

Action Id 32098627

Comm TR # 32098627

PM Pradeep Rm# 511



October 23, 2025

Pradeep Patel, P.G.  
Geoscientist  
Industrial and Hazardous Waste Permits Section  
Waste Permits Division (MC-130)  
Texas Commission on Environmental Quality  
12100 Park 35 Circle  
Austin, Texas 78753



Re: BASF Corporation – Freeport, Texas  
Response to Technical Notice of Deficiency No. 1 for Permit Renewal Application  
Hazardous Waste Permit No. 50128, Industrial Solid Waste Registration No. 30024  
EPA ID No. TXD008081697, RN100218049, CN600124895, Tracking No. 31613162

Dear Mr. Patel:

On behalf of BASF Corporation (BASF), Coterie Environmental LLC is providing responses to comments from the Texas Commission on Environmental Quality (TCEQ) email dated August 18, 2025, regarding the permit renewal application for Industrial and Hazardous Waste Permit No. 50128 for the BASF Freeport facility.

The sections below follow the same order as they appear in TCEQ's application deficiencies table. Comments have been printed in italics and the corresponding responses are presented in bold print.

### **Response to TCEQ Comments**

T1. *Part B, Appendix I. D, Section D, p. 50 (Page 3/6), Clarification, Please clarify if you have confidential material.*

**Confidential information was submitted in Section XIII of the permit application. Table I Section D.3 was corrected in the June 17, 2025, revision of the application in response to TCEQ's administrative Notice of Deficiency (NOD).**

T2. *Part B, Appendix I.E, Section E, Location Drawings, 40 CFR 270.14; 305.50(a)7; 30 TAC 305.45(a)(6), Omission, Provide PE or PG seal and signature as needed.*

**No engineering plans or specifications that require a PE or PG seal have been included in the application.**

T3. *Part B, Table I-A.E.5, p. 51 & Site Selection Report 4.0, p. 80, 30 TAC § 335.204(a)(4), Inconsistent, Correct Table I A.E.5 to indicate that the facility is located over a regional aquifer as explained in the Site Selection Report.*

**Table I Section E.5 has been corrected to indicate that the facility is located over a regional aquifer. (Revised page 52 of PDF)**

T4. *Part B, Section IV, Section 10.0, p. 144, Incorrect, Change the reference of "Texas Natural Resource Conservation Commission" to "Texas Commission on Environmental Quality."*

**Section 10.0 of the contingency plan has been corrected. (Revised pages 130 and 146 of PDF)**

T5. *Part B, Section IV, Contingency plan Attachment A Hazardous Waste Location Map, page 148, Omission, Incinerator IN-5500.*

**Attachment A of the contingency plan has been revised to show Incinerator IN-5500 in the legend. (Revised page 150 of PDF)**

T6. *Part B, Section IV, Section 1.0, p. 165, 40 CFR §§ 264.13(b) and (c), Incorrect, Delete the reference to 40 CFR 264.13(c) which applies to offsite wastes.*

**The incorrect reference has been removed from Section 1.0 of the waste analysis plan.**

**We are also providing revisions to Sections 3.0 and 7.5. Section 3.0 was revised to indicate that analyses are performed to comply with the ash feed rate limit for Incinerator IN-4702, not risk-based limits as originally stated. Section 7.5 was revised to reference 40 CFR Part 265 Subpart BB not 40 CFR Part 264 Subpart BB. (Revised pages 165, 167, 171, and 175 of PDF)**

T7. *Part B, Section V, General Engineering Report 2.3, p. 205, 40 CFR 270.14(b)(8)(iii), Incorrect, Detail what mechanism(s) are in place to protect the water source(s) for this facility from contamination.*

**We have provided additional information on the concrete areas surrounding the incinerators, responses to spills, and the water supply systems for the facility. (Revised pages 206 through 209 of PDF)**

T8. *Part B, Section V, General Engineering Report, 3.0 Traffic Pattern, p. 206, 40 CFR §270.14(b)(10), Incomplete, Provide applicable information noted in the regulation cited. Expand the description.*

**Additional information has been provided in Section 3.0 of the general engineering report. (Revised pages 206 through 209 of PDF)**

T9. *Part B, Section V, General Engineering Report 2.5, p. 206, Typo, Change the heading of this subsection from "Personnel" to "Personal".*

**The section heading has been corrected. (Revised pages 206 through 209 of PDF)**

T10. *Part B, Section V, Figure V.A.1, p. 209, 40 CFR 270.14(b)(19)(viii), Incorrect, Indicate access control to the facility on this map.*

**Figure V.A.8 – Fences and Gates has been added to the application. (Revised page 218 of PDF)**

T11. *Part B, Section V, Table V.A., Inconsistent, In this table and other locations in the application the incinerator IN-5500 is referred to as "Proposed" or described as an active unit. Change references from "proposed" to "active" in tables and other locations..*

**Table V.A has been revised to indicate that Incinerator IN-5500 is active. We have also revised Table V.H.1 and Table III-2 of the Part A application to be consistent. (Revised pages 21, 205, and 220 of PDF)**

T12. *Part B, Section V, Table V.A, p. 203, Typo, Change column heading "Unit Description" superscript from 2 to 3 and column heading "Unit Status" superscript from 3 to 2.*

**The footnotes in Table V.A has been corrected. (Revised page 205 of PDF)**

T13. *Part B, Section V, Table V.H.2, p. 221, Typo, Delete footnote 3 which is not referred to in the table.*

**The footnote in Table V.H.2 has been deleted. (Revised page 224 of PDF)**

T14. *Part B, Section V, Omission, Signature and Certification.*

**We have revised each of the incinerator engineering reports to include a certification section. These sections have been sealed by a Texas Professional Engineer (PE).**

**We have also revised the engineering report for Incinerator IN-4702 to address trial burn requirements. (Revised pages 227 through 277 of PDF)**

*T15. Part B, Section IX. A, Preliminary Review Checklist, Omission, Provide the details of the preliminary review checklist for other NORs (Why all NOR's are included).*

**As indicated in the *Instructions for Preliminary Review Facility Checklist*, all units that received hazardous wastes after July 26, 1982, or for which closure was certified after January 26, 1983, were included in the Preliminary Review Facility Checklist. Other units listed in the Notice of Registration (NOR) are non-hazardous waste units that have never received hazardous waste. There are no new units included in the list since the last permit renewal. There are no corrective actions at the facility at this time. All historical corrective actions have been completed and received "No further action" letters, which were provided in the previous renewal application. No units have been identified as requiring investigations. Therefore, no Preliminary Review Unit Checklists were included in the renewal application. We have added a statement to the Preliminary Review Facility Checklist to clarify the current status of the facility. (Revised page 355 of PDF)**

During a teleconference on October 17, 2025, TCEQ requested the following additional changes to the renewal application:

- Table V.H.3 was added to the application to identify the ash feed rate limit for Incinerator IN-4702 (Revised page 225 of the PDF); and
- The Tables VII.B and VII.E.1 and the closure plan were revised to indicate that the closure cost estimate is in 2024 dollars (Revised pages 313, 314, 326 through 329, and 331 of the PDF).

We are providing electronic copies of clean and redline/strikeout pages showing the application revisions. An electronic copy of the complete revised application will be uploaded to the TCEQ's FTPS site. One copy of the replacement pages, including new signature pages, will be submitted. If you have questions, please feel free to contact Justin Matthews at (979) 415-7092 or [REDACTED] or me at (610) 406-2214 or [REDACTED]

Sincerely,

Coterie Environmental LLC



S. Heather McHale, P.E.  
Principal

cc: Justin Matthews, BASF



We create chemistry

**BASF CORPORATION**

*FREEPORT, TEXAS*

**INDUSTRIAL AND HAZARDOUS WASTE  
STORAGE/PROCESSING/DISPOSAL FACILITY  
PERMIT No. 50128  
SOLID WASTE REGISTRATION No. 30024  
EPA ID No. TXD008081697**

**PERMIT RENEWAL APPLICATION**

**MAY 2025**

**REVISION: JUNE 2025**

**REVISION: SEPTEMBER 2025**

**REVISION: OCTOBER 2025**

*Coterie* ENVIRONMENTAL

**840 FIRST AVENUE, SUITE 400 • KING OF PRUSSIA, PA 19406  
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*FREEPORT, TEXAS*

**INDUSTRIAL AND HAZARDOUS WASTE  
STORAGE/PROCESSING/DISPOSAL FACILITY  
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# PART A

Signature Page

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Operator Signature: [Signature] Date: 10-29-25

Name and Official Title (type or print): Bradley R. Morrison, Senior Vice President

Operator Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name and Official Title (type or print): \_\_\_\_\_

Operator Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name and Official Title (type or print): \_\_\_\_\_

Owner Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Name and Official Title (type or print): \_\_\_\_\_

To be completed by the operator if the application is signed by an authorized representative for the operator

I, \_\_\_\_\_ hereby designate \_\_\_\_\_ (operator) (authorized representative)

as my representative and hereby authorize said representative to sign any application, submit additional information as may be requested by the Commission; and/or appear for me at any hearing or before the Texas Commission on Environmental Quality in conjunction with this request for a Texas Water Code or Texas Solid Waste Disposal Act permit. I further understand that I am responsible for the contents of this application, for oral statements given by my authorized representative support of the application, and for compliance with the terms and conditions of any permit which might be issued based upon this application.

\_\_\_\_\_  
Printed or Typed Name of Operator or Principal Executive Officer

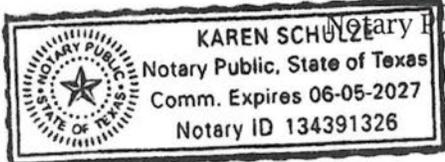
\_\_\_\_\_  
Signature

(Note: Application Must Bear Signature & Seal of Notary Public)

Subscribed and sworn to before me by the said Bradley Morrison on this 29<sup>th</sup> day of October, 2025.

My commission expires of the 5<sup>th</sup> day of June, 2027

Karen Schulze  
Notary Public in and for Brazoria County, Texas

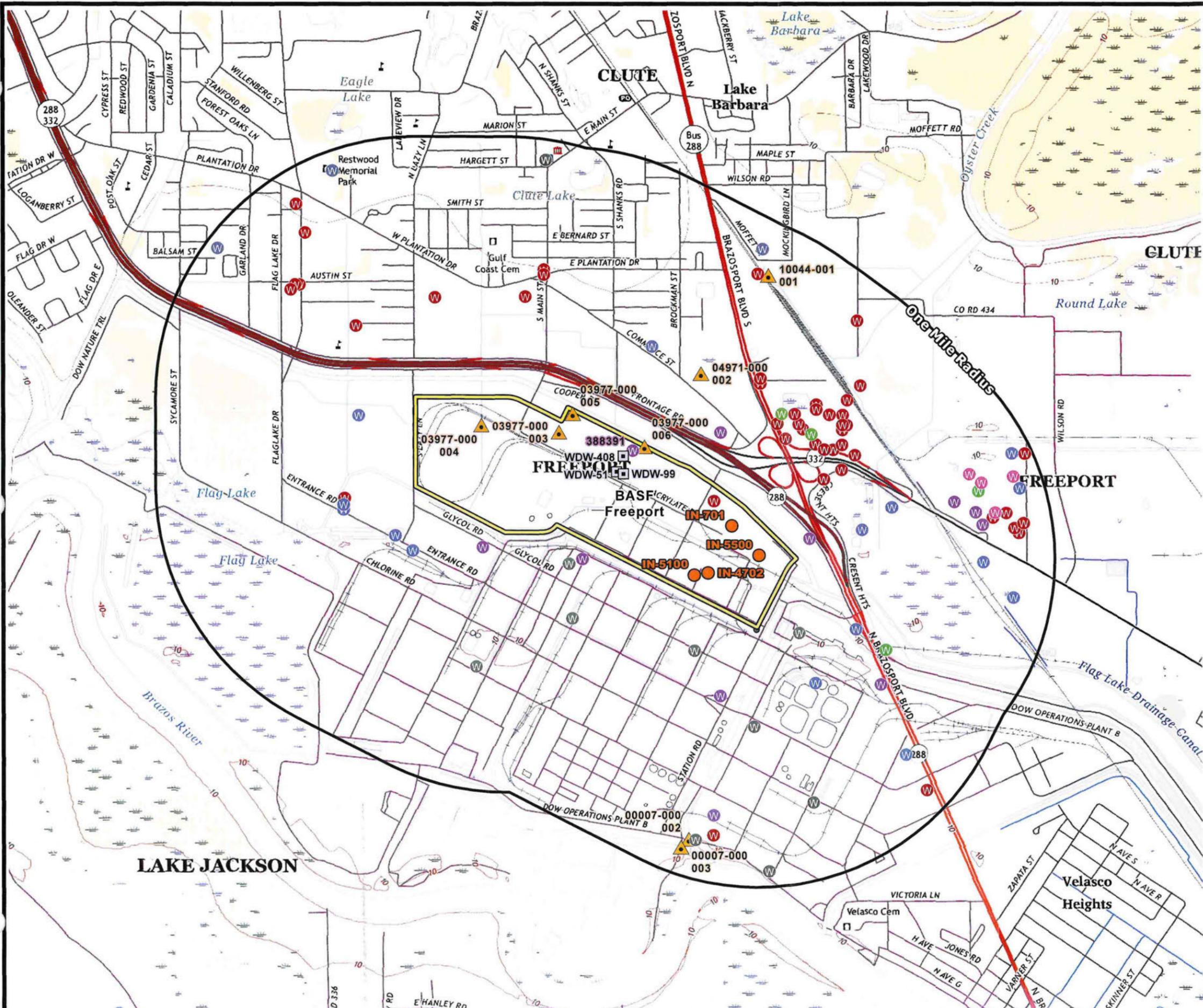


**Table III-2 - Hazardous Waste Management Unit Checklist**

<b>Waste Management Unit</b>	<b>TCEQ N.O.R. Unit #</b>	<b>Status<sup>1</sup></b>	<b>Design Capacity<sup>2</sup></b>	<b>Number of Years Utilized</b>	<b>Date in Service</b>
<b>Incinerator IN-701</b>	<b>019</b>	<b>Active</b>	<b>100 MMBtu/hr</b>	<b>39</b>	<b>08/1986</b>
<b>Incinerator IN-5100</b>	<b>089</b>	<b>Active</b>	<b>216 MMBtu/hr</b>	<b>24</b>	<b>05/2001</b>
<b>Incinerator IN-4702</b>	<b>004</b>	<b>Active</b>	<b>100 MMBtu/hr</b>	<b>10</b>	<b>03/2015</b>
<b>Incinerator IN-5500</b>	<b>080</b>	<b>Active</b>	<b>100 MMBtu/hr</b>	<b>0</b>	<b>To be determined</b>
<b>Boiler B-20A/Utilities</b>	<b>022</b>	<b>Closed</b>	<b>213 MMBtu/hr</b>	<b>23</b>	<b>1968</b>
<b>Boiler B-20B/Utilities</b>	<b>014</b>	<b>Closed</b>	<b>213 MMBtu/hr</b>	<b>23</b>	<b>1968</b>
<b>Boiler WB-900/NEOL<sup>®</sup></b>	<b>013</b>	<b>Closed</b>	<b>49.8 MMBtu/hr</b>	<b>21</b>	<b>12/1980</b>
<b>Incinerator IN-800</b>	<b>020</b>	<b>Closed</b>	<b>24 MMBtu/hr</b>	<b>6</b>	<b>12/1989</b>
<b>Incinerator BR-3 Cyclohexanone I</b>	<b>002</b>	<b>Closed</b>	<b>40,600 lb/hr</b>	<b>5</b>	<b>1975</b>
<b>Incinerator BR-400 Cyclohexanone II</b>	<b>010</b>	<b>Closed</b>	<b>Unknown</b>	<b>15</b>	<b>1972</b>
<b>Incinerator BR-410 Cyclohexanone II</b>	<b>011</b>	<b>Closed</b>	<b>Unknown</b>	<b>15</b>	<b>1972</b>
<b>Tank D-7841</b>	<b>015</b>	<b>Closed</b>	<b>15,000 gal</b>	<b>6</b>	<b>12/1989</b>

