63.1063(d)(3), [G](e)***	***63.1102(c)(12), 63.1104(l)(4), 63.1109(a), (c), 63.1065(a), [G]63.1065(b), (c)***	***63.1100(g), (g)(2)(ii), 63.1102(c)(13), 63.1104(m)(2)(i), (m)(2)(i)(A)-(C), 63.1104(m)(2)(ii)-(iii), 63.1109(b), 63.1110(a), (a)(1)-(2), (a)(4)-(5), 63.1110(a)(7)-(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), (a)(10)(iii), 63.1110(a)(10)(iii)(A)-(E), 63.1110(a)(10)(iii)(E)(1)-(4), 63.1110(a)(10)(iii)(F)-(G), (a)(10)(iv), 63.1110(a)(10)(iv), (a)(10)(iv)(A)-(C), 63.1110(a)(10)(iv)(C)(1)-(4), 63.1110(a)(10)(iv)(D)-(E), (b)(1)-(2), 63.1110(c), (c)(1)-(7), (d)(1), (d)(1)(i)-(ii) 63.1110(e), (e)(1)-(3), (f), (f)(1)-(4), 63.1110(g)(1)-(4), (h)(1)-(7), 63.1111(b), 63.1111(b)(1), (b)(1)(i)-(ii), 63.1111(b)(1)(ii)(A)-(B), (b)(1)(iii)-(iv), 63.1111(b)(2), [G]63.1066(a), 63.1066(b)(1)-(2)***

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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
16	***OC6L8ST01B***	***63YY-01***	***HAPS***	***63.1108(b)(4)(iii), [G]63.1063(c)(2), [G](d)(1), [G]63.1063(d)(3), [G](e)***	***63.1102(c)(12), 63.1104(l)(4), 63.1109(a), (c), 63.1065(a), [G]63.1065(b), (c)***	***63.1100(g), (g)(2)(ii), 63.1102(c)(13), 63.1104(m)(2)(i), (m)(2)(i)(A)-(C), 63.1104(m)(2)(ii)-(iii), 63.1109(b), 63.1110(a), (a)(1)-(2), (a)(4)-(5), 63.1110(a)(7)-(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), (a)(10)(iii), 63.1110(a)(10)(iii)(A)-(E), 63.1110(a)(10)(iii)(E)(1)-(4), 63.1110(a)(10)(iii)(F)-(G), (a)(10)(iv), 63.1110(a)(10)(iv), (a)(10)(iv)(A)-(C), 63.1110(a)(10)(iv)(C)(1)-(4), 63.1110(a)(10)(iv)(D)-(E), (b)(1)-(2), 63.1110(c), (c)(1)-(7), (d)(1), (d)(1)(i)-(ii) 63.1110(e), (e)(1)-(3), (f), (f)(1)-(4), 63.1110(g)(1)-(4), (h)(1)-(7), 63.1111(b), 63.1111(b)(1), (b)(1)(i)-(ii), 63.1111(b)(1)(ii)(A)-(B), (b)(1)(iii)-(iv), 63.1111(b)(2), [G]63.1066(a), 63.1066(b)(1)-(2)***

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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
16	***OC6L8ST901***	***63YY-01***	***HAPS***	***63.1108(b)(4)(iii), [G]63.1063(c)(2), [G](d)(1), [G]63.1063(d)(3), [G](e)***	***63.1102(c)(12), 63.1104(l)(4), 63.1109(a), (c), 63.1065(a), [G]63.1065(b), (c)***	***63.1100(g), (g)(2)(ii), 63.1102(c)(13), 63.1104(m)(2)(i), (m)(2)(i)(A)-(C), 63.1104(m)(2)(ii)-(iii), 63.1109(b), 63.1110(a), (a)(1)-(2), (a)(4)-(5), 63.1110(a)(7)-(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), (a)(10)(iii), 63.1110(a)(10)(iii)(A)-(E), 63.1110(a)(10)(iii)(E)(1)-(4), 63.1110(a)(10)(iii)(F)-(G), (a)(10)(iv), 63.1110(a)(10)(iv), (a)(10)(iv)(A)-(C), 63.1110(a)(10)(iv)(C)(1)-(4), 63.1110(a)(10)(iv)(D)-(E), (b)(1)-(2), 63.1110(c), (c)(1)-(7), (d)(1), (d)(1)(i)-(ii) 63.1110(e), (e)(1)-(3), (f), (f)(1)-(4), 63.1110(g)(1)-(4), (h)(1)-(7), 63.1111(b), 63.1111(b)(1), (b)(1)(i)-(ii), 63.1111(b)(1)(ii)(A)-(B), (b)(1)(iii)-(iv), 63.1111(b)(2), [G]63.1066(a), 63.1066(b)(1)-(2)***
8	OC6L8ST916	R5112-01	VOC	***NONE*** ~~115.115(a), (a)(6), 115.116(a)(2), [G]115.117~~	***NONE*** ~~115.118(a)(4), (a)(4)(F), (a)(5), 115.118(a)(7)~~	NONE

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Table 1b: Additions

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Revision No.	Unit/Group/Process ID No.	SOP/GOP Index No.	Pollutant	Monitoring and Testing Requirements	Recordkeeping Requirements	Reporting Requirements
16	***OC6L8V1905***	***63YY-01***	***HAPS***	***63.1108(b)(4)(iii), [G]63.1063(c)(2), [G](d)(1), [G]63.1063(d)(3), [G](e)***	***63.1102(c)(12), 63.1104(l)(4), 63.1109(a), (c), 63.1065(a), [G]63.1065(b), (c)***	***63.1100(g), (g)(2)(ii), 63.1102(c)(13), 63.1104(m)(2)(i), (m)(2)(i)(A)-(C), 63.1104(m)(2)(ii)-(iii), 63.1109(b), 63.1110(a), (a)(1)-(2), (a)(4)-(5), 63.1110(a)(7)-(8), (a)(10)(ii), 63.1110(a)(10)(ii)(A), (a)(10)(iii), 63.1110(a)(10)(iii)(A)-(E), 63.1110(a)(10)(iii)(E)(1)-(4), 63.1110(a)(10)(iii)(F)-(G), (a)(10)(iv), 63.1110(a)(10)(iv), (a)(10)(iv)(A)-(C), 63.1110(a)(10)(iv)(C)(1)-(4), 63.1110(a)(10)(iv)(D)-(E), (b)(1)-(2), 63.1110(c), (c)(1)-(7), (d)(1), (d)(1)(i)-(ii) 63.1110(e), (e)(1)-(3), (f), (f)(1)-(4), 63.1110(g)(1)-(4), (h)(1)-(7), 63.1111(b), 63.1111(b)(1), (b)(1)(i)-(ii), 63.1111(b)(1)(ii)(A)-(B), (b)(1)(iii)-(iv), 63.1111(b)(2), [G]63.1066(a), 63.1066(b)(1)-(2)***