<sup>1</sup> Indicate only one of the following: Active, Inactive, Closed, or Proposed

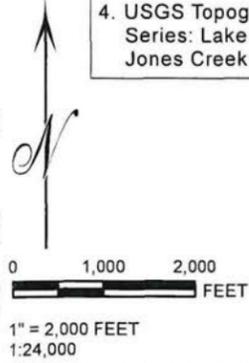
<sup>2</sup> Cubic yards, gallons, pounds, gallons/minute, pounds/hour, BTUs/hour, etc.



**Legend**

- BASF Freeport Facility
  - One Mile Radius
  - Incinerator Locations (4)
  - ▲ Wastewater Outfalls (Permit Number and Outfall Name)
  - Deepwell Location
- TWDB Wells**
- W Domestic / Public Supply
  - W Environmental Soil Boring
  - W Industrial
  - W Monitor
  - W Plugged or Destroyed / Unused
  - W Test Well

- Data Sources:**
1. Wastewater Outfalls - TCEQ GIS Database (March 27, 2025)
  2. Deepwell Locations - Pilko and Associates, LP - Attachment C-3, Permitted Facilities
  3. TWDB Wells - Texas Water Development Board GIS Database (February 2025)
  4. USGS Topographic Quadrangles 7.5 Minute Series: Lake Jackson, TX 2022 / Oyster Creek, TX 2022 / Jones Creek, TX 2022 / Freeport, TX 2025



<b>BASF CORPORATION FREEPORT, TEXAS</b>		
<b>USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLE MAP AND WELL LOCATIONS</b>		
DRAWN BY: L WILSON	SCALE: AS NOTED	PROJ. NO. 047-23-06
CHECKED BY: H MCHALE	DATE PRINTED: 9/30/2025	FILE NO USGS Topo and Well Locations
APPROVED BY: H MCHALE	<b>ATTACHMENT C</b>	
DATE: September 2025		

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# PART B

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**Appendix I.A:  
TABLE I AND TABLE I.1**

8. Identify the name of the drainage basin and segment where the facility is located <sup>8</sup>

River Segment

River Basin

E. Facility Siting Summary:

Is the facility located or proposed to be located:

- |  |     |
|--|-----|
| 1. Within a 100-year floodplain?   | No  |
| 2. in wetlands?  | No  |
| 3. In the critical habitat of an endangered species of plant or animal?  | No  |
| 4. On the recharge zone of a sole-source aquifer?  | No  |
| 5. In an area overlying a regional aquifer?  | Yes |
| 6. Within 0.5 mile (2,640 feet) of an established residence, church, school, day care center, surface water body used for public drinking water supply, or dedicated public park? [30 TAC 335.202]<br>If Yes: the TCEQ shall not issue a permit for this facility. | No  |
| 7. In an area in which the governing body of the country or municipality has prohibited the processing or disposal of municipal hazardous waste or industrial solid waste?<br>If yes: provide a copy of the ordinance or order.                                    | No  |

F. Wastewater and Stormwater Disposition

1. Is the disposal of any waste to be accomplished by a waste disposal well at this facility?

If Yes: List WDW Permit No(s)

2. Will any point source discharge of effluent or rainfall runoff occur as a result of the proposed activities?

3. If Yes, is this discharge regulated by a TPDES or TCEQ permit?  Yes

TCEQ Permit No.

TPDES Permit No.

No

Date TCEQ discharge permit application filed:

Date TPDES discharge application filed:



**Appendix I.C:  
SIGNATURE PAGE**



**Signature Page**

I, Bradley R. Morrison, Senior Vice President – General Manager Freeport Site,  
(Operator) (Title)

certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: [Signature] Date: 10-29-25

**To be completed by the Operator if the application is signed by an Authorized Representative for the Operator**

I, \_\_\_\_\_, hereby designate \_\_\_\_\_  
[Print or Type Name] [Print or Type Name]

as my representative and hereby authorize said representative to sign any application, submit additional information as may be requested by the Commission; and/or appear for me at any hearing or before the Texas Commission on Environmental Quality in conjunction with this request for a Texas Water Code or Texas Solid Waste Disposal Act permit. I further understand that I am responsible for the contents of this application, for oral statements given by my authorized representative in support of the application, and for compliance with the terms and conditions of any permit which might be issued based upon this application.

\_\_\_\_\_  
Printed or Typed Name of Operator or Principal Executive Officer

\_\_\_\_\_  
Signature

SUBSCRIBED AND SWORN to before me by the said Bradley Morrison  
On this 29th day of October, 2025  
My commission expires on the 5th day of June, 2027

Notary Public in and for Brazoria County, Texas  
[Note: Application Must Bear Signature & Seal of Notary Public]



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**Appendix III.E:  
CONTINGENCY PLAN  
(TABLES III.E.1, III.E.2, AND III.E.3 AND CONTINGENCY PLAN)**



**BASF CORPORATION**  
*FREEPORT, TEXAS*

**INDUSTRIAL AND HAZARDOUS WASTE  
STORAGE/PROCESSING/DISPOSAL FACILITY  
PERMIT No. 50128  
SOLID WASTE REGISTRATION No. 30024  
EPA ID No. TXD008081697**

**CONTINGENCY PLAN**

**MAY 2025  
REVISION: SEPTEMBER 2025**

- 
- An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
  - Estimated quantity and disposition of recovered material that resulted from the incident.

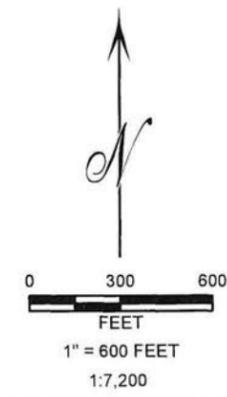
Additional authorities that may be notified include the United States Environmental Protection Agency (USEPA) Region VI offices, the United States Coast Guard Emergency Response Center, the Texas Department of Public Safety, the TCEQ Region 12, the Texas General Land Office, and the Texas Parks and Wildlife Department Region IV.

**Attachment A:  
HAZARDOUS WASTE UNIT LOCATIONS**

NOR #	Name
004	Incinerator IN-4702
008	Main container storage
019	Incinerator IN-701
059	Tank D-403A
060	Tank D-1401
061	Tank D-1402
062	Tank D-1403
064	Tank D-1422
065	Tank D-1423
066	Tank D-1424
067	Tank D-3806
068	Tank D-806
069	Tank D-840
071	Tank D-499
073	Tank D-2668A
080	Incinerator IN-5500
082	Tank D-7840
083	100 Block container storage
089	Incinerator IN-5100
090	Tank D-1450
091	Tank D-2850
094	1450 Block container storage
096	700 Block container storage
099	1500 Block container storage
103	400 Block container storage
104	400 Block tanker storage
107	Miscellaneous container storage
108	1250 Block container storage
114	Miscellaneous container storage
116	Tank D-147B
119	Dispersions Unit container storage
120	Tank D-3872
124	Tank D-491A
126	100 Block container storage



- Legend**
- BASF Freeport Facility
  - Incinerator Locations (4)
  - Hazardous Waste Locations
  - Satellite Accumulation Areas



<b>BASF CORPORATION FREEPORT, TEXAS</b>			
<b>HAZARDOUS WASTE LOCATIONS</b>			
DRAWN BY:	L WILSON	SCALE:	PROJ. NO. 047-23-06
CHECKED BY:	H MCHALE	AS NOTED	FILE NO. Haz Waste Locations
APPROVED BY:	H MCHALE	DATE PRINTED:	ATTACHMENT A
DATE:	August 2025	8/26/2025	
Coterie		840 First Ave., Suite 400 King of Prussia, PA 19406	
ENVIRONMENTAL			

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**Appendix IV.D:  
WASTE ANALYSIS PLAN**



**BASF CORPORATION**  
*FREEPORT, TEXAS*

**INDUSTRIAL AND HAZARDOUS WASTE  
STORAGE/PROCESSING/DISPOSAL FACILITY  
PERMIT No. 50128  
SOLID WASTE REGISTRATION No. 30024  
EPA ID No. TXD008081697**

**WASTE ANALYSIS PLAN**

**MAY 2025  
REVISION: SEPTEMBER 2025**

## 1.0 INTRODUCTION

BASF Corporation (BASF) operates four liquid hazardous waste incinerators at its facility in Freeport, Texas. These units are designated as Incinerator IN-701, Incinerator IN-4702, Incinerator IN-5100, and Incinerator IN-5500. These incinerators are the only permitted hazardous waste units at the facility. The incinerators are subject to the Resource Conservation and Recovery Act (RCRA) general permitting and operating requirements of Title 40 Code of Federal Regulations (CFR) Parts 264 and 270 and Title 30 Texas Administrative Code (TAC) Chapter 335 Subchapters F and H. The incinerators are also subject to the Hazardous Waste Combustor National Emission Standards for Hazardous Air Pollutants (HWC NESHAP) codified in 40 CFR Part 63 Subpart EEE.

This RCRA waste analysis plan (WAP) specifies the procedures that BASF uses to obtain the required chemical and physical analyses of the hazardous waste managed in the permitted units. These procedures ensure that the hazardous wastes that are treated onsite are managed in accordance with all applicable Federal and Texas RCRA requirements. The plan also includes the parameters for which each waste will be analyzed, the methods that will be used to sample and test for the parameters, and the frequency of analyses. This plan has been developed in accordance with 40 CFR § 264.13(b). It includes the following required components:

- The parameters for which each hazardous waste will be analyzed and the rationale for the selection of these parameters;
- The sampling method that will be used to obtain a representative sample of the hazardous waste;
- The test methods that will be used;
- The frequency of sampling and analysis;
- The quality assurance (QA)/quality control (QC) procedures that will be used to ensure that the sampling and analysis procedures are satisfactory; and
- The methods that will be used to meet the additional waste analysis requirements for specific waste management methods as specified in 40 CFR § 264.13(b)(6).

All sampling and analysis performed in accordance with this WAP will follow procedures specified in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition (SW-846)*, ASTM International (ASTM), or an equivalent method.

This WAP does not address compliance with the HWC NESHAP established pollutant feed rate limitations for the incinerators, as they are controlled by the facility's HWC NESHAP Feedstream Analysis Plan.

The remaining sections of the WAP provide the following information:

- Section 2.0 presents a description of the hazardous waste streams;

### 3.0 PARAMETERS AND RATIONALE

BASF must obtain a chemical and physical analysis of the wastes to determine their classification as a hazardous waste and to ensure that they comply with RCRA operating limits. The following four types of analyses are performed for the wastes:

- Waste characterization parameters – Analyses are performed to determine the proper waste classifications and codes;
- RCRA compliance parameters – Analyses are performed to demonstrate compliance with the ash feed rate limit for Incinerator IN-4702;
- Underlying Hazardous Constituent (UHC) parameters – Analyses are performed to enable assessment of the waste composition for UHCs in accordance with 40 CFR Part 268, Land Disposal Restriction Rules; and
- Leak Detection and Repair (LDAR) parameters – Analyses are performed to determine applicability of LDAR requirements of 40 CFR Part 264 Subpart BB.

Waste characterization parameters, UHC parameters, and LDAR parameters are analyzed for each hazardous waste stream at the point of generation. RCRA compliance parameters are analyzed for Incinerator IN-4702 hazardous and non-hazardous waste streams (acrylate residue, GAA crystallization residue, GAA distillation residue, dispersions condensate, and HDO<sup>®</sup> aqueous waste).

## 7.0 SPECIAL WASTE HANDLING

40 CFR § 264.13(b)(6) requires that the WAP address methods that will be used to meet the additional waste analysis requirements for specific waste management methods. This section addresses ignitable, reactive, or incompatible wastes, Land Disposal Restriction Rules, and RCRA air emission standards.

### 7.1 IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTES

BASF complies with the additional requirements in 40 CFR § 264.13(b)(6) for facilities managing ignitable, reactive, or incompatible wastes, as applicable. Accordingly, this WAP provides a description of any additional waste analyses that are required to ensure compliance with RCRA provisions addressing handling of ignitable, reactive, or incompatible wastes.

BASF generates ignitable wastes prior to onsite combustion in the incinerators. BASF takes precautions to prevent accidental ignition of the wastes and protects the ignitable wastes from sources of ignition in accordance with 40 CFR § 264.17. Reactive wastes are not handled in the incinerators. All liquid wastes that are managed in the incinerators are chemically compatible.

### 7.2 LAND DISPOSAL RESTRICTIONS

BASF maintains compliance with land disposal restrictions for wastes generated at the facility, and records demonstrating compliance (*e.g.*, analytical data, notices, *etc.*) are maintained onsite for a minimum of three years. As shown in Table IV.C in Section IV of the Part B Permit Application, analyses are performed to enable assessment of the waste composition for UHCs in accordance with 40 CFR Part 268, Land Disposal Restriction Rules.