TCEQ 10018 (APDG 5939v2, Revised 06/15) OP-REQ3 – Applicable Requirements Summary
This form is for use by sources subject to air quality permit
requirements and may be revised periodically. (Title V Release 11/08)

Form OP-REQ2
Negative Applicable Requirement Determinations
Federal Operating Permit Program

Date: August 28, 2023	**Regulated Entity No.:** RN100225945	**Permit No.:** O2213
Company Name: The Dow Chemical Company	**Area Name:** Hydrocarbons	

Unit AI	Revision No.	Unit/Group/Process ID No.	Unit/Group/ Process Applicable Form	Potentially Applicable Regulatory Name	Negative Applicability Citation	Negative Applicability Reason
D	15	~~OC2L8GF500~~	~~OP-UA7~~	~~40 CFR Part 63, Subpart A~~	~~63.11(a)~~	~~The flare is not required by a subpart under 40 CFR Part 63.~~
D	15	~~OC6L8F1~~	~~OP-UA7~~	~~40 CFR Part 63, Subpart A~~	~~63.11(a)~~	~~The flare is not required by a subpart under 40 CFR Part 63.~~
D	15	~~OC6L8F1018~~	~~OP-UA7~~	~~40 CFR Part 63, Subpart A~~	~~63.11(a)~~	~~The flare is not required by a subpart under 40 CFR Part 63.~~

TCEQ-10017 (APDG 5741v3, Revised 06/15) OP-REQ2 - Instructions
This form for use by facilities subject to air quality permit requirements and may be revised periodically (Title V Release 10/07)

Texas Commission on Environmental Quality
Application Area-Wide Applicability Determinations and General Information
Form OP-REQ1
Federal Operating Permit Program

Date:	August 28, 2023
Permit No.:	O2213
RN No.:	RN100225945

For SOP applications, answer ALL questions unless otherwise directed.
♦ *For GOP applications, answer ONLY these questions unless otherwise directed.*

Form OP-REQ1: Page 78			
XI.	**Miscellaneous (continued)**		
B.	**Forms**		
♦	1.	The application area contains units that are potentially subject to a regulation for which the TCEQ has not developed a unit attribute form. If the response to Question XI.B.1 is "NO" or "N/A," go to Section XI.C.	☒YES ☐NO ☐N/A
♦	2.	Provide the Part and Subpart designation for the federal rule(s) or the Chapter, Subchapter, and Division designation for the State regulation(s) in the space provided below.	
40 CFR Part 63, Subparts YY, EEEE (OLD) and GGGGG			
C.	**Emission Limitation Certifications**		
♦	1.	The application area includes units for which federally enforceable emission limitations have been established by certification.	☒YES ☐NO
D.	**Alternative Means of Control, Alternative Emission Limitation or Standard, or Equivalent Requirements**		
	1.	The application area is located at a site that is subject to a site-specific requirement of the state implementation plan (SIP).	☒YES ☐NO
	2.	The application area includes units located at the site that are subject to a site-specific requirement of the SIP.	☒YES ☐NO
	3.	The application area includes units which demonstrate compliance by using an alternative means of control, alternative emission limitation or standard or equivalent requirements approved by the EPA Administrator. *If the response to Question XI.D.3 is "YES," please include a copy of the approval document with the application.*	☐YES ☒NO
	4.	The application area includes units which demonstrate compliance by using an alternative means of control, alternative emission limitation or standard or equivalent requirements approved by the TCEQ Executive Director. *If the response to Question XI.D.4 is "YES," please include a copy of the approval document with the application.*	☒***YES*** ☐NO ~~☐YES ☒NO~~

Federal Operating Permit Program
Application for Permit Revision/Renewal – Form OP-2-Table 1

Date: **August 28, 2023**	
Permit No.: **O2213**	
Regulated Entity No.: **RN100225945**	
Company Name: **The Dow Chemical Company**	
For Submissions to EPA	
Has an electronic copy of this application been submitted (or is being submitted) to EPA?	☒ YES ☐ NO
I. Application Type	
Indicate the type of application:	
☐ Renewal	
☒ Streamlined Revision (Must include provisional terms and conditions as explained in the instructions.)	
☐ Significant Revision	
☐ Revision Requesting Prior Approval	
☐ Administrative Revision	
☐ Response to Reopening	
II. Qualification Statement	
For SOP Revisions Only	☒ YES ☐ NO
For GOP Revisions Only	☐ YES ☐ NO

Federal Operating Permit Program
Application for Permit Revision/Renewal – Form OP-2-Table 1 *(continued)*

III. Major Source Pollutants (Complete this section if the permit revision is due to a change at the site or change in regulations.)						
Indicate all pollutants for which the site is a major source based on the site's potential to emit: *(Check the appropriate box[es].)*						
☒ VOC	☒ NO_X	☒ SO_2	☒ PM_{10}	☒ CO	☐ Pb	☒ HAP
Other:						
IV. Reference Only Requirements *(For reference only)*						
Has the applicant paid emissions fees for the most recent agency fiscal year (September 1 - August 31)?						☒ YES ☐ NO ☐ N/A
V. Delinquent Fees and Penalties						
Notice: This form will not be processed until all delinquent fees and/or penalties owed to the TCEQ or the Office of the Attorney General on behalf of the TCEQ are paid in accordance with the Delinquent Fee and penalty protocol.						

Federal Operating Permit Program
Application for Permit Revision/Renewal – Form OP-2-Table 2

Date: **August 28, 2023**
Permit No.: **O2213**
Regulated Entity No.: **RN100225945**
Company Name: **The Dow Chemical Company**

Using the table below, provide a description of the revision.