### 7.3 AIR EMISSION STANDARDS

BASF complies with the RCRA air emission standards of 40 CFR 265 Subpart BB. As shown in Table IV.C in Section IV of the Part B Permit Application, analyses are performed to determine, for each piece of equipment, whether the equipment contains or contacts a hazardous waste with organic concentration that equals or exceeds 10 percent by weight and to determine the volatile organic (VO) concentration of a hazardous waste.

## **V. ENGINEERING REPORTS**

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## TABLE OF APPENDICES

APPENDIX	TITLE
V.A	General (Table V.A and General Engineering Report)
V.B	Container Storage Areas (Not Applicable)
V.C	Tanks and Tank Systems (Not Applicable)
V.D	Surface Impoundments (Not Applicable)
V.E	Waste Piles (Not Applicable)
V.F	Land Treatment Units (Not Applicable)
V.G	Landfills (Not Applicable)
V.H	Incinerators (Tables V.H.1, V.H.2, V.H.3, and V.H.4, Incinerator IN-701 Engineering Report, Incinerator IN-4702 Engineering Report, Incinerator IN-5100 Engineering Report, and Incinerator IN-5500 Engineering Report)
V.I	Boilers and Industrial Furnaces (Not Applicable)
V.J	Drip Pads (Not Applicable)
V.K	Miscellaneous Units (Not Applicable)
V.L	Containment Buildings (Not Applicable)

**Appendix V.A:**

**GENERAL**

**(TABLE V.A AND GENERAL ENGINEERING REPORT)**

Permit No.  
Permittee:

50128  
BASF Corporation

**Table V.A. - Facility Waste Management Handling Units**

TCEQ Permit Unit No. <sup>1</sup>	Unit Name	NOR No. <sup>1</sup>	Unit Description <sup>3</sup>	Capacity	Unit Status <sup>2</sup>
1	Incinerator IN-701	019	Horizontal, cylindrical, liquid injection incinerator	100 MMBtu/hr	Active
4	Incinerator IN-4702	004	Vertical, cylindrical, down-fired, liquid injection incinerator	100 MMBtu/hr	Active
5	Incinerator IN-5100	089	Vertical, cylindrical, down-fired, liquid injection incinerator	216 MMBtu/hr	Active
6	Incinerator IN-5500	080	Vertical, cylindrical, down-fired, liquid injection incinerator	100 MMBtu/hr	Active

<sup>1</sup> Permitted Unit No. and NOR No. cannot be reassigned to new units or used more than once and all units that were in the Attachment D of a previously issued permit must be listed.

<sup>2</sup> Unit Status options: Active, Closed, Inactive (built but not managing waste), Proposed (not yet built), Never Built, Transferred, Post-Closure.

<sup>3</sup> If a unit has been transferred, the applicant should indicate which facility/permit it has been transferred to in the Unit Description column of Table V.A.



**BASF CORPORATION**  
*FREPORT, TEXAS*

**INDUSTRIAL AND HAZARDOUS WASTE  
STORAGE/PROCESSING/DISPOSAL FACILITY  
PERMIT No. 50128  
SOLID WASTE REGISTRATION No. 30024  
EPA ID No. TXD008081697**

**GENERAL ENGINEERING REPORT**

**MAY 2025  
REVISION: SEPTEMBER 2025**

## **1.0 INTRODUCTION**

BASF Corporation (BASF) operates four liquid hazardous waste incinerators at its facility in Freeport, Texas. These units are designated as Incinerator IN-701, Incinerator IN-4702, Incinerator IN-5100, and Incinerator IN-5500. These incinerators are the only permitted hazardous waste units at the facility. The incinerators are subject to the Resource Conservation and Recovery Act (RCRA) general permitting and operating requirements of Title 40 Code of Federal Regulations (CFR) Parts 264 and 270 and Title 30 Texas Administrative Code (TAC) Chapter 335 Subchapters F and H. The incinerators are also subject to the Hazardous Waste Combustor National Emission Standards for Hazardous Air Pollutants (HWC NESHAP) codified in 40 CFR Part 63 Subpart EEE.

This general engineering report provides the information required by 40 CFR §§ 270.14(b)(8) and (b)(10). The following sections address prevention of hazards and traffic patterns.

## **2.0 PREVENTION OF HAZARDS**

In accordance with 40 CFR § 270.14(b)(8), this section provides information on the prevention of hazards from the processing and storage areas of the BASF Freeport Site. BASF will use the appropriate procedures, structures, or equipment to prevent the adverse conditions identified in the following sections for the hazardous waste management areas.

### **2.1 UNLOADING PROCEDURES**

There are no unloading procedures associated with the permitted hazardous waste management units. The liquid wastes are collected in their appropriate tanks and are pumped directly to Incinerator IN-701, Incinerator IN-4702, Incinerator IN-5100, or Incinerator IN-5500. In some cases, the liquid wastes are piped directly from process equipment to the incinerator.

### **2.2 RUN-OFF**

The incinerators are constructed within concrete areas with sumps that collect any liquid, including rainwater and larger spills. Collected liquid is sent to onsite wastewater treatment before being discharged via permitted discharge points.

### **2.3 WATER SUPPLIES**

The likelihood of groundwater contamination resulting from a waste spill is relatively small due to the concrete surfaces referenced above. Also, the small volume of waste subject to potential spillage and the quick response time for such an accident mitigate against the possibility of groundwater contamination. Small spills are addressed using the spill control equipment identified in Table III.E.3 in Section III of the Part B Permit Application. Larger spills would be collected in the sumps and sent to onsite treatment.

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Concreted areas around incinerators are inspected daily by operations, as indicated in Table III.D in Section III of the Part B Permit Application. These inspections ensure that the concrete is maintained so that any spills will be contained. Any defects identified during inspections are entered into the maintenance notification system and assigned a priority level. The least severe issues are scheduled at the maintenance team's convenience, while more urgent issues require repair within two to three days.

Potable water for the BASF Freeport Site is supplied by the City of Clute. All connections to this water supply are equipped with backflow preventers to avoid contamination. BASF uses a combination of onsite wells and surface water intakes for process water supply. Water from these sources is pumped to the facility's water treatment systems. The treated water is discharged via air gapped piping to a tank and basin that supply the onsite process water distribution system, which minimizes the potential for backflow and groundwater contamination.

## **2.4 EQUIPMENT AND POWER FAILURE**

Any power outages or equipment failure in the waste feed system for Incinerator IN-701, Incinerator IN-4702, Incinerator IN-5100, and Incinerator IN-5500 will automatically shut off the waste at the source, thereby preventing waste transfer to these units. Hence, power outages and equipment failure do not present a risk of hazardous waste release from these units.

## **2.5 PERSONAL PROTECTION EQUIPMENT**

During the handling of the liquid wastes, personal protective equipment is worn (if the potential for exposure exists). Personal protective equipment consists of chemical goggles, coveralls (for minimal exposures), impervious suits, gloves, and rubber boots. Chemical resistant gloves are required. If the potential for vapor, mist, or dust generation exists, a properly fitted Mine Safety and Health Administration (MSHA) approved or National Institute for Occupational Safety and Health (NIOSH) approved respirator with appropriate cartridges must be worn. For large spills, tank cleaning, or other confined-space entry, a supplied-air respiratory system is required.

The liquid wastes are managed as flammable liquids. All sources of ignition are excluded when activities that could release flammable vapors are undertaken. Smoking is not permitted within the BASF Freeport Site except in designated areas. "No Smoking" signs are posted at all entries to the facility.

## **2.6 PROCEDURES TO MINIMIZE RELEASES TO THE ATMOSPHERE**

Incinerator IN-701, Incinerator IN-4702, Incinerator IN-5100, and Incinerator IN-5500 are operated in accordance with good engineering practices to minimize releases to the atmosphere. The liquid wastes are piped directly from process equipment or appropriate tanks to the incinerators, which minimizes the potential for spills. The combustion chambers are sealed to minimize fugitive emissions.

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## 3.0 TRAFFIC PATTERNS

In accordance with 40 CFR § 270.14(b)(10), this section provides information on the traffic patterns in and around the hazardous waste management areas at the BASF Freeport Site. Vehicles are restricted from the area of the incinerators. Vehicle entry requires prior check-in and verification by operations. The number of vehicles permitted each day depends on the work occurring within the unit and is limited based on safety requirements. Traffic around the perimeter of the area is restricted to ten miles per hour.

All facility roadways are constructed in accordance with BASF standards. Roadway capacities are sufficient for all types of vehicles that typically enter the areas surrounding the incinerators, including emergency vehicles.

## 4.0 FIGURES

The following general maps and figures are included in Attachment A:

- Figure V.A.1 – Facility Plot Plan;
- Figure V.A.2 – 7.5-Minute Topographical Map;
- Figure V.A.3 – FEMA Flood Map;
- Figure V.A.4 – General Land Use Map;
- Figure V.A.5 – Wind Rose;
- Figure V.A.6 – Well Location Map;
- Figure V.A.7 – Stormwater Drainage System; and
- Figure V.A.8 – Fences and Gates

**Attachment A:  
MAPS AND FIGURES**

**Appendix IV.D:  
WASTE ANALYSIS PLAN**



**BASF CORPORATION**  
*FREEPORT, TEXAS*

**INDUSTRIAL AND HAZARDOUS WASTE  
STORAGE/PROCESSING/DISPOSAL FACILITY  
PERMIT No. 50128  
SOLID WASTE REGISTRATION No. 30024  
EPA ID No. TXD008081697**

**WASTE ANALYSIS PLAN**

**MAY 2025  
REVISION: SEPTEMBER 2025**

## 1.0 INTRODUCTION

BASF Corporation (BASF) operates four liquid hazardous waste incinerators at its facility in Freeport, Texas. These units are designated as Incinerator IN-701, Incinerator IN-4702, Incinerator IN-5100, and Incinerator IN-5500. These incinerators are the only permitted hazardous waste units at the facility. The incinerators are subject to the Resource Conservation and Recovery Act (RCRA) general permitting and operating requirements of Title 40 Code of Federal Regulations (CFR) Parts 264 and 270 and Title 30 Texas Administrative Code (TAC) Chapter 335 Subchapters F and H. The incinerators are also subject to the Hazardous Waste Combustor National Emission Standards for Hazardous Air Pollutants (HWC NESHAP) codified in 40 CFR Part 63 Subpart EEE.

This RCRA waste analysis plan (WAP) specifies the procedures that BASF uses to obtain the required chemical and physical analyses of the hazardous waste managed in the permitted units. These procedures ensure that the hazardous wastes that are treated onsite are managed in accordance with all applicable Federal and Texas RCRA requirements. The plan also includes the parameters for which each waste will be analyzed, the methods that will be used to sample and test for the parameters, and the frequency of analyses. This plan has been developed in accordance with 40 CFR § 264.13(b). It includes the following required components:

- The parameters for which each hazardous waste will be analyzed and the rationale for the selection of these parameters;
- The sampling method that will be used to obtain a representative sample of the hazardous waste;
- The test methods that will be used;
- The frequency of sampling and analysis;
- The quality assurance (QA)/quality control (QC) procedures that will be used to ensure that the sampling and analysis procedures are satisfactory; and
- The methods that will be used to meet the additional waste analysis requirements for specific waste management methods as specified in 40 CFR § 264.13(b)(6).

All sampling and analysis performed in accordance with this WAP will follow procedures specified in *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition* (SW-846), ASTM International (ASTM), or an equivalent method.

This WAP does not address compliance with the HWC NESHAP established pollutant feed rate limitations for the incinerators, as they are controlled by the facility's HWC NESHAP Feedstream Analysis Plan.

The remaining sections of the WAP provide the following information:

- Section 2.0 presents a description of the hazardous waste streams;

### 3.0 PARAMETERS AND RATIONALE

BASF must obtain a chemical and physical analysis of the wastes to determine their classification as a hazardous waste and to ensure that they comply with RCRA operating limits. The following four types of analyses are performed for the wastes:

- Waste characterization parameters – Analyses are performed to determine the proper waste classifications and codes;
- RCRA compliance parameters – Analyses are performed to demonstrate compliance with the ash feed rate limit for Incinerator IN-4702;
- Underlying Hazardous Constituent (UHC) parameters – Analyses are performed to enable assessment of the waste composition for UHCs in accordance with 40 CFR Part 268, Land Disposal Restriction Rules; and
- Leak Detection and Repair (LDAR) parameters – Analyses are performed to determine applicability of LDAR requirements of 40 CFR Part 264 Subpart BB.

Waste characterization parameters, UHC parameters, and LDAR parameters are analyzed for each hazardous waste stream at the point of generation. RCRA compliance parameters are analyzed for Incinerator IN-4702 hazardous and non-hazardous waste streams (acrylate residue, GAA crystallization residue, GAA distillation residue, dispersions condensate, and HDO<sup>®</sup> aqueous waste).

## 7.0 SPECIAL WASTE HANDLING

40 CFR § 264.13(b)(6) requires that the WAP address methods that will be used to meet the additional waste analysis requirements for specific waste management methods. This section addresses ignitable, reactive, or incompatible wastes, Land Disposal Restriction Rules, and RCRA air emission standards.

### 7.1 IGNITABLE, REACTIVE, OR INCOMPATIBLE WASTES

BASF complies with the additional requirements in 40 CFR § 264.13(b)(6) for facilities managing ignitable, reactive, or incompatible wastes, as applicable. Accordingly, this WAP provides a description of any additional waste analyses that are required to ensure compliance with RCRA provisions addressing handling of ignitable, reactive, or incompatible wastes.

BASF generates ignitable wastes prior to onsite combustion in the incinerators. BASF takes precautions to prevent accidental ignition of the wastes and protects the ignitable wastes from sources of ignition in accordance with 40 CFR § 264.17. Reactive wastes are not handled in the incinerators. All liquid wastes that are managed in the incinerators are chemically compatible.

### 7.2 LAND DISPOSAL RESTRICTIONS

BASF maintains compliance with land disposal restrictions for wastes generated at the facility, and records demonstrating compliance (*e.g.*, analytical data, notices, *etc.*) are maintained onsite for a minimum of three years. As shown in Table IV.C in Section IV of the Part B Permit Application, analyses are performed to enable assessment of the waste composition for UHCs in accordance with 40 CFR Part 268, Land Disposal Restriction Rules.

### 7.3 AIR EMISSION STANDARDS

BASF complies with the RCRA air emission standards of 40 CFR 265 Subpart BB. As shown in Table IV.C in Section IV of the Part B Permit Application, analyses are performed to determine, for each piece of equipment, whether the equipment contains or contacts a hazardous waste with organic concentration that equals or exceeds 10 percent by weight and to determine the volatile organic (VO) concentration of a hazardous waste.

## **V. ENGINEERING REPORTS**

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## TABLE OF APPENDICES

APPENDIX	TITLE
V.A	General (Table V.A and General Engineering Report)
V.B	Container Storage Areas (Not Applicable)
V.C	Tanks and Tank Systems (Not Applicable)
V.D	Surface Impoundments (Not Applicable)
V.E	Waste Piles (Not Applicable)
V.F	Land Treatment Units (Not Applicable)
V.G	Landfills (Not Applicable)
V.H	Incinerators (Tables V.H.1, V.H.2, V.H.3, and V.H.4, Incinerator IN-701 Engineering Report, Incinerator IN-4702 Engineering Report, Incinerator IN-5100 Engineering Report, and Incinerator IN-5500 Engineering Report)
V.I	Boilers and Industrial Furnaces (Not Applicable)
V.J	Drip Pads (Not Applicable)
V.K	Miscellaneous Units (Not Applicable)
V.L	Containment Buildings (Not Applicable)

**Appendix V.A:**

**GENERAL**

**(TABLE V.A AND GENERAL ENGINEERING REPORT)**

**Table V.A. - Facility Waste Management Handling Units**

TCEQ Permit Unit No. <sup>1</sup>	Unit Name	NOR No. <sup>1</sup>	Unit Description <sup>3</sup>	Capacity	Unit Status <sup>2</sup>
1	Incinerator IN-701	019	Horizontal, cylindrical, liquid injection incinerator	100 MMBtu/hr	Active
4	Incinerator IN-4702	004	Vertical, cylindrical, down-fired, liquid injection incinerator	100 MMBtu/hr	Active
5	Incinerator IN-5100	089	Vertical, cylindrical, down-fired, liquid injection incinerator	216 MMBtu/hr	Active
6	Incinerator IN-5500	080	Vertical, cylindrical, down-fired, liquid injection incinerator	100 MMBtu/hr	Active

<sup>1</sup> Permitted Unit No. and NOR No. cannot be reassigned to new units or used more than once and all units that were in the Attachment D of a previously issued permit must be listed.

<sup>2</sup> Unit Status options: Active, Closed, Inactive (built but not managing waste), Proposed (not yet built), Never Built, Transferred, Post-Closure.

<sup>3</sup> If a unit has been transferred, the applicant should indicate which facility/permit it has been transferred to in the Unit Description column of Table V.A.



**BASF CORPORATION**  
*FREPORT, TEXAS*

**INDUSTRIAL AND HAZARDOUS WASTE  
STORAGE/PROCESSING/DISPOSAL FACILITY  
PERMIT No. 50128  
SOLID WASTE REGISTRATION No. 30024  
EPA ID No. TXD008081697**

**GENERAL ENGINEERING REPORT**

**MAY 2025  
REVISION: SEPTEMBER 2025**

## **1.0 INTRODUCTION**

BASF Corporation (BASF) operates four liquid hazardous waste incinerators at its facility in Freeport, Texas. These units are designated as Incinerator IN-701, Incinerator IN-4702, Incinerator IN-5100, and Incinerator IN-5500. These incinerators are the only permitted hazardous waste units at the facility. The incinerators are subject to the Resource Conservation and Recovery Act (RCRA) general permitting and operating requirements of Title 40 Code of Federal Regulations (CFR) Parts 264 and 270 and Title 30 Texas Administrative Code (TAC) Chapter 335 Subchapters F and H. The incinerators are also subject to the Hazardous Waste Combustor National Emission Standards for Hazardous Air Pollutants (HWC NESHAP) codified in 40 CFR Part 63 Subpart EEE.

This general engineering report provides the information required by 40 CFR §§ 270.14(b)(8) and (b)(10). The following sections address prevention of hazards and traffic patterns.

## **2.0 PREVENTION OF HAZARDS**

In accordance with 40 CFR § 270.14(b)(8), this section provides information on the prevention of hazards from the processing and storage areas of the BASF Freeport Site. BASF will use the appropriate procedures, structures, or equipment to prevent the adverse conditions identified in the following sections for the hazardous waste management areas.

### **2.1 UNLOADING PROCEDURES**

There are no unloading procedures associated with the permitted hazardous waste management units. The liquid wastes are collected in their appropriate tanks and are pumped directly to Incinerator IN-701, Incinerator IN-4702, Incinerator IN-5100, or Incinerator IN-5500. In some cases, the liquid wastes are piped directly from process equipment to the incinerator.

### **2.2 RUN-OFF**

The incinerators are constructed within concrete areas with sumps that collect any liquid, including rainwater and larger spills. Collected liquid is sent to onsite wastewater treatment before being discharged via permitted discharge points.

### **2.3 WATER SUPPLIES**

The likelihood of groundwater contamination resulting from a waste spill is relatively small due to the concrete surfaces referenced above. Also, the small volume of waste subject to potential spillage and the quick response time for such an accident mitigate against the possibility of groundwater contamination. Small spills are addressed using the spill control equipment identified in Table III.E.3 in Section III of the Part B Permit Application. Larger spills would be collected in the sumps and sent to onsite treatment.

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Concreted areas around incinerators are inspected daily by operations, as indicated in Table III.D in Section III of the Part B Permit Application. These inspections ensure that the concrete is maintained so that any spills will be contained. Any defects identified during inspections are entered into the maintenance notification system and assigned a priority level. The least severe issues are scheduled at the maintenance team's convenience, while more urgent issues require repair within two to three days.

Potable water for the BASF Freeport Site is supplied by the City of Clute. All connections to this water supply are equipped with backflow preventers to avoid contamination. BASF uses a combination of onsite wells and surface water intakes for process water supply. Water from these sources is pumped to the facility's water treatment systems. The treated water is discharged via air gapped piping to a tank and basin that supply the onsite process water distribution system, which minimizes the potential for backflow and groundwater contamination.

## **2.4 EQUIPMENT AND POWER FAILURE**

Any power outages or equipment failure in the waste feed system for Incinerator IN-701, Incinerator IN-4702, Incinerator IN-5100, and Incinerator IN-5500 will automatically shut off the waste at the source, thereby preventing waste transfer to these units. Hence, power outages and equipment failure do not present a risk of hazardous waste release from these units.

## **2.5 PERSONAL PROTECTION EQUIPMENT**

During the handling of the liquid wastes, personal protective equipment is worn (if the potential for exposure exists). Personal protective equipment consists of chemical goggles, coveralls (for minimal exposures), impervious suits, gloves, and rubber boots. Chemical resistant gloves are required. If the potential for vapor, mist, or dust generation exists, a properly fitted Mine Safety and Health Administration (MSHA) approved or National Institute for Occupational Safety and Health (NIOSH) approved respirator with appropriate cartridges must be worn. For large spills, tank cleaning, or other confined-space entry, a supplied-air respiratory system is required.

The liquid wastes are managed as flammable liquids. All sources of ignition are excluded when activities that could release flammable vapors are undertaken. Smoking is not permitted within the BASF Freeport Site except in designated areas. "No Smoking" signs are posted at all entries to the facility.

## **2.6 PROCEDURES TO MINIMIZE RELEASES TO THE ATMOSPHERE**

Incinerator IN-701, Incinerator IN-4702, Incinerator IN-5100, and Incinerator IN-5500 are operated in accordance with good engineering practices to minimize releases to the atmosphere. The liquid wastes are piped directly from process equipment or appropriate tanks to the incinerators, which minimizes the potential for spills. The combustion chambers are sealed to minimize fugitive emissions.

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## 3.0 TRAFFIC PATTERNS

In accordance with 40 CFR § 270.14(b)(10), this section provides information on the traffic patterns in and around the hazardous waste management areas at the BASF Freeport Site. Vehicles are restricted from the area of the incinerators. Vehicle entry requires prior check-in and verification by operations. The number of vehicles permitted each day depends on the work occurring within the unit and is limited based on safety requirements. Traffic around the perimeter of the area is restricted to ten miles per hour.

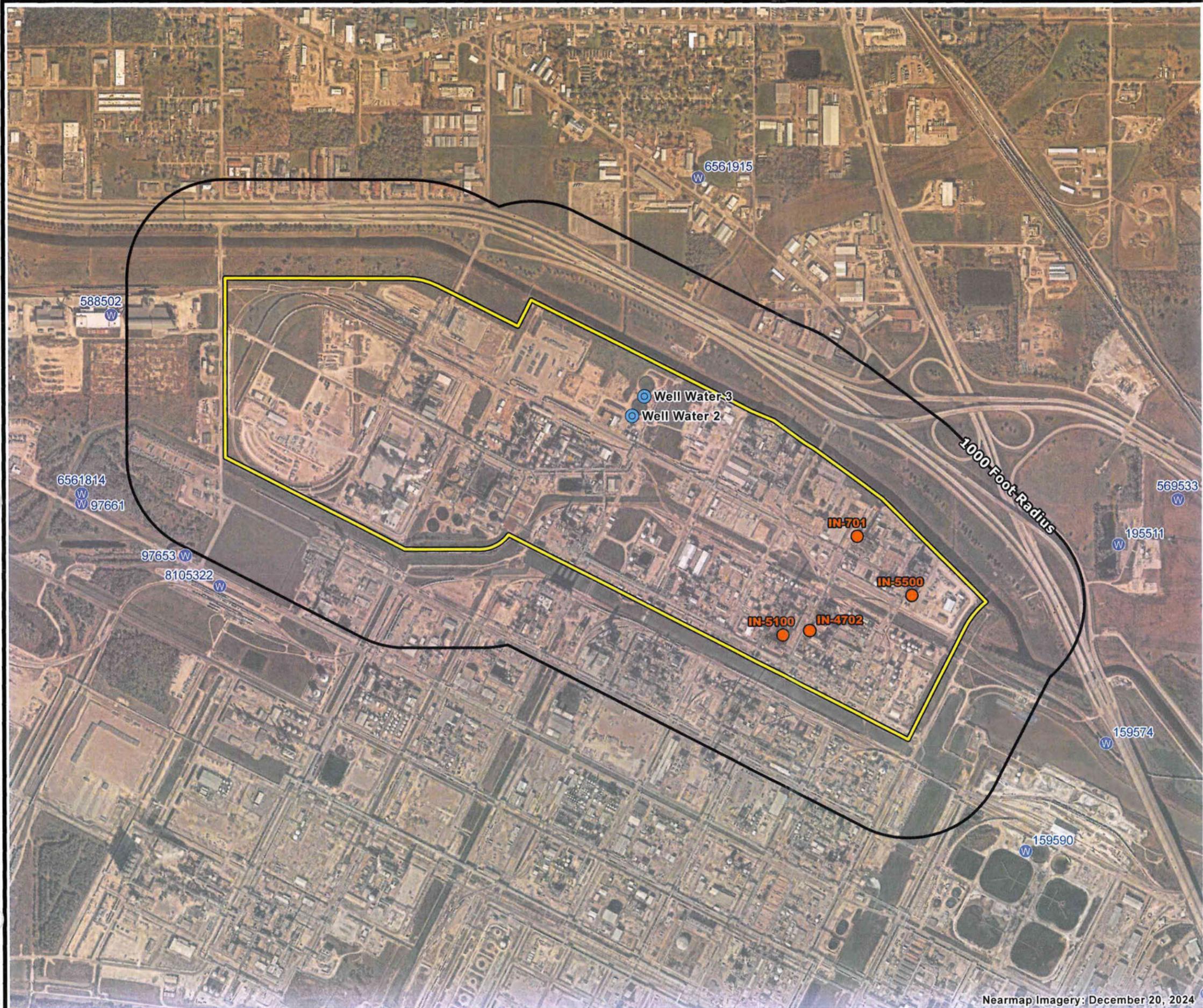
All facility roadways are constructed in accordance with BASF standards. Roadway capacities are sufficient for all types of vehicles that typically enter the areas surrounding the incinerators, including emergency vehicles.

## 4.0 FIGURES

The following general maps and figures are included in Attachment A:

- Figure V.A.1 – Facility Plot Plan;
- Figure V.A.2 – 7.5-Minute Topographical Map;
- Figure V.A.3 – FEMA Flood Map;
- Figure V.A.4 – General Land Use Map;
- Figure V.A.5 – Wind Rose;
- Figure V.A.6 – Well Location Map;
- Figure V.A.7 – Stormwater Drainage System; and
- Figure V.A.8 – Fences and Gates