Revision No.	Revision Code	New Unit	Unit/Group	Process	NSR Authorization	Description of Change and Provisional Terms and Conditions
			ID No.	Applicable Form		
1	MS-C	NO	B60L7F1	OP-REQ3	N/A	Please update the 40 CFR Part 63, Subpart FFFF citations in order to remove the citations that are no longer applicable after August 12, 2023, and to include the new citations that are applicable after August 12, 2023. Dow is also requesting to remove any citations that reference daily averages since these citations do not apply to flares [63.998(b) and 63.999(c)]. Dow received an interpretation on these citations in 2020. This interpretation is available upon request from the TCEQ permit writer. Please see Form OP-REQ3 for the detailed citations.
2	MS-C	NO	N/A	OP-REQ1 (Page 78)	N/A	Please incorporate AMOC #62, dated September 21, 2022, into this Title V Permit. Question XI.D.4 on the Form OP-REQ1 has been changed to "YES".
3	MS-C	NO	BSRSRLR615	OP-UA1 OP-REQ3	N/A	Please add 40 CFR Part 63, Subpart EEEE (OLD MACT) low-level positive applicability to this unit. Please see Form OP-REQ3 for detailed citations.

Federal Operating Permit Program
Application for Permit Revision/Renewal – Form OP-2-Table 2

Date: **August 28, 2023**
Permit No.: **O2213**
Regulated Entity No.: **RN100225945**
Company Name: **The Dow Chemical Company**

Using the table below, provide a description of the revision.

Revision No.	Revision Code	New Unit	Unit/Group ID No.	Process Applicable Form	NSR Authorization	Description of Change and Provisional Terms and Conditions
4	MS-C	NO	BSRSRST615 BSRSRST616 OC6L8D97	OP-UA1 OP-REQ3	N/A	Please remove 40 CFR Part 63, Subpart EEEE (OLD MACT) general high-level positive applicability from these units. Please add 40 CFR Part 63, Subpart EEEE (OLD MACT) low-level positive applicability to these units. Please see Form OP-REQ3 for detailed citations.
5	MS-C	NO	BSRHSBH	OP-SUMR	N/A	Please remove this unit from the entire Title V Permit. This unit is the vent stack for the Salt Bath Heater (BSRSRHSBH), which was removed in the last minor revision (Project #34140)
6	MS-C	NO	N/A	Major NSR Summary Table	N/A	Please update the 20432, PSDTX994M2, and N274 Major NSR Summary Table. This table has been provided in a separate Word document with track changes.

Federal Operating Permit Program
Application for Permit Revision/Renewal – Form OP-2-Table 2

Date: **August 28, 2023**
Permit No.: **O2213**
Regulated Entity No.: **RN100225945**
Company Name: **The Dow Chemical Company**

Using the table below, provide a description of the revision.

Revision No.	Revision Code	New Unit	Unit/Group	Process	NSR Authorization	Description of Change and Provisional Terms and Conditions
			ID No.	Applicable Form		
7	MS-C	NO	OC2L8GF500 OC6L8F1 OC6L8F1018	N/A	N/A	Please remove reference to 60.18 in the 30 TAC Chapter 115, HRVOC Vent Gas "Textual Description" on the Applicable Requirements Summary Table for these units. Please add reference to 63.1103(e)(4) to the 30 TAC Chapter 115, HRVOC Vent Gas "Textual Description" for these units. Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart A for all units venting to a flare per AMOC #62, dated September 21, 2022.

Federal Operating Permit Program
Application for Permit Revision/Renewal – Form OP-2-Table 2

Date: **August 28, 2023**	
Permit No.: **O2213**	
Regulated Entity No.: **RN100225945**	
Company Name: **The Dow Chemical Company**	

Using the table below, provide a description of the revision.

Revision No.	Revision Code	New Unit	Unit/Group	Process	NSR Authorization	Description of Change and Provisional Terms and Conditions
			ID No.	Applicable Form		
8	MS-C	NO	OC6L8D91 OC6L8D97 OC6L8ST916	OP-UA3 OP-REQ3	N/A	Please remove citation 60.18 from the 30 TAC Chapter 115, Storage of VOCs requirements for this unit. Please update the Alternate Control Requirement answer from “NO” to “YES” for operating scenario 1 (R5112-01) on Form OP-UA3/Table 4a. Please add citation 63.1103(e)(4)(xii)-(xiii) to the Standards for these units. Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart A for all units venting to a flare per AMOC #62, dated September 21, 2022. Please see Form OP-REQ3 for detailed citations.

Federal Operating Permit Program
Application for Permit Revision/Renewal – Form OP-2-Table 2

Date: **August 28, 2023**
Permit No.: **O2213**
Regulated Entity No.: **RN100225945**
Company Name: **The Dow Chemical Company**

Using the table below, provide a description of the revision.

Revision No.	Revision Code	New Unit	Unit/Group ID No.	Process Applicable Form	NSR Authorization	Description of Change and Provisional Terms and Conditions
9	MS-C	NO	OC6L8RX1 OC6L8RX2 OC6L8RX3 OC6L8RX4	OP-UA15 OP-REQ3	N/A	Please remove citation 60.18 from the 30 TAC Chapter 115, Vent Gas Controls requirements for this unit. Please update the Alternate Control Requirement answer from "NONE" to "ALTED" on Form OP-UA15/Table 2b. Please add citation 63.1103(e)(4)(xii)-(xiii) to the Standards for these units. Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart A for all units venting to a flare per AMOC #62, dated September 21, 2022. Please see Form OP-REQ3 for detailed citations.

Federal Operating Permit Program
Application for Permit Revision/Renewal – Form OP-2-Table 2

Date: **August 28, 2023**
Permit No.: **O2213**
Regulated Entity No.: **RN100225945**
Company Name: **The Dow Chemical Company**

Using the table below, provide a description of the revision.

Revision No.	Revision Code	New Unit	Unit/Group ID No.	Process Applicable Form	NSR Authorization	Description of Change and Provisional Terms and Conditions
10	MS-C	NO	OC2L8D1181 OC6L8D169 OC6L8D280	OP-UA19 OP-REQ3	N/A	Please remove citation 60.18(b) from the 30 TAC Chapter 115, Industrial Wastewater requirements for this unit. Please update the Alternate Control Requirement answer from “NO” to “YES” on Form OP-UA19/Table 1a. Please add citation 63.1103(e)(4)(xii)-(xiii) to the Standards for these units. Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart A for all units venting to a flare per AMOC #62, dated September 21, 2022. Please see Form OP-REQ3 for detailed citations.
11	MS-C	NO	B60L7FU1 B72L7FU1 OC6L8FU01 OC6L8FU11	OP-UA1 OP-REQ3	N/A	Please remove 40 CFR Part 63, Subpart YY general high-level positive applicability from these units. Please add 40 CFR Part 63, Subpart YY low-level positive applicability to these units. Please see Form OP-REQ3 for detailed citations. Please note, 40 CFR Part 63, Subpart UU citations are included.