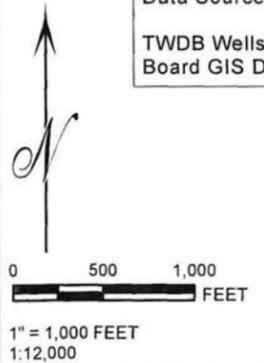
**Attachment A:  
MAPS AND FIGURES**



**Legend**

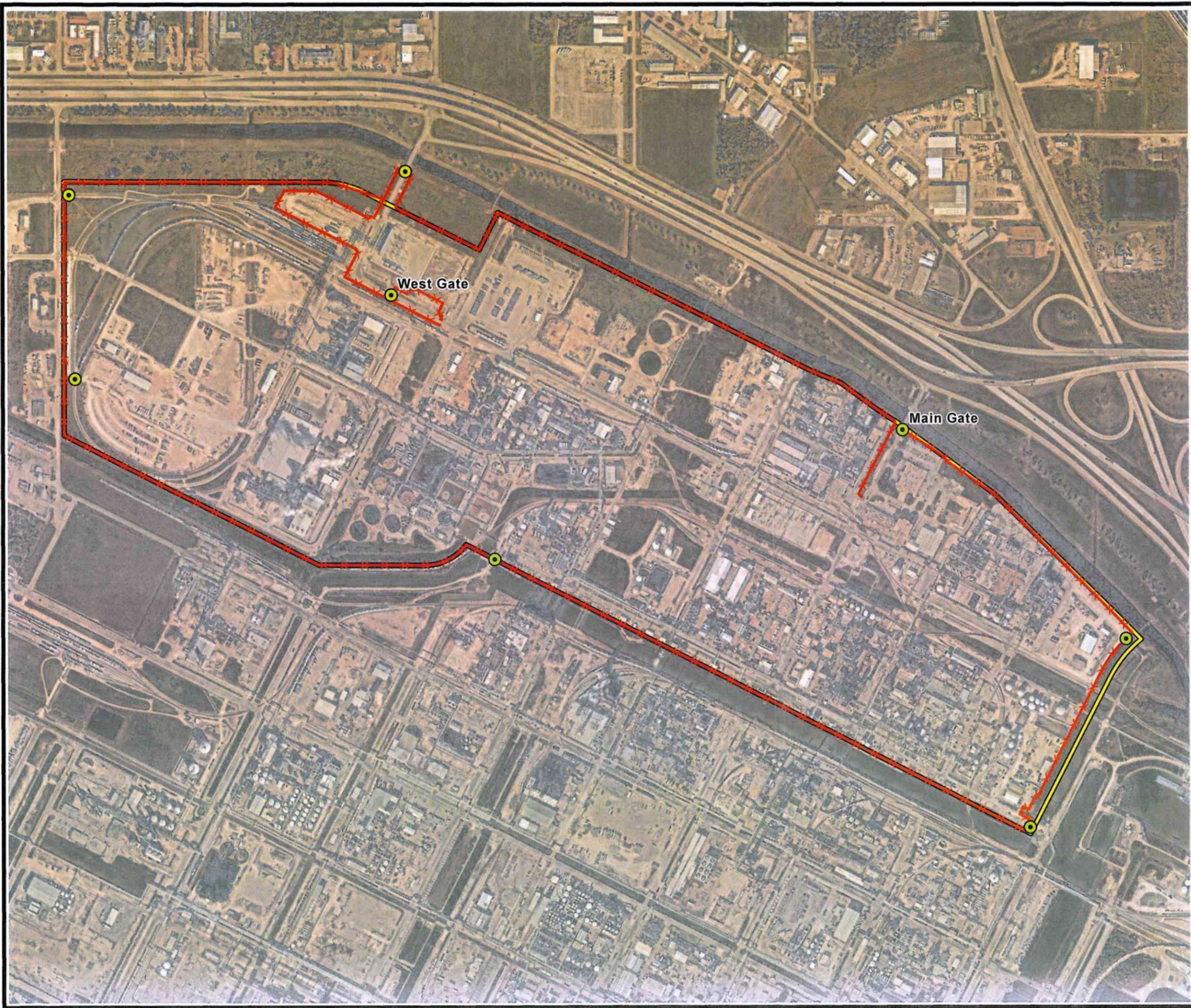
- BASF Freeport Facility
- 1000 Foot Radius
- Incinerator Locations (4)
- ⊙ BASF Process Water Supply
- TWDB Water Well ID#
- ⊙ Domestic / Public Supply

Data Source:  
 TWDB Wells - Texas Water Development Board GIS Database (February 2025)



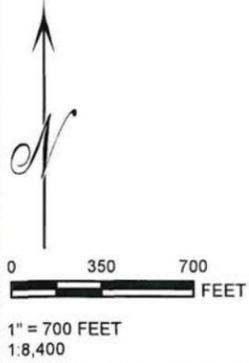
<b>BASF CORPORATION FREEPORT, TEXAS</b>		
<b>WATER WELL LOCATION MAP</b>		
DRAWN BY: L WILSON	SCALE: AS NOTED	PROJ. NO. 047-23-06
CHECKED BY: H MCHALE	DATE PRINTED: 9/30/2025	FILE NO. Water Well Location
APPROVED BY: H MCHALE	FIGURE V.A.6	
DATE: September 2025		

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**Legend**

- BASF Freeport Facility
- ✂ Fenceline
- Gate



<b>BASF CORPORATION FREEPORT, TEXAS</b>		
<b>FENCES AND GATES MAP</b>		
DRAWN BY:	L WILSON	SCALE: AS NOTED
CHECKED BY:	H MCHALE	PROJ. NO. 047-23-06
APPROVED BY:	H MCHALE	FILE NO. Fences and Gates
DATE:	August 2025	DATE PRINTED: 8/27/2025
<b>FIGURE V.A.8</b>		

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 King of Prussia, PA 19406

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**Appendix V.H:**

**INCINERATORS**

**(TABLES V.H.1, V.H.2, V.H.3, AND V.H.4,  
INCINERATOR IN-701 ENGINEERING REPORT,  
INCINERATOR IN-4702 ENGINEERING REPORT,  
INCINERATOR IN-5100 ENGINEERING REPORT, AND  
INCINERATOR IN-5500 ENGINEERING REPORT)**

Permit No.

50128

Permittee:

BASF Corporation

Table V.H.1. - Incinerators

Permit Unit No. *	Incinerators	N.O.R No.	Waste Nos. <sup>†</sup>	Waste Physical Form (Pumpable or Non-Pumpable)	Reactive, Incompatible, or F020, F021, F022, F023, F026, or F027 Waste	Unit Status
1	Incinerator IN-701	019	1, 6	Pumpable	No	Active
4	Incinerator IN-4702	004	2, 3, 7, 8, 9	Pumpable	No	Active
5	Incinerator IN-5100	089	4, 5, 10	Pumpable	No	Active
6	Incinerator IN-5500	080	1, 6	Pumpable	No	Active

<sup>†</sup> From the first column of Table IV.B.

\* If the unit is already permitted, use the established "Permit Unit No." If the unit is not yet permitted, the number given here for the unit will become the "Permit Unit No." The numbers should be in an order that will be convenient for the facility operator.

Permit No.

50128

Permittee:

BASF Corporation

Parameter	Monitoring Basis <sup>1</sup>	Monitoring Device	Device Location	Permit Limit	Primary Combustion Chamber AWFCO Y/N <sup>2</sup>	Secondary Combustion Chamber AWFCO Y/N <sup>2</sup>
[Absorbers:]						
Absorber minimum pH of incoming liquid	Not applicable					
Absorber minimum liquid to gas ratio (L/G)	Not applicable					
Other Air Pollution Control Devices permit conditions as necessary	Not applicable					

<sup>1</sup> Instantaneous as defined in 40 CFR 266.102(e)(6)(i)(A) shall mean a value which occurs at any time. A value shall be determined by the monitoring device no less than every 15 seconds. Continuous monitor is one which continuously samples or measures the regulated parameter without interruption, and evaluates the detector response at least once each 15 seconds, and computes and records the average value at least every 60 seconds. Hourly Rolling Average (HRA) as defined in 40 CFR 266.102(e)(6)(i)(B). -For carcinogenic metals and lead feed rates: Instantaneous as defined above or, rolling average as defined in 40 CFR 266.102(e)(6)(ii).

<sup>2</sup> AWFCO: Automatic Waste Feed Cutoff. For AWFCOs indicated by "Y", the Permit Limit in the table triggers an AWFCO.

**Table V.H.3. - Maximum Constituent Feed Rate**

[Multi-chamber Incinerators (e.g., rotary kilns) may need feed rate limits to each combustion chamber.] The total feed rate of constituents to the incinerator(s) shall not exceed the following limitations in grams per hour (g/hr) or tons per year (T/yr), as noted. The metals limitations have been evaluated through the risk assessment. The ash and chlorine limits are based upon testing or regulatory limits.

Constituent	Maximum Allowable Feed Rate In All Feedstreams Hourly Basis (g/hr)	Maximum Allowable Feed Rate In All Hazardous Waste Feedstreams Hourly Basis (g/ hr) <sup>1</sup>	Maximum Allowable Feed Rate in All Pumpable Hazardous Waste Feedstreams Hourly Basis (g/ hr) <sup>1</sup>	Maximum Allowable Feed Rate in All Feedstreams Annual Basis (T/ yr)
Arsenic				
Beryllium				
Cadmium				
Total Chromium				
Antimony				
Barium				
Lead				
Mercury				
Silver				
Thallium				
Total Chlorine				
Ash to Secondary Combustion Chamber or Other Primary Chamber if Only Pumpable Waste is Fed	<b>For Incinerator IN-4702:</b> 7.5 lb/hr (12-hour rolling average basis <sup>2</sup> )	Not applicable	Not applicable	Not applicable

<sup>1</sup> Not applicable for Tier I or Tier I adjusted metals feed rate screening limits. [Hourly feed rate limits must comply with the requirements of 40 CFR 266.106 for carcinogenic metals and non-carcinogenic metals. As applicable, the feed rate limit for chromium may be specified as hexavalent and total chromium limits.]

<sup>2</sup> 40 CFR Part 264 Subpart O does not specify an averaging period for the ash feed rate limit. To be consistent with averaging periods established for metals, ash, and chlorine under 40 CFR 63.1209 (HWC NESHAP), the averaging period for ash feed rate has been established on a 12-hour rolling average basis.



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PERMIT No. 50128  
SOLID WASTE REGISTRATION No. 30024  
EPA ID No. TXD008081697**

**INCINERATOR IN-701  
ENGINEERING REPORT**

**MAY 2025  
REVISION: SEPTEMBER 2025**

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## **1.0 INTRODUCTION**

BASF Corporation (BASF) operates a liquid hazardous waste incinerator, designated as Incinerator IN-701, at its facility in Freeport, Texas. Incinerator IN-701 is subject to the Resource Conservation and Recovery Act (RCRA) general permitting and operating requirements of Title 40 Code of Federal Regulations (CFR) Parts 264 and 270 and Title 30 Texas Administrative Code (TAC) Chapter 335 Subchapters F and H. The incinerator is also subject to the Hazardous Waste Combustor National Emission Standards for Hazardous Air Pollutants (HWC NESHAP) codified in 40 CFR Part 63 Subpart EEE.

40 CFR § 270.19 requires that BASF submit information about Incinerator IN-701 with this permit application to demonstrate compliance with the standards contained in 40 CFR §§ 264.340 thru 351. However, pursuant to 40 CFR §§ 264.340(b) and 270.62, all waste analysis, performance standards, operating requirements, monitoring requirements, and inspection requirements do not apply to Incinerator IN-701 once BASF demonstrates compliance with the HWC NESHAP and submits the Notification of Compliance. BASF completed this process in 2005. The Texas Commission on Environmental Quality (TCEQ) issued a Finding of Compliance for the incinerator in 2005. Accordingly, most of the information specified by 40 CFR § 270.19 is no longer applicable. Details related to operation and design of the incinerator and associated equipment are now addressed under the Clean Air Act's HWC NESHAP.

The remaining sections of this report provide the following information:

- Section 2.0 describes the incinerator equipment;
- Section 3.0 discusses the continuous monitoring systems (CMS);
- Section 4.0 discusses the Part B Section V application tables;
- Section 5.0 discusses special waste considerations;
- Section 6.0 addresses startup, shutdown, and malfunction requirements; and
- Section 7.0 provides the certification statement for this engineering report.

## 2.0 EQUIPMENT DESCRIPTION

Incinerator IN-701 is a liquid injection incinerator. The incinerator is a horizontal, cylindrical, self-supporting unit designed for forced draft operation. The incinerator is equipped with heat recovery for steam production. There is no air pollution control equipment installed on the unit because control is not necessary to comply with the applicable performance standards. The unit has been designed to process non-hazardous and hazardous liquid waste and process vent gas up to a capacity of 100 million British thermal units per hour (MMBtu/hr).

Table 1 provides information on the Incinerator IN-701 design. Figure 1 provides a general process schematic diagram of Incinerator IN-701. Process and instrumentation diagrams (P&IDs) are provided in Section XIII. These figures have been identified as confidential information.

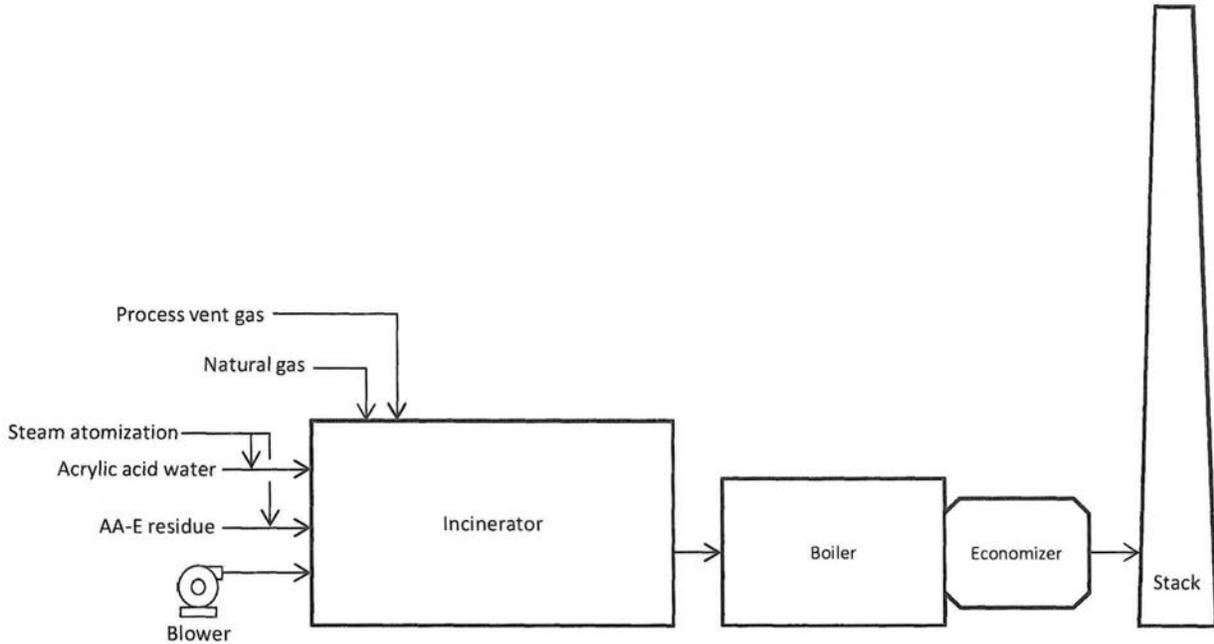
**TABLE 1  
INCINERATOR IN-701 DESIGN INFORMATION**

ITEM	DESCRIPTION
Manufacturer's name and model number of incinerator	The incinerator was designed and was manufactured by the John Zink Company of Tulsa, Oklahoma. The incinerator was custom designed and does not have a model number.
Type of incinerator	The incinerator is a liquid injection type incinerator. It is a horizontal, cylindrical, down-fired, self-supporting unit designed for forced draft operation.
Linear dimension of incinerator unit including cross sectional area of combustion chamber	The incinerator precombustion chamber is approximately 7.5 feet in length, and the main combustion chamber is approximately 35 feet in length. The combustion chamber has a cross-section of approximately 133 square feet at the widest section.
Description of auxiliary fuel system (type/feed)	Natural gas is fired through the burner to heat the system to its design operating temperature and to maintain the combustion zone temperature during normal operations. The burner is designed for a total heat release of 70 MMBtu/hr.
Nozzle and burner design	The burner system is located in a horizontal orientation on the front of the chamber. The burner assembly includes a steam-atomized gun to fire non-hazardous residues. The acrylic acid water is fed to the incinerator through multiple steam-atomized guns located downstream of the burner. Vent gases are introduced immediately downstream of the burner.
Capacity of prime mover	The combustion air fan supplies a maximum of 30,000 actual cubic feet per minute (acfm) at 16 inches water column (in. w.c.). The fan is driven by a 1,780 revolutions per minute (rpm), 150-horsepower (hp) motor.
Description of automatic waste feed cutoff system(s)	The automatic waste feed cutoff system is operated to comply with the HWC NESHAP. There are no cutoffs associated with the RCRA permit.
Stack gas monitoring and pollution control monitoring system	The stack is equipped with a continuous emissions monitoring systems (CEMS) to monitor carbon monoxide (CO) and oxygen. These CEMS are designed and operated to comply with the requirements of the HWC NESHAP. The CEMS are not required for compliance with the RCRA permit.

**TABLE 1 (CONTINUED)**  
**INCINERATOR IN-701 DESIGN INFORMATION**

ITEM	DESCRIPTION
Construction materials	The incinerator is constructed of carbon steel. The combustion chamber is lined with 18 inches of refractory material.
Location and description of temperature, pressure, and flow indicating devices and control devices	Combustion chamber temperature, stack gas flow rate, total hazardous waste feed rate, and atomizing fluid pressure are monitored to comply with the HWC NESHAP. No process monitors are required for compliance with the RCRA permit. The combustion chamber temperature monitor is located in the transition duct between the combustion chamber and the waste heat boiler. The stack gas flow rate monitor is located in the stack. The hazardous waste feed rate monitor is located in the feed line of the acrylic acid water prior to the steam-atomized guns. The atomizing fluid pressure is monitored in the steam line to the acrylic acid water feed line.

**FIGURE 1**  
**INCINERATOR IN-701 PROCESS SCHEMATIC**



**2.1 FEEDSTREAMS**

Acrylic acid water (TCEQ No. 1503-105H) carries the 40 CFR Part 261 hazardous waste numbers of D002 (corrosivity) and D018 (benzene). This waste is produced within the Acrylic Acid production areas. This waste is fed to Incinerators IN-701 and IN-5500 in on-line configurations and is not allowed to accumulate.

AA-E residue is a non-hazardous liquid waste stream that is generated within the Acrylic Acid production areas. The waste stream is stored in Tank D-412 and is fed to Incinerator IN-701 in a batch mode.

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In addition to the liquid wastes, BASF feeds process vent gas to Incinerator IN-701. The process vent gas streams are identified as the AA-E2 off-gas, the vacuum vent off-gas, and the nitrogen vent off-gas. The process vent gas is predominantly nitrogen with some organic content.

Natural gas is also used as auxiliary fuel during startup and to control temperatures in the incinerator.

## **2.2 AIR POLLUTION CONTROL**

The incinerator is not equipped with any air pollution control device.

## **2.3 STACK**

The exhaust stack of Incinerator IN-701 is approximately 200 feet above grade. The stack is ten feet in diameter at the base and reduces to seven feet in diameter at the top. The stack is equipped with ports suitable for proper isokinetic sampling.

## **2.4 SECONDARY CONTAINMENT**

The incinerator is set on a concrete pad. The concrete paving is sloped to concrete drainage ditches that drain to concrete sumps. The slopes of the concrete are adequate to provide proper drainage. In the event of a spill, the containment area is washed down to the drainage system. The contaminated water is then collected by vacuum truck and disposed of appropriately.

### 3.0 CONTINUOUS MONITORING SYSTEMS

Incinerator IN-701 is equipped with CMS, including continuous process monitoring systems (CPMS) and continuous emissions monitoring systems (CEMS). These CMS enable the facility to maintain safe operation of the incinerators in compliance with the HWC NESHAP operating parameter limits (OPLs).

The data measured by the CMS is recorded in the facility operating records. System operations are monitored with process controllers which then transmit the process conditions to the distributed control system (DCS).

#### 3.1 CONTINUOUS PROCESS MONITORING SYSTEMS

Various CPMS are required for the incinerator to document compliance with the applicable HWC NESHAP OPLs. Table 2 presents a summary of the CPMS for Incinerator IN-701.

**TABLE 2  
INCINERATOR IN-701 CONTINUOUS PROCESS MONITORING SYSTEMS**

TAG NO.	MEASURED PARAMETER	INSTRUMENT DESCRIPTION
T-7051, T-7052, T-7053	Combustion chamber temperature	Type K thermocouples
F-7073, F-7074	Stack gas flow rate	Annubar and differential pressure transmitter
F-1105	Acrylic acid water feed rate	Orifice plate and differential pressure transmitter
F-7062	AA-E residue feed rate	Coriolis mass flow meter
P-7055	Atomizing fluid pressure for acrylic acid water	Pressure transmitter

#### 3.2 CONTINUOUS EMISSIONS MONITORING SYSTEMS

BASF monitors the concentrations of carbon monoxide (CO) and oxygen in the stack gas of the incinerator to comply with the HWC NESHAP. BASF utilizes non-dispersive infrared (NDIR) analyzers to continuously monitor CO concentration in the stack gas for the incinerator. The analyzer is a dual range design with a span of zero to 200 parts per million by volume on a dry basis (ppmv dry) for the low range and a span of zero to 3,000 ppmv dry span for the high range. The oxygen analyzer that is used to correct CO emission concentrations to seven percent oxygen is a paramagnetic analyzer. The analyzer has a span of zero to 25 percent oxygen by volume on a dry basis. BASF also utilizes a backup CEMS that consists of the same instruments as the primary unit.

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### **3.3 AUTOMATIC WASTE FEED CUTOFF SYSTEMS**

BASF operates the incinerator with an automatic waste feed cutoff (AWFCO) system that immediately and automatically cut off the hazardous waste feed to the incinerator when operating conditions deviate from those established in the HWC NESHAP.

### **3.4 EMERGENCY SHUTDOWN SYSTEMS**

Emergency shutdown features are included to protect the equipment in the event of a malfunction. During an emergency shutdown, all waste feeds and fuel feeds are stopped. The trigger points for an emergency shutdown have been set independent of regulatory test conditions. These limits are based on equipment design and operating specifications and are considered good operating practices. For example, the following conditions will trigger a stop of all feeds to the incinerator:

- Low fuel gas pressure;
- High fuel gas pressure;
- Low combustion air flow rate;
- Low combustion air pressure;
- High combustion chamber temperature;
- Flame failure;
- Forced draft fan failure;
- Steam drum low water level;
- Superheated steam high pressure; and
- Superheated steam high temperature.

## 4.0 APPLICATION TABLES

Section V of the Part B application includes several tables intended to define the operating conditions of the incinerators. The following tables are included in Section V for Incinerator IN-701:

- Table V.H.1., *Incinerators* – This table lists the incinerators included in the permit. This table is applicable to the BASF Freeport Site and has been included in the permit application.
- Table V.H.2., *Incinerator Permit Conditions, Monitoring and Automatic Waste Feed Cutoff Systems* – This table establishes operating conditions for an incinerator. This table is not applicable to Incinerator IN-701 because the HWC NESHAP Finding of Compliance has been issued.
- Table V.H.3., *Maximum Constituent Feed Rates* – This table establishes constituent feed rate limits for an incinerator. This table is not applicable to Incinerator IN-701 because the HWC NESHAP Finding of Compliance has been issued.
- Table V.H.4., *Maximum Allowable Emission Rates* – This table establishes emission rate limits for an incinerator. This table is not applicable to IN-701 because the HWC NESHAP Finding of Compliance has been issued.
- Table V.H.5., *Incinerator Permit Conditions, Monitoring and Automatic Waste Feed Cutoff Systems – Short-Term Operation* – This table establishes operating limits for shakedown and trial burn periods for a new incinerator. Incinerator IN-701 is an existing incinerator. This table is not applicable to Incinerator IN-701.
- Table V.H.8., *Principal Organic Hazardous Constituents* – This table establishes the principal organic hazardous constituent (POHCs) to be used for the destruction and removal efficiency (DRE) demonstration during a trial burn. Trial burns are no longer applicable to the incinerator because HWC NESHAP comprehensive performance tests (CPTs) are performed and the HWC NESHAP Finding of Compliance has been issued. This table is not applicable to Incinerator IN-701.

## **5.0 SPECIAL WASTE CONSIDERATIONS**

This section addresses special considerations for wastes managed in the incinerator.

### **5.1 REACTIVE OR INCOMPATIBLE WASTE**

Incinerator IN-701 does not manage reactive or incompatible wastes.

### **5.2 DIOXIN WASTES**

Incinerator IN-701 does not manage F020, F021, F022, F023, F026, and F027 wastes.

### **5.3 PRECAUTIONS FOR IGNITION OR REACTION**

Precautions to prevent the ignition or reaction of wastes are based on normal plant safety protocol and specific hazardous waste area operations. Hazardous waste is hard-piped directly from the process to the incinerator's combustion chamber. There is no exposure to the atmosphere and therefore no potential for ignition or reaction.

## 6.0 STARTUP, SHUTDOWN, AND MALFUNCTION

BASF maintains and operates in accordance with an HWC NESHAP startup, shutdown, and malfunction plan for the incinerator. The plan states that BASF intends to utilize the option under 40 CFR § 270.235(a)(1)(iii) to not include permit conditions that address startup, shutdown, and malfunction events in the RCRA permit. As such, the HWC NESHAP startup, shutdown, and malfunction plan for the incinerators has been submitted for review and approval. In the event that the startup, shutdown, and malfunction plan has not been approved prior to issuing this permit renewal, we offer the following alternative for addressing startup, shutdown, and malfunction events in the permit.

As described in the HWC NESHAP startup, shutdown, and malfunction plan, BASF minimizes emissions from startup, shutdown, and malfunction events by not feeding hazardous waste during these time periods. No hazardous waste shall be fed to the incinerator during startup, shutdown, or malfunction event. During a malfunction event, if an exceedance of any HWC NESHAP OPLs occurs, hazardous waste feed to the incinerator must be ceased immediately by activating the AWFCO system. When a malfunction is not associated with an OPL and related AFWCO system, the hazardous waste feed to the incinerator shall be ceased as quickly as possible.

BASF believes that these waste feed restrictions adequately address emissions from startup, shutdown, and malfunction events.

## 7.0 CERTIFICATION

I certify under penalty of law that this engineering report was prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the units, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



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YH  
9/9/25



**BASF CORPORATION**  
*FREEPORT, TEXAS*

**INDUSTRIAL AND HAZARDOUS WASTE  
STORAGE/PROCESSING/DISPOSAL FACILITY  
PERMIT No. 50128  
SOLID WASTE REGISTRATION No. 30024  
EPA ID No. TXD008081697**

**INCINERATOR IN-4702  
ENGINEERING REPORT**

**MAY 2025  
REVISION: SEPTEMBER 2025  
REVISION: OCTOBER 2025**

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## **1.0 INTRODUCTION**

BASF Corporation (BASF) operates a liquid hazardous waste incinerator, designated as Incinerator IN-4702, at its facility in Freeport, Texas. Incinerator IN-4702 is subject to the Resource Conservation and Recovery Act (RCRA) general permitting and operating requirements of Title 40 Code of Federal Regulations (CFR) Parts 264 and 270 and Title 30 Texas Administrative Code (TAC) Chapter 335 Subchapters F and H. The incinerator is also subject to the Hazardous Waste Combustor National Emission Standards for Hazardous Air Pollutants (HWC NESHAP) codified in 40 CFR Part 63 Subpart EEE.

40 CFR § 270.19 requires that BASF submit information about Incinerator IN-4702 with this permit application to demonstrate compliance with the standards contained in 40 CFR §§ 264.340 thru 351. However, pursuant to 40 CFR §§ 264.340(b) and 270.62, all waste analysis, performance standards, operating requirements, monitoring requirements, and inspection requirements do not apply to a hazardous waste incineration unit that becomes subject to RCRA permit requirements after October 12, 2005. Incinerator IN-4702 was initially permitted under RCRA in 2016. Accordingly, most of the information specified by 40 CFR § 270.19 is not applicable. Details related to operation and design of the incinerator and associated equipment are addressed under the Clean Air Act's HWC NESHAP.

BASF has chosen to comply with the alternative metals emission control requirements of 40 CFR § 63.1219(e) for Incinerator IN-4702. Therefore, the incinerator is subject to the particulate matter (PM) performance standard of 40 CFR § 264.343(c). Information pertaining to compliance with the PM performance standard is provided in this report.

The remaining sections of this report provide the following information:

- Section 2.0 describes the incinerator equipment;
- Section 3.0 discusses the continuous monitoring systems (CMS);
- Section 4.0 discusses the Part B Section V application tables;
- Section 5.0 addresses trial burn requirements;
- Section 6.0 discusses special waste considerations;
- Section 7.0 addresses startup, shutdown, and malfunction requirements; and
- Section 8.0 provides the certification statement for this engineering report.

## 2.0 EQUIPMENT DESCRIPTION

Incinerator IN-4702 is a liquid injection incinerator. The incinerator is a custom designed vertical, cylindrical, down-fired, self-supporting unit designed for forced draft operation. The incinerator is equipped with heat recovery for steam production. There is no air pollution control equipment installed on the unit because control is not necessary to comply with the applicable performance standards. The unit has been designed to process non-hazardous and hazardous liquid waste and process vent gas up to a capacity of 100 million British thermal units per hour (MMBtu/hr).

Table 1 provides information on the Incinerator IN-4702 design. Figure 1 provides a general process schematic diagram of Incinerator IN-4702. Process and instrumentation diagrams (P&IDs) are provided in Section XIII. These figures have been identified as confidential information.