Federal Operating Permit Program
Application for Permit Revision/Renewal – Form OP-2-Table 2

Date: **August 28, 2023**
Permit No.: **O2213**
Regulated Entity No.: **RN100225945**
Company Name: **The Dow Chemical Company**

Using the table below, provide a description of the revision.

Revision No.	Revision Code	New Unit	Unit/Group ID No.	Process Applicable Form	NSR Authorization	Description of Change and Provisional Terms and Conditions
12	MS-C	NO	OC6L8H8 OC6L8H9 OC6L8H10 (GRP2L8PF)	OP-UA1 OP-UA48	N/A	Please remove 40 CFR Part 63, Subpart RRR positive applicability from these units. Please add 40 CFR Part 63, Subparts YY low-level positive applicability to these units. Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart RRR for all reactor processes per AMOC #62, dated September 21, 2022. Please see Form OP-REQ3 for detailed citations. Please note, 40 CFR Part 63, Subpart SS citations are included.
13	MS-C	NO	OC6L8H1 OC6L8H2 OC6L8H3 OC6L8H4 OC6L8H5 OC6L8H6 OC6L8H7 (GRP1L8PF)	OP-UA1	N/A	Please add 40 CFR Part 63, Subparts YY low-level positive applicability to these units. Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart RRR for all reactor processes per AMOC #62, dated September 21, 2022. Please see Form OP-REQ3 for detailed citations. Please note, 40 CFR Part 63, Subpart SS citations are included.

Federal Operating Permit Program
Application for Permit Revision/Renewal – Form OP-2-Table 2

Date: **August 28, 2023**	
Permit No.: **O2213**	
Regulated Entity No.: **RN100225945**	
Company Name: **The Dow Chemical Company**	

Using the table below, provide a description of the revision.

Revision No.	Revision Code	New Unit	Unit/Group ID No.		Process Applicable Form	NSR Authorization	Description of Change and Provisional Terms and Conditions
14	MS-C	NO	OC6L8T1251 OC6L8T160 OC6L8T19 OC6L8T201 OC6L8T20A OC6L8T20B OC6L8T251 OC6L8T252 OC6L8T301 OC6L8T350 OC6L8T40	OC6L8T41 OC6L8T50 OC6L8T51 OC6L8T52 OC6L8T54A OC6L8T54B OC6L8T60 OC6L8T64A OC6L8T64B OC6L8T72 (GRPL8DIST)	OP-SUMR	N/A	Please remove 40 CFR Part 63, Subpart NNN positive applicability from these units. Please remove these units from the entire Title V Permit; they no longer have any positive or negative applicability listed in the Title V Permit. Dow is choosing to comply with 40 CFR Part 63, Subpart YY in lieu of 40 CFR Part 60, Subpart NNN for all distillation units per AMOC #62, dated September 21, 2022. All distillation units are routed to control devices (OC6L8H1 – OC6L8H10, OC6L8F1018, OC6L8F1, or OC2L8GF500). Therefore, all requirements will be found at these control devices.

Federal Operating Permit Program
Application for Permit Revision/Renewal – Form OP-2-Table 2

Date: **August 28, 2023**
Permit No.: **O2213**
Regulated Entity No.: **RN100225945**
Company Name: **The Dow Chemical Company**

Using the table below, provide a description of the revision.

Revision No.	Revision Code	New Unit	Unit/Group ID No.	Process Applicable Form	NSR Authorization	Description of Change and Provisional Terms and Conditions
15	MS-C	NO	OC2L8GF500 OC6L8F1 OC6L8F1018	OP-UA1 OP-UA7	N/A	Please add 40 CFR Part 63, Subparts YY low-level positive applicability to these units. Please remove 40 CFR Part 63, Subpart A negative applicability from these units. Please add 40 CFR Part 63, Subpart A positive applicability to these units. Please see Form OP-REQ3 for detailed citations. Please note, 40 CFR Part 63, Subpart SS citations are included.
16	MS-C	NO	OC6L8ST01A OC6L8ST01B OC6L8ST901 OC6L8V1905	OP-UA1 OP-UA3	N/A	Please add 40 CFR Part 63, Subparts YY low-level positive applicability to these units. Please see Form OP-REQ3 for detailed citations. Please note, 40 CFR Part 63, Subpart WW citations are included.

Federal Operating Permit Program
Application for Permit Revision/Renewal – Form OP-2-Table 2

Date: **August 28, 2023**	
Permit No.: **O2213**	
Regulated Entity No.: **RN100225945**	
Company Name: **The Dow Chemical Company**	

Using the table below, provide a description of the revision.

Revision No.	Revision Code	New Unit	Unit/Group	Process	NSR Authorization	Description of Change and Provisional Terms and Conditions
			ID No.	Applicable Form		
17	MS-C	NO	OC6L8D91	OP-UA3	N/A	Please update the 30 TAC Chapter 115, Storage of VOCs Control Device Type from "FLARE" to "DIRINC" in the second operating scenario (R5112-02). Also, please change the Control Device ID No. from "OC6L8F1" to "OC6L8TO".
18	MS-C	NO	OC6L8D97	OP-UA3	N/A	Please remove the 30 TAC Chapter 115, Storage of VOCs second operating scenario (R5112-02) from this unit. Both operating scenarios vent to the same control device type. Therefore, Dow would like to combine the two operating scenarios into one, listing both control devices in the same row.

Federal Operating Permit Program
Application for Permit Revision/Renewal – Form OP-2-Table 2

Date: **August 28, 2023**	
Permit No.: **O2213**	
Regulated Entity No.: **RN100225945**	
Company Name: **The Dow Chemical Company**	

Using the table below, provide a description of the revision.

Revision No.	Revision Code	New Unit	Unit/Group ID No.	Process Applicable Form	NSR Authorization	Description of Change and Provisional Terms and Conditions
19	MS-C	NO	OC6L8RX1	OP-UA15	N/A	Please remove the 30 TAC Chapter 115, Vent Gas Control second operating scenario (R5121-02) from this unit. Both operating scenarios vent to the same control device type. Therefore, Dow would like to combine the two operating scenarios into one, listing both control devices in the same row.
20	MS-C	NO	OC6L8RX2	OP-UA15	N/A	Please update the Control Device ID No. from "OC6L8F902" to "OC6L8TO" in the 30 TAC Chapter 115, Vent Gas Control first operating scenario (R5121-01). Please update the Control Device ID No. from "OC6L8F902" to "OC6L8F1018" in the 30 TAC Chapter 115, Vent Gas Control second operating scenario (R5121-02).