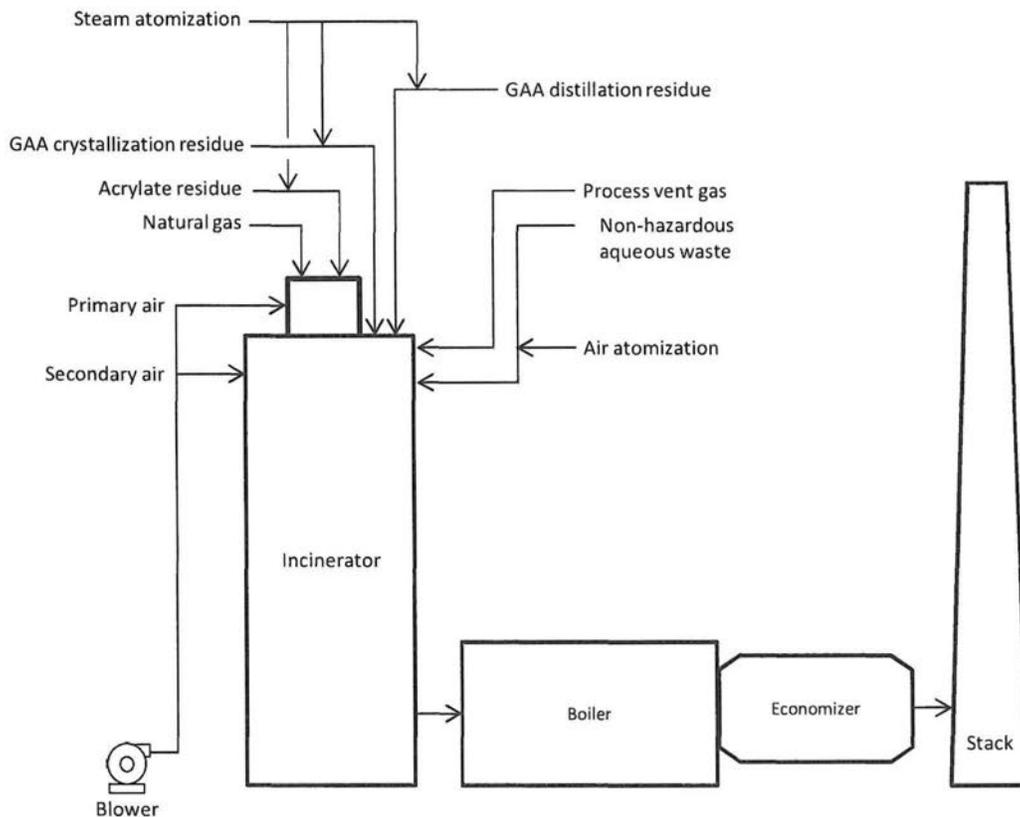
**TABLE 1  
INCINERATOR IN-4702 DESIGN INFORMATION**

ITEM	DESCRIPTION
Manufacturer's name and model number of incinerator	The incinerator was designed by Callidus Technologies, Inc., of Tulsa, Oklahoma. The incinerator was custom designed and does not have a model number.
Type of incinerator	The incinerator is a liquid injection type incinerator. It is a vertical, cylindrical, down-fired, self-supporting unit designed for forced draft operation.
Linear dimension of incinerator unit including cross sectional area of combustion chamber	The combustion chamber is 67 feet tall with a 12.5-foot outer diameter and is lined with 18 inches of refractory brick. It has a total volume of 4,749 cubic feet.
Description of auxiliary fuel system (type/feed)	Natural gas is supplied to the incinerator from the BASF header. Natural gas flows through automatic double block and bleed valves and into the incinerator through the burner. Before entering the incinerator, the natural gas pressure is reduced to approximately 30 pounds per square inch gauge (psig). The amount of natural gas fed to the incinerator is controlled to maintain the combustion temperature.
Nozzle and burner design	<p>A combination gas and liquid burner is mounted at the top of the combustion chamber. The burner has an electric spark ignited premix pilot. The burner assembly consists of a primary fuel gas tip, secondary fuel gas tips, a pilot tip, and one steam-atomized waste liquid gun.</p> <p>The liquid wastes and vent gases are introduced into the combustion chamber in three zones. In the first zone, the hazardous and non-hazardous residues are fed to the incinerator through the four steam atomized waste liquid guns at the top of the combustion chamber. In the second zone, the vent gases are injected into the combustion chamber through six injectors. In the third zone, the aqueous wastes are introduced to the combustion chamber via five air-atomized waste guns located downstream of the burner and process vent gas nozzles.</p>
Capacity of prime mover	The combustion air fan supplies a maximum of 26,610 actual cubic feet per minute (acfm) at 31.7 inches water column (in. w.c.). The fan is driven by a 1,775 revolutions per minute (rpm), 200-horsepower (hp) motor.

**TABLE 1 (CONTINUED)**  
**INCINERATOR IN-4702 DESIGN INFORMATION**

ITEM	DESCRIPTION
Description of automatic waste feed cutoff system(s)	The automatic waste feed cutoff system is operated to comply with the HWC NESHAP. Only two cutoffs are associated with the RCRA permit: maximum total combustion air flow rate and maximum ash feed rate.
Stack gas monitoring and pollution control monitoring system	The stack is equipped with a continuous emissions monitoring systems (CEMS) to monitor carbon monoxide (CO) and oxygen. These CEMS are designed and operated to comply with the requirements of the HWC NESHAP. The CEMS are not required for compliance with the RCRA permit.
Construction materials	The incinerator is constructed of carbon steel. The combustion chamber is lined with 18 inches of refractory material.
Location and description of temperature, pressure, and flow indicating devices and control devices	Combustion chamber temperature, total combustion air flow rate, total hazardous waste feed rate, and atomizing fluid pressure are monitored to comply with the HWC NESHAP. The combustion chamber temperature monitor is located in the transition duct between the combustion chamber and the waste heat boiler. The combustion air flow rate monitors are located in the air plenums before the combustion chamber. The hazardous waste feed rate monitors are located in the waste feed lines prior to the steam-atomized guns. The atomizing fluid pressure is monitored in the steam lines to the waste feed lines.

**FIGURE 1**  
**INCINERATOR IN-4702 PROCESS SCHEMATIC**



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## 2.1 FEEDSTREAMS

Acrylate residue (TCEQ No. 5175-219H) is a mixture of hazardous waste streams generated within the butyl acrylate (BA) and 2-ethylhexyl acrylate (2-EHA) production areas. Acrylate residue carries the 40 CFR Part 261 hazardous waste numbers of D001 (ignitability) and D002 (corrosivity). This waste mixture is stored in Tank D-147B prior to being burned in Incinerator IN-4702.

Glacial acrylic acid (GAA) crystallization residue (TCEQ No. 1706-219H) carries the 40 CFR Part 261 hazardous waste number of D001 (ignitability). This waste is generated in the Glacial 4 production area. The GAA crystallization is stored in Tank D-3872 prior to being burned in Incinerator IN-4702.

GAA distillation residue is a non-hazardous waste that is generated within the Glacial 2 and 3 production areas. The GAA distillation residue is stored in Tank D-463 prior to being burned in Incinerator IN-4702.

Dispersions condensate is a non-hazardous aqueous waste that is generated within the Dispersions production area. This waste is stored in Tank D-5151 prior to being burned in Incinerator IN-4702.

1,6-Hexanediol (HDO<sup>®</sup>) aqueous waste is a non-hazardous aqueous waste that is generated within the HDO<sup>®</sup> production area. This waste is typically a component of the D-1451 non-hazardous aqueous waste (TCEQ No. 1821-1191) that is burned in Incinerator IN-5100. It is stored in Tank D-950 before being blended into Tank D-1451. Occasionally, the HDO<sup>®</sup> aqueous waste may be fed directly to Incinerator IN-4702 from Tank D-950.

In addition to the liquid wastes, BASF feeds process vent gas to Incinerator IN-4702. The process vent gas streams are identified as the BA off-gas, the BA tank farm vent, the vacuum vent, the dispersions process vent, the methyl methacrylate (MMA)/ureidomethacrylate (UMA)/styrene storage drum vent, and the acetonitrile (ACN) storage drum vent. The process vent gas is predominantly nitrogen with some organic content.

Natural gas is also used as auxiliary fuel during startup and to control temperatures in the incinerator.

## 2.2 AIR POLLUTION CONTROL

The incinerator is not equipped with any air pollution control device.

## 2.3 STACK

The exhaust stack of Incinerator IN-4702 is approximately 125 feet above grade. The stack is nine feet in diameter. The stack is equipped with ports suitable for proper isokinetic sampling.

## 2.4 SECONDARY CONTAINMENT

The incinerator is set on a concrete pad. The concrete paving is sloped to concrete drainage ditches that drain to concrete sumps. The slopes of the concrete are adequate to provide proper drainage. In the

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event of a spill, the containment area is washed down to the drainage system. The contaminated water is then collected by vacuum truck and disposed of appropriately.

### 3.0 CONTINUOUS MONITORING SYSTEMS

Incinerator IN-4702 is equipped with CMS, including continuous process monitoring systems (CPMS) and continuous emissions monitoring systems (CEMS). These CMS enable the facility to maintain safe operation of the incinerators in compliance with the HWC NESHAP operating parameter limits (OPLs).

The data measured by the CMS is recorded in the facility operating records. System operations are monitored with process controllers which then transmit the process conditions to the distributed control system (DCS).

#### 3.1 CONTINUOUS PROCESS MONITORING SYSTEMS

Various CPMS are required for the incinerator to document compliance with the applicable HWC NESHAP OPLs. Table 2 present a summary of the CPMS for Incinerator IN-4702. Some of the CPMS are also required to demonstrate compliance with the PM performance standard of 40 CFR § 264.343(c).

**TABLE 2  
INCINERATOR IN-4702 CONTINUOUS PROCESS MONITORING SYSTEMS**

TAG NO.	MEASURED PARAMETER	INSTRUMENT DESCRIPTION
TI-7090A, TI-7090B, TI-7090C	Combustion chamber temperature	Type K thermocouples and temperature transmitters
FI-7068	Primary combustion air flow rate <sup>1</sup>	Averaging velocity element and differential pressure transmitter
FI-7069	Secondary combustion air flow rate <sup>1</sup>	Thermal mass flow meter
FI-7065	Acrylate residue feed rate <sup>1</sup>	Coriolis mass flow meter
FIC-7081	Glacial acrylic acid crystallization residue feed rate <sup>1</sup>	Coriolis mass flow meter
FI-7104	Glacial acrylic acid distillation residue feed rate <sup>1</sup>	Coriolis mass flow meter
FI-7026	Non-hazardous aqueous waste feed rate <sup>1</sup>	Coriolis mass flow meter
PT-7083A, PT-7083B	Atomizing fluid pressure for residues	Pressure transmitter

<sup>1</sup> This parameter is also monitored for RCRA compliance.

##### 3.1.1 TOTAL COMBUSTION AIR FLOW RATE

An indicator of gas residence time is continuously monitored to demonstrate compliance with the RCRA PM standard. The continuous measurements are used to calculate one-minute averages (OMAs) and hourly rolling averages (HRAs). The HRA values are compared to the permit limit to demonstrate compliance. BASF monitors the total combustion air flow rate to comply with this requirement.

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The combustion air enters the combustion chamber in two locations, identified as the primary and the secondary combustion air. Each combustion air flow rate is monitored in thousands of standard cubic feet per minute (kscfm) using the instruments described in Table 2.

### **3.1.2 ASH FEED RATE**

The ash feed rate is continuously monitored to demonstrate compliance with the RCRA PM standard for Incinerator IN-4702. The continuous measurements are used to calculate OMAs and 12-hour rolling averages (12-hr RAs). The 12-hr RA values are compared to the permit limit to demonstrate compliance.

BASF calculates the ash feed rate on a mass basis in pounds per hour (lb/hr) using the weight fraction of ash in each feedstream and the continuously monitored feed rate of each feedstream. The feed rate of each feedstream is monitored in lb/hr using the instruments described in Table 2.

## **3.2 CONTINUOUS EMISSIONS MONITORING SYSTEMS**

BASF monitors the concentrations of carbon monoxide (CO) and oxygen in the stack gas of the incinerator to comply with the HWC NESHAP. BASF utilizes non-dispersive infrared (NDIR) analyzers to continuously monitor CO concentration in the stack gas for the incinerator. The analyzer is a dual range design with a span of zero to 200 parts per million by volume on a dry basis (ppmv dry) for the low range and a span of zero to 3,000 ppmv dry span for the high range. The oxygen analyzer that is used to correct CO emission concentrations to seven percent oxygen is a paramagnetic analyzer. The analyzer has a span of zero to 25 percent oxygen by volume on a dry basis. BASF also utilizes a backup CEMS that consists of the same instruments as the primary unit.

## **3.3 AUTOMATIC WASTE FEED CUTOFF SYSTEMS**

BASF operates the incinerator with an automatic waste feed cutoff (AWFCO) system that immediately and automatically cut off the hazardous waste feed to the incinerator when operating conditions deviate from those established in the HWC NESHAP. The following AWFCOs are also required to demonstrate compliance with the PM performance standard of 40 CFR § 264.343(c):

- Maximum total combustion air flow rate; and
- Maximum ash feed rate.

## **3.4 EMERGENCY SHUTDOWN SYSTEMS**

Emergency shutdown features are included to protect the equipment in the event of a malfunction. During an emergency shutdown, all waste feeds and fuel feeds are stopped. The trigger points for an emergency shutdown have been set independent of regulatory test conditions. These limits are based on equipment design and operating specifications and are considered good operating practices. For example, the following conditions will trigger a stop of all feeds to the incinerator:

- Low fuel gas pressure;

- 
- High fuel gas pressure;
  - High combustion chamber temperature;
  - Flame failure;
  - Forced draft fan failure; and
  - Steam drum low water level.

## 4.0 APPLICATION TABLES

Section V of the Part B application includes several tables intended to define the operating conditions of the incinerators. The following tables are included in Section V for Incinerator IN-4702:

- Table V.H.1., *Incinerators* – This table lists the incinerators included in the permit. This table is applicable to the BASF Freeport Site and has been included in the permit application.
- Table V.H.2., *Incinerator Permit Conditions, Monitoring and Automatic Waste Feed Cutoff Systems* – This table establishes operating conditions for an incinerator. The table is included for Incinerator IN-4702 to establish the OPLs for the applicable RCRA performance standard.
- Table V.H.3., *Maximum Constituent Feed Rates* – This table establishes constituent feed rate limits for an incinerator. The table is included for Incinerator IN-4702 to establish the OPL for ash feed rate. The metals and chlorine limits in this table are not applicable because Incinerator IN-4702 complies with the HWC NESHAP emission standards for metals and chlorine.
- Table V.H.4., *Maximum Allowable Emission Rates* – This table establishes emission rate limits for an incinerator. The table is included for Incinerator IN-4702 to establish the applicable RCRA performance standard for PM.
- Table V.H.5., *Incinerator Permit Conditions, Monitoring and Automatic Waste Feed Cutoff Systems – Short-Term Operation* – This table establishes operating limits for shakedown and trial burn periods for a new incinerator. Incinerator IN-4702 is an existing incinerator. This table is not applicable to Incinerator IN-4702.
- Table V.H.8., *Principal Organic Hazardous Constituents* – This table establishes the principal organic hazardous constituent (POHCs) to be used for the destruction and removal efficiency (DRE) demonstration during a trial burn. Trial burns are not applicable to the incinerator because it was initially permitted under RCRA after October 12, 2005, and complies with the HWC NESHAP DRE standard. This table is not applicable to Incinerator IN-4702.