Federal Operating Permit Program
Application for Permit Revision/Renewal – Form OP-2-Table 3

Date: **August 28, 2023**		
Permit No.: **O2213**		
Regulated Entity No.: **RN100225945**		
Company Name: **The Dow Chemical Company**		
I.	**Significant Revision** *(Complete this section if you are submitting a significant revision application or a renewal application that includes a significant revision.)*	
A.	Is the site subject to bilingual requirements pursuant to 30 TAC § 122.322?	☐ YES ☐ NO
B.	Indicate the alternate language(s) in which public notice is required:	
C.	Will, there be a change in air pollutant emissions as a result of the significant revision?	☐ YES ☐ NO

TCEQ-10059 (APDG 5722v26, revised 03/22) OP-2
This form is for use by facilities subject to air quality permit requirements and may be revised periodically. (Title V release 03/10)

August 28, 2023

Electronic Submittal via ePermits

Mr. Johnny Bowers
TCEQ Air Permits Initial Review Team (APIRT), MC-161
P.O. Box 13087
Austin, TX 78711-3087

The Dow Chemical Company, CN600356976; RN100225945
Hydrocarbons - Title V Operating Permit O2213
Permit Minor Revision Application

Dear Mr. Bowers,

The Dow Chemical Company is submitting the Title V Operating Permit O2213 minor revision application for the Hydrocarbons Unit located in Brazoria County, Texas. This minor revision application is submitted in accordance with 30 TAC Chapter 122, Subchapter, C §122.215 – §122.217.

Please do not hesitate to contact me at cschmidt6@dow.com if you require additional information regarding this submittal.

Sincerely,

Crystal Schmidt

Crystal Schmidt
Air Permit Manager

enclosure

cc:

US EPA Region 6	R6AirPermitsTX@epa.gov
TCEQ Air Section Manager, Region 12	R12apdmail@tceq.texas.gov
Brazoria County Health Department	jodiev@brazoria-county.com

Texas Commission on Environmental Quality

Title V Existing

2213

Site Information (Regulated Entity)

What is the name of the permit area to be authorized?	HYDROCARBONS
Does the site have a physical address?	Yes
Physical Address	
Number and Street	2301 N BRAZOSPORT BLVD
City	FREEPORT
State	TX
ZIP	77541
County	BRAZORIA
Latitude (N) (##.######)	28.990833
Longitude (W) (-###.######)	95.4075
Primary SIC Code	2869
Secondary SIC Code	
Primary NAICS Code	325199
Secondary NAICS Code	
Regulated Entity Site Information	
What is the Regulated Entity's Number (RN)?	RN100225945
What is the name of the Regulated Entity (RE)?	DOW TEXAS OPERATIONS FREEPORT
Does the RE site have a physical address?	Yes
Physical Address	
Number and Street	2301 N BRAZOSPORT BLVD
City	FREEPORT
State	TX
ZIP	77541
County	BRAZORIA
Latitude (N) (##.######)	28.9825
Longitude (W) (-###.######)	-95.352777
Facility NAICS Code	
What is the primary business of this entity?	INDUSTRIAL CHEMICAL MANUFACTURING PLANT

Customer (Applicant) Information

How is this applicant associated with this site?	Owner Operator
What is the applicant's Customer Number (CN)?	CN600356976
Type of Customer	Corporation
Full legal name of the applicant:	
Legal Name	The Dow Chemical Company
Texas SOS Filing Number	1216206
Federal Tax ID	381285128
State Franchise Tax ID	13812851288
State Sales Tax ID	
Local Tax ID	
DUNS Number	84970516
Number of Employees	251-500
Independently Owned and Operated?	

Responsible Official Contact

Person TCEQ should contact for questions about this application:	
Organization Name	THE DOW CHEMICAL COMPANY
Prefix	MR
First	JOHN
Middle	
Last	SAMPSON
Suffix	
Credentials	
Title	SENIOR VP
Enter new address or copy one from list:	
Mailing Address	
Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	2301 N BRAZOSPORT BLVD
Routing (such as Mail Code, Dept., or Attn:)	
City	FREEPORT
State	TX
ZIP	77541

Phone (###-###-####)	9792389977
Extension	
Alternate Phone (###-###-####)	
Fax (###-###-####)	9792358116
E-mail	txles@dow.com

Duly Authorized Representative Contact

Person TCEQ should contact for questions about this application	
Select existing DAR contact or enter a new contact.	FRAN FALCON(THE DOW CHEMICA...)
Organization Name	THE DOW CHEMICAL COMPANY
Prefix	MS
First	FRAN
Middle	
Last	FALCON
Suffix	
Credentials	
Title	EH&S REGIONAL LEVERAGED DELIVERY DIRECTOR
Enter new address or copy one from list	
Mailing Address	
Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	2301 N BRAZOSPORT BLVD
Routing (such as Mail Code, Dept., or Attn:)	BLDG B-101
City	FREEPORT
State	TX
Zip	77541
Phone (###-###-####)	9792389764
Extension	
Alternate Phone (###-###-####)	
Fax (###-###-####)	9792380317
E-mail	FQFalcon@dow.com

Technical Contact

Person TCEQ should contact for questions about this application:	

Select existing TC contact or enter a new contact.	New Contact
Organization Name	The Dow Chemical Company
Prefix	MRS
First	Crystal
Middle	
Last	Schmidt
Suffix	
Credentials	
Title	Air Permit Manager
Enter new address or copy one from list:	Duly Authorized Representative Contact Address
Mailing Address	
Address Type	Domestic
Mailing Address (include Suite or Bldg. here, if applicable)	332 HIGHWAY 332 E
Routing (such as Mail Code, Dept., or Attn:)	
City	LAKE JACKSON
State	TX
ZIP	77566
Phone (###-###-####)	9792381742
Extension	
Alternate Phone (###-###-####)	
Fax (###-###-####)	9792380317
E-mail	cschmidt6@dow.com

Title V General Information - Existing

1) Permit Type:	SOP
2) Permit Latitude Coordinate:	28 Deg 59 Min 27 Sec
3) Permit Longitude Coordinate:	95 Deg 24 Min 27 Sec
4) Is this submittal a new application or an update to an existing application?	New Application
4.1. What type of permitting action are you applying for?	Streamlined Revision
4.1.1. Are there any permits that should be voided upon issuance of this permit application through permit conversion?	No
4.1.2. Are there any permits that should be voided upon issuance of this permit application through permit consolidation?	No
5) Who will electronically sign this Title V application?	Duly Authorized Representative

6) Does this application include Acid Rain Program or Cross-State Air Pollution Rule requirements? No

Title V Attachments Existing

Attach OP-1 (Site Information Summary)

Attach OP-2 (Application for Permit Revision/Renewal)

[File Properties]

File Name	OP_2_Form OP-2.pdf
Hash	D11A926D1BA0DDA948B5284A7E1A15FCDEC8673D52FA3295EBEB2AA577AB62DE
MIME-Type	application/pdf

Attach OP-REQ1 (Application Area-Wide Applicability Determinations and General Information)

[File Properties]

File Name	OP_REQ1_Form OP-REQ1.pdf
Hash	D525AC21F11B89610D961690CF626C4D2BD5BA2DA0D0F404C68C00A97A66528C
MIME-Type	application/pdf

Attach OP-REQ2 (Negative Applicable Requirement Determinations)

[File Properties]

File Name	OP_REQ2_Form OP-REQ2.pdf
Hash	7796172D6D6265845C1E0AE9BC673E08C4ADE5C5A5328DB6245EBFB95DB9F904
MIME-Type	application/pdf

Attach OP-REQ3 (Applicable Requirements Summary)

[File Properties]

File Name	OP_REQ3_Form OP-REQ3.pdf
Hash	AA8633AC59BFA46690AA3689A5A466FEA73647620ADAB07F3C2D6EA9A49F984F
MIME-Type	application/pdf

Attach OP-PBRSUP (Permits by Rule Supplemental Table)

Attach OP-SUMR (Individual Unit Summary for Revisions)

[File Properties]

File Name	OP_SUMR_Form OP-SUMR.pdf
Hash	5546FD1BADC35952D44BA82D04F6B4911A3947DE0343C9E01954E74CEF3B4BB2
MIME-Type	application/pdf

Attach OP-MON (Monitoring Requirements)

Attach OP-UA (Unit Attribute) Forms

[File Properties]

File Name	OP-UA Forms.pdf
Hash	4A15F8B5CD65DB2DE54A8BE9F54C1059863B1F3B01C35E39D0BF1174B287164C
MIME-Type	application/pdf

If applicable, attach OP-AR1 (Acid Rain Permit Application)

Attach OP-CRO2 (Change of Responsible Official Information)

Attach OP-DEL (Delegation of Responsible Official)

Attach any other necessary information needed to complete the permit.

[File Properties]

File Name	AMOC62_343209_Approval_6269035.pdf
Hash	45FDE65D3C6F6B97958DCA7BA26F49E847AF4F8E7A3A4141D5C58CF430941AA9
MIME-Type	application/pdf

[File Properties]

File Name	Cover Letter.pdf
Hash	F8FA29F2943DE7CED82422C69ACF403405281F8B0975C65D8487C93F438EB094
MIME-Type	application/pdf

[File Properties]

File Name	O2213 Dow_Major NSR Summary Table_Final 3.0_Dow Comments.docx
Hash	9E56CD6388CCAB25C1AD62EAEB5C57E37904186352A226B557D2E6EB507FC44A
MIME-Type	application/vnd.openxmlformats-officedocument.wordprocessingml.document

An additional space to attach any other necessary information needed to complete the permit.

Expedite Title V

1) Per Texas Health and Safety Code, Section 382.05155, does the applicant want to expedite the processing of this application?	No

Certification

I certify that I am the Duly Authorized Representative for this application and that, based on information and belief formed after reasonable inquiry, the statements and information on this form are true, accurate, and complete.

1. I am Fran Q Falcon, the owner of the STEERS account ER028176.
2. I have the authority to sign this data on behalf of the applicant named above.
3. I have personally examined the foregoing and am familiar with its content and the content of any attachments, and based upon my personal knowledge and/or inquiry of any individual responsible for information contained herein, that this information is true, accurate, and complete.
4. I further certify that I have not violated any term in my TCEQ STEERS participation agreement and that I have no reason to believe that the confidentiality or use of my password has been compromised at any time.
5. I understand that use of my password constitutes an electronic signature legally equivalent to my written signature.
6. I also understand that the attestations of fact contained herein pertain to the implementation, oversight and enforcement of a state and/or federal environmental program and must be true and complete to the best of my knowledge.
7. I am aware that criminal penalties may be imposed for statements or omissions that I know or have reason to believe are untrue or misleading.
8. I am knowingly and intentionally signing Title V Existing 2213.
9. My signature indicates that I am in agreement with the information on this form, and authorize its submittal to the TCEQ.

OWNER OPERATOR Signature: Fran Q Falcon OWNER OPERATOR

Account Number:	ER028176
Signature IP Address:	165.225.32.84
Signature Date:	2023-08-28
Signature Hash:	80A3533D44DE24C165D8ACFA6462AF282D76C27E4CCA371E3E66B7ED9C16C9B2
Form Hash Code at time of Signature:	3575367113AAF93A035819B1F6B219037CAFC5E753014EDFDDAAB54430DADD83

Submission

Reference Number:	The application reference number is 588024
Submitted by:	The application was submitted by ER028176/Fran Q Falcon

Submitted Timestamp:	The application was submitted on 2023-08-28 at 20:35:18 CDT
Submitted From:	The application was submitted from IP address 165.225.32.84
Confirmation Number:	The confirmation number is 486699
Steers Version:	The STEERS version is 6.69
Permit Number:	The permit number is 2213

Additional Information

Application Creator: This account was created by Crystal Schmidt

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

September 21, 2022

MS FRAN QUINLAN FALCON
TEXAS REGIONAL ENVIRONMENTAL DIRECTOR
THE DOW CHEMICAL COMPANY
332 HIGHWAY 332 E
LAKE JACKSON TX 77566-5044

Re: Alternative Method of Compliance (AMOC) No. 62
Light Hydrocarbon Units 8 & 9
Alternate Compliance Monitoring
Regulated Entity Number: RN100225945
Customer Reference Number: CN600356976
Associated Permit Numbers: 166672, 20432, N274, PSDTX994M3, 107153, N260, PSDTX1328M2, and O2213

Dear Ms. Fran Quinlan Falcon:

This correspondence is in response to The Dow Chemical Company's (Dow's) June 6, 2022 request to revise AMOC No. 62 to expand and update Dow's current alternative compliance demonstration for process vent requirements under 40 Code of Federal Regulations (CFR) 63, Subpart YY National Emission Standards for Hazardous Air Pollutants for Source Categories: Generic Maximum Achievable Control Technology Standards and Subpart SS National Emission Standards for Closed Vent Systems, Control Devices, Recovery Devices and Routing to a Fuel Gas System or a Process (EMACT) in lieu of 40 CFR 60 Subpart NNN Standards of Performance for Volatile Organic Compound (VOC) Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations (NSPS NNN) and Subpart RRR Standards of Performance for Volatile Organic Compound Emissions from SOCMI Reactor Processes (NSPS RRR).

The previous versions of this AMOC approved EMACT requirements in lieu of NSPS NNN and RRR for distillation units and reactor processes on Light Hydrocarbons Unit 9 (LHC-9). We understand this revision includes all vent streams associated with distillation units and reactor processes on Light Hydrocarbons Unit 8 (LHC-8) (subject to NSPS NNN and RRR respectively), to demonstrate compliance with flare requirements following the EMACT. Additionally, since the EMACT standards have been updated since the previous AMOC revision, all applicable standards and monitoring requirements effective July 6, 2023 for LHC-8 and LHC-9 are updated (see Attachment for details).

Finally, we understand the company is requesting to have this AMOC approve EMACT requirements for flares to demonstrate compliance with the following 30 Texas Administrative Code (TAC) Chapter 115 references to 40 CFR §60.18 for LHC-8 and LHC-9:

- Subchapter B, Division 1 - VOC from Storage Tanks, Division 2 – VOC Vent Gas Controls, Division 3 - Water Separation, Division 4 - Industrial Wastewater;
- Subchapter C, Division 1 - VOC from Loading and Unloading of Transfer Operations and Marine Vessel Loading;
- Subchapter D, Division 3 - Fugitive Emission Control in Petroleum Refining, Natural Gas/Gasoline Processing, and Petrochemical Processes in Ozone Nonattainment Areas; and
- Subchapter H, Division 1 - HRVOC Vent Gas Controls, Subchapter F, Division 3 -Degassing of Storage Tanks, Transport Vessels, and Marine Vessels.

The Texas Commission on Environmental Quality (TCEQ) Executive Director has made a final decision to approve your AMOC request. The TCEQ has been delegated authority to enforce the above cited standards and is authorized to approve this AMOC. You are reminded that approval of any AMOC shall not abrogate the Executive Director or Administrator's authority under the Act or in any way prohibit later canceling the AMOC. By copy of this letter, we are informing the Environmental Protection Agency, Region 6, of this decision as required by TCEQ's delegation of authority.

This AMOC approval may supersede certain requirements or representations in the Permit Nos. referenced above. To ensure effective and consistent enforceability, we request that Dow incorporate this AMOC into the permits through submittal of appropriate actions no later than 90 days after this approval.

This approval may also change applicable requirements for the site, which are identified in the site operating permit (SOP) O2213. The TCEQ recommends the submittal of a SOP administrative revision if any changes are necessary. Changes meeting the criteria for an administrative revision can be operated before issuance of the revision if a complete application is submitted to the TCEQ and this information is maintained with the SOP records at the site.

If you need further information or have any questions, please contact Ms. Anne Inman, P.E. at (512) 239-1276 or write to the Texas Commission on Environmental Quality, Office of Air, Air Permits Division, MC-163, P.O. Box 13087, Austin, Texas 78711-3087.

Sincerely,

Samuel Short, Deputy Director
Air Permits Division
Office of Air
Texas Commission on Environmental Quality

cc: Director, Environmental Health, Brazoria County Health Department, Angleton
Air Section Manager, Region 12 - Houston
Jesse E. Chacon, P.E., Manager, Operating Permits Section, Air Permits Division, OA: MC-163
Rebecca Partee, Manager, Chemical New Source Review Permits Section, Air Permits Division, OA: MC-163
Air Permits Section Chief, New Source Review Section (6PD-R), U.S. Environmental Protection Agency, Region 6, Dallas

Project Number: 343209

Attachment Updated EMACT Standards and Monitoring Requirements
Effective July 6, 2023 for LHC-8 and LHC-9

NSPS NNN LHC-8 Distillation Systems Permit Nos. 20432, N274, PSDTX994M3:

	Unit	Description	FINs	EPNs
	D-50	Off-Gas Knock Out Drum/Recovery System, All 21 Distillation routine & MSS vented to control devices:		
1.	T-1251	Heavy Oil Stripper	OC6L8T1251	Furnaces S1- S10 (see above),
2.	T-160	Debutanizer	OC6L8T160	FS-1018 Vent Flare EPN OC6F1018,
3.	T-19	Low Pressure Cracked Gas Stripper	OC6L8T19	FS-1 Elevated Flare EPN OC6F1, or
4.	T-201	Quench Oil Tower	OC6L8T201	GF-500 MPGF EPN OC2GF500
5.	T-20A	Caustic Tower	OC6L8T20A	
6.	T-20B	Caustic Tower	OC6L8T20B	
7.	T-251	Heavy Fuel Oil Stripper	OC6L8T251	
8.	T-252	Top Light Fuel Oil Stripper	OC6L8T252	
9.	T-301	Quench Water Stripper	OC6L8T301	
10.	T-350	Oil Water Stripper	OC6L8T350	
11.	T-40	High Pressure Depropanizer	OC6L8T40	
12.	T-41	Low Pressure Depropanizer	OC6L8T41	
13.	T-50	Ethylene Recovery Tower	OC6L8T50	
14.	T-51	Methane Stripper	OC6L8T51	
15.	T-52	Deethanizer	OC6L8T52	
16.	T-54A	C3 Splitter Bottom Section	OC6L8T54A	
17.	T-54B	C3 Splitter Top Section	OC6L8T54B	
18.	T-60	Debutanizer	OC6L8T60	
19.	T-64A	C3 Splitter Bottom Section	OC6L8T64A	
20.	T-64B	C3 Splitter Top Section	OC6L8T64B	
21.	T-72	C2 Splitter	OC6L8T72	

NSPS NNN LHC-9 Distillation Systems Permit Nos. 107153, PSDTX1328M2, and N260:

	Unit	Description	FINs	EPNs
1.	T-171	Quench Water Tower	OC2L9DU171	All vented through various
2.	T-191A	Quench Water Stripper	OC2L9DU191	control devices, including:
3.	T-261	Caustic Wash Tower	OC2L9DU261	HP MPGF-596 EPNs
4.	T-301	Dethanizer	OC2L9DU301	OC2F596, OC2F5961, OC2F5962
5.	T-331	Demethanizer	OC2L9DU331	LP GF-597 EPN OC2F597 &
6.	T-351	C2 Splitter	OC2L9DU351	TXO FX-784 EPN OC2TOX
7.	T-421	Depropanizer	OC2L9DU421	
8.	T-431	Debutanizer	OC2L9DU431	
9.	T-709	Spent Caustic Stripper	OC2L9DU709	

NSPS RRR LHC-8 Reactor Processes/Control Devices Permit Nos. 20432, N274, PSDTX994M3:

	Unit	Description	EPNs
•	F-1	Pyrolysis Furnace	OC6S1
•	F-2	Pyrolysis Furnace	OC6S2
•	F-3	Pyrolysis Furnace	OC6S3
•	F-4	Pyrolysis Furnace	OC6S4
•	F-5	Pyrolysis Furnace	OC6S5
•	F-6	Pyrolysis Furnace	OC6S6
•	F-7	Pyrolysis Furnace	OC6S7
•	F-8	Pyrolysis Furnace	OC6S8
•	F-9	Pyrolysis Furnace	OC6S9
•	F-10	Pyrolysis Furnace	OC6S10

NSPS RRR LHC-9 Reactor Processes Permit Nos. 107153, PSDTX1328M2, and N260:

Unit	Description	FINs	EPNs
• F-120	Cracking Furnace (aka Heater H-120)	OC2L9H120	OC2H120
• F-121	Cracking Furnace (aka Heater H-121)	OC2L9H121	OC2H121
• F-122	Cracking Furnace (aka Heater H-122)	OC2L9H122	OC2H122
• F-123	Cracking Furnace (aka Heater H-123)	OC2L9H123	OC2H123
• F-124	Cracking Furnace (aka Heater H-124)	OC2L9H124	OC2H124
• F-125	Cracking Furnace (aka Heater H-125)	OC2L9H125	OC2H125
• F-126	Cracking Furnace (aka Heater H-126)	OC2L9H126	OC2H126
• F-127	Cracking Furnace (aka Heater H-127)	OC2L9H127	OC2H120
• F-128	Cracking Furnace (aka Heater H-128)	OC2L9H128	OC2H120
• F-129	Cracking Furnace (aka Heater H-129)	OC2L9H129	OC2H120
• R-402 devices, including	Acetylene Hydrogenation Reactor	OC2L9RX402	various control
• R-404 above	Acetylene Hydrogenation Reactor	OC2L9RX404	flares and TXO

Updated EMACT Requirements for Units in LHC-8 and LHC-9

Unit Type	Prior to 7/6/2023	On/After 7/6/2023
Steam-assisted Flares	§60.18 or AMOC 62	Operating Limits and Monitoring §§63.670-63.671, §63.1103(e)(4) as applicable: • Operating Limits specified in §§63.670(b)-(f), (m)(1), 63.1103(e)(4)(xii)-(xiii) • Monitoring requirements specified in §§63.670(g)-(j), 63.655(g)(11)(ii), 63.1103(e)(4)(viii)-(ix), (xii) • Flare Management Plan (Emergency Flaring provisions) specified in §§63.670(o), 63.1103(e)(4)(ii)-(iv) • Calibration requirements specified in Table 13 to 40 CFR 63 Subpart CC • Operation of CMS/CPMS Monitoring Plan requirements §§63.671(a)-(d) • Recordkeeping requirements in §§63.1109(e), 63.1103(e)(4)(x), • Notification of Compliance Status (NOCS) requirements in §63.1110(d)(1)(iv) - Due date 150 days after the first applicable compliance date or 12/3/2023. • Periodic Report requirements in §63.1110(e)(4) for ethylene production flare reports starting with the Periodic Report due 11/30/2023 (Reporting period 4/1/2023 – 9/30/2023)
Pressure-assisted MPGFs	EPA AMEL & AMOC No. 8	Per § 63.1103(e)(4)(vii)(G), EPA AMEL August 31, 2015 and AMOC No. 8 September 9, 2015
FX-784 Thermal Oxidizer	§63.982(c)(2), §63.983, §63.988, §63.996, §63.997	Additional bypass requirements § 63.1103(e)(6) Loss of SSM provisions § 63.1103(e)(9)
Closed vent systems	§ 63.983 (MACT SS)	Additional bypass requirements § 63.1103(e)(6) Loss of SSM provisions § 63.1103(e)(9)
Pyrolysis furnaces (F1–F10) Cracking furnaces (F-120–F-129)	NSPS RRR	Closed vent system and non-flare control device requirements §63.1103(e), Table 7 item (d)(1)(ii)(B), and §63.982(c)(2) which references the process heater requirements in §63.988 including: • applicable general monitoring requirements of §63.996; • the applicable performance test requirements and procedures of §63.997; • and monitoring, recordkeeping and reporting requirements. Daily inspection requirements of the firebox burners (§ 63.1103(e)(7)(i)). • All burners impinging on the radiant tube(s) will be repaired as soon as practical, but not later than 1 calendar day after impingement is found. • Records of the daily inspection and any repairs §63.1109(h). • Instances where repair delayed beyond 1 calendar day §63.1103(e)(7)(i) reported in the Periodic Report as specified in §63.1110(e)(7)(iii). • At least two of the control measures specified in §§ 63.1103(e)(7)(ii) through (iv) used to minimize coke combustion emissions from decoking of the radiant tube(s) in each ethylene cracking furnace. Depending upon which control measures are selected, records will be kept as specified in §§63.1109(h)(2)-(h)(5) and where the control measures were not followed will be reported in the Periodic Report as specified in §63.1110(e)(7)(i).

Isolation Valve Inspections	N/A	Follow §63.1103(e)(8)(i) and (ii) prior to the decoking operation and prior to returning the ethylene cracking furnace to normal operations after a decoking operation. • If poor isolation is identified, the isolation issue will be rectified: prior to continuing decoking operations to prevent leaks into the ethylene production process or prior to continuing normal operations to prevent product from escaping to the atmosphere through the decoking pot or furnace firebox. • For each decoking operation of an ethylene cracking furnace, records will be kept as specified in §63.1109(h)(6) documenting the day each inspection took place and the results of each inspection where an isolation problem was identified including any repairs made to correct the problem. • Instances where an isolation valve inspection was not conducted according to the procedures in §63.1103(e)(8) will be reported in the Periodic Report as specified in §63.1110(e)(7)(ii).