## **5.0 TRIAL BURN**

A trial burn is required for Incinerator IN-4702 to demonstrate compliance with the PM performance standard of 40 CFR § 264.343(c) and to establish applicable OPLs. The trial burns for Incinerator IN-4702 are performed in conjunction with the periodic HWC NESHAP comprehensive performance tests (CPTs). The PM testing is addressed in the CPT plans submitted one year prior to the CPTs. The most recent CPT plan for Incinerator IN-4702 was submitted in April 2025, and the CPT will be performed in 2026. A trial burn plan is not being submitted with this permit application.

## **6.0 SPECIAL WASTE CONSIDERATIONS**

This section addresses special considerations for wastes managed in the incinerator.

### **6.1 REACTIVE OR INCOMPATIBLE WASTE**

Incinerator IN-4702 does not manage reactive or incompatible wastes.

### **6.2 DIOXIN WASTES**

Incinerator IN-4702 does not manage F020, F021, F022, F023, F026, and F027 wastes.

### **6.3 PRECAUTIONS FOR IGNITION OR REACTION**

Precautions to prevent the ignition or reaction of wastes are based on normal plant safety protocol and specific hazardous waste area operations. Hazardous waste is hard-piped directly from the process to the incinerator's combustion chamber. There is no exposure to the atmosphere and therefore no potential for ignition or reaction.

## 7.0 STARTUP, SHUTDOWN, AND MALFUNCTION

BASF maintains and operates in accordance with an HWC NESHAP startup, shutdown, and malfunction plan for the incinerator. The plan states that BASF intends to utilize the option under 40 CFR § 270.235(a)(1)(iii) to not include permit conditions that address startup, shutdown, and malfunction events in the RCRA permit. As such, the HWC NESHAP startup, shutdown, and malfunction plan for the incinerators has been submitted for review and approval. In the event that the startup, shutdown, and malfunction plan has not been approved prior to issuing this permit renewal, we offer the following alternative for addressing startup, shutdown, and malfunction events in the permit.

As described in the HWC NESHAP startup, shutdown, and malfunction plan, BASF minimizes emissions from startup, shutdown, and malfunction events by not feeding hazardous waste during these time periods. No hazardous waste shall be fed to the incinerator during startup, shutdown, or malfunction event. During a malfunction event, if an exceedance of any HWC NESHAP OPLs occurs, hazardous waste feed to the incinerator must be ceased immediately by activating the AFWCO system. When a malfunction is not associated with an OPL and related AFWCO system, the hazardous waste feed to the incinerator shall be ceased as quickly as possible.

BASF believes that these waste feed restrictions adequately address emissions from startup, shutdown, and malfunction events.

## 8.0 CERTIFICATION

I certify under penalty of law that this engineering report was prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the units, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Name: Yasuko Horiuchi Dodd

Registration No.: 110622

YD 9/9/25



**BASF CORPORATION**  
*FREEPORT, TEXAS*

**INDUSTRIAL AND HAZARDOUS WASTE  
STORAGE/PROCESSING/DISPOSAL FACILITY  
PERMIT No. 50128  
SOLID WASTE REGISTRATION No. 30024  
EPA ID No. TXD008081697**

**INCINERATOR IN-5100  
ENGINEERING REPORT**

**MAY 2025  
REVISION: SEPTEMBER 2025**

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## **1.0 INTRODUCTION**

BASF Corporation (BASF) operates a liquid hazardous waste incinerator, designated as Incinerator IN-5100, at its facility in Freeport, Texas. Incinerator IN-5100 is subject to the Resource Conservation and Recovery Act (RCRA) general permitting and operating requirements of Title 40 Code of Federal Regulations (CFR) Parts 264 and 270 and Title 30 Texas Administrative Code (TAC) Chapter 335 Subchapters F and H. The incinerator is also subject to the Hazardous Waste Combustor National Emission Standards for Hazardous Air Pollutants (HWC NESHAP) codified in 40 CFR Part 63 Subpart EEE.

40 CFR § 270.19 requires that BASF submit information about Incinerator IN-5100 with this permit application to demonstrate compliance with the standards contained in 40 CFR §§ 264.340 thru 351. However, pursuant to 40 CFR §§ 264.340(b) and 270.62, all waste analysis, performance standards, operating requirements, monitoring requirements, and inspection requirements do not apply to Incinerator IN-5100 once BASF demonstrates compliance with the HWC NESHAP and submits the Notification of Compliance. BASF completed this process in 2005. The Texas Commission on Environmental Quality (TCEQ) issued a Finding of Compliance for the incinerator in 2005. Accordingly, most of the information specified by 40 CFR § 270.19 is no longer applicable. Details related to operation and design of the incinerator and associated equipment are now addressed under the Clean Air Act's HWC NESHAP.

The remaining sections of this report provide the following information:

- Section 2.0 describes the incinerator equipment;
- Section 3.0 discusses the continuous monitoring systems (CMS);
- Section 4.0 discusses the Part B Section V application tables;
- Section 5.0 discusses special waste considerations;
- Section 6.0 addresses startup, shutdown, and malfunction requirements; and
- Section 7.0 provides the certification statement for this engineering report.

## 2.0 EQUIPMENT DESCRIPTION

Incinerator IN-5100 is a liquid injection incinerator. The incinerator is a custom designed vertical, cylindrical, down-fired, self-supporting unit designed for forced draft operation. The incinerator is equipped with heat recovery for steam production. There is no air pollution control equipment installed on the unit because control is not necessary to comply with the applicable performance standards. The unit has been designed to process non-hazardous and hazardous liquid waste and process vent gas up to a capacity of 216 million British thermal units per hour (MMBtu/hr).

Table 1 provides information on the Incinerator IN-5100 design. Figure 1 provides a general process schematic diagram of Incinerator IN-5100. Process and instrumentation diagrams (P&IDs) are provided in Section XIII. These figures have been identified as confidential information.

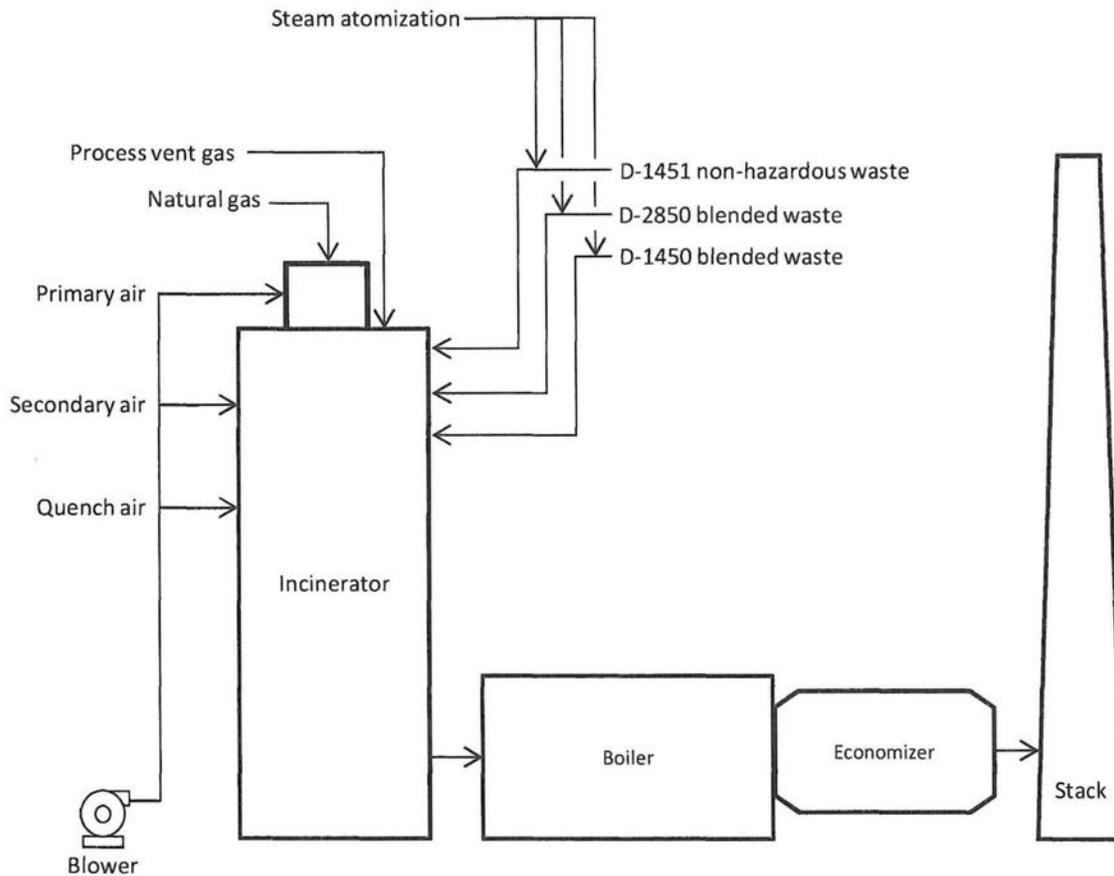
**TABLE 1  
INCINERATOR IN-5100 DESIGN INFORMATION**

ITEM	DESCRIPTION
Manufacturer's name and model number of incinerator	The incinerator was designed by Callidus Technologies, Inc., of Tulsa, Oklahoma. The incinerator was custom designed and does not have a model number.
Type of incinerator	The incinerator is a liquid injection type incinerator. It is a vertical, cylindrical, down-fired, self-supporting unit designed for forced draft operation.
Linear dimension of incinerator unit including cross sectional area of combustion chamber	The incinerator precombustion chamber is approximately 13 feet in height, and the main combustion chamber is approximately 50 feet in height. The combustion chamber has a cross-section of approximately 163 square feet at the widest section.
Description of auxiliary fuel system (type/feed)	Natural gas is fired through the burner to heat the system to its design operating temperature and to maintain the combustion zone temperature during normal operations. The burner is designed for a total heat release of 165 MMBtu/hr.
Nozzle and burner design	A medium intensity low-nitrogen oxides (NO <sub>x</sub> ) vortex burner is mounted at the top of the combustion chamber. The burner has an electric spark ignited premix pilot. The burner assembly consists of a primary fuel gas tip, secondary fuel gas tips, a pilot tip, and seven steam-atomized waste liquid guns.  The liquid wastes and vent gases are introduced into the combustion chamber in four zones. In the first zone, the D-2850 blended waste is fed to the incinerator through the seven steam-atomized waste liquid guns included in the burner assembly. In the second zone, the two vent gases are injected into the combustion chamber through six injectors. In the third zone, the D-1450 blended waste is introduced to the combustion chamber through six steam-atomized waste guns located downstream of the burner. In the fourth zone, the D-1451 non-hazardous aqueous waste is fed to the unit through 15 steam-atomized waste guns.
Capacity of prime mover	The combustion air fan supplies a maximum of 70,000 actual cubic feet per minute (acfm) at 28.8 inches water column (in. w.c.) at 1,780 revolutions per minute (rpm). The fan is driven by a 1800 rpm, 500-horsepower (hp) motor.
Description of automatic waste feed cutoff system(s)	The automatic waste feed cutoff system is operated to comply with the HWC NESHAP. There are no cutoffs associated with the RCRA permit.

**TABLE 1 (CONTINUED)**  
**INCINERATOR IN-5100 DESIGN INFORMATION**

ITEM	DESCRIPTION
Stack gas monitoring and pollution control monitoring system	The stack is equipped with a continuous emissions monitoring systems (CEMS) to monitor carbon monoxide (CO) and oxygen. These CEMS are designed and operated to comply with the requirements of the HWC NESHAP. The CEMS are not required for compliance with the RCRA permit.
Construction materials	The incinerator is constructed of carbon steel. The combustion chamber is lined with 15 inches of refractory material.
Location and description of temperature, pressure, and flow indicating devices and control devices	Combustion chamber temperature, combustion air flow rate, total hazardous waste feed rate, and atomizing fluid pressure are monitored to comply with the HWC NESHAP. No process monitors are required for compliance with the RCRA permit. The combustion chamber temperature monitor is located in the combustion chamber approximately 6.5 feet above grade, immediately before the waste heat boiler inlet. The combustion air flow rate monitors are located in the air plenums before the combustion chamber. The hazardous waste feed rate monitors are located in the waste feed lines prior to the steam-atomized guns. The atomizing fluid pressure is monitored in the steam lines to the waste feed lines.

**FIGURE 1**  
**INCINERATOR IN-5100 PROCESS SCHEMATIC**



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## 2.1 FEEDSTREAMS

D-1450 blended waste (TCEQ No. 1820-219H) carries the 40 CFR Part 261 hazardous waste numbers of D001 (ignitability) and D018 (benzene). This waste is a blend of several different waste streams generated in the 1,6-Hexanediol (HDO®), Neopentyl Glycol (NEOL®), Oxo-Alcohols, Butyl Acrylate, and Cyclohexanone process units. The separate waste streams are mixed into Tank D-1450 to be burned in Incinerator IN-5100.

D-2850 blended waste (TCEQ No. 1832-219H) carries the 40 CFR Part 261 hazardous waste number of D007 (chromium). This waste is a blend of several different waste streams generated in the HDO® and NEOL® process units. The separate waste streams are mixed into Tank D-2850 to be burned in Incinerator IN-5100. This waste may also be shipped offsite for disposal.

D-1451 non-hazardous aqueous waste is a blend of several different waste streams generated in the HDO®, NEOL®, and Oxo-Alcohols process units. The separate waste streams are mixed into Tank D-1451 to be burned in Incinerator IN-5100.

In addition to the liquid wastes, BASF feeds process vent gas from the HDO® and NEOL® process units to the Incinerator IN-5100. The main components of the process vent gas are methanol and other alcohols and esters.

Natural gas is also used as auxiliary fuel during startup and to control temperatures in the incinerator.

## 2.2 AIR POLLUTION CONTROL

The incinerator is not equipped with any air pollution control device.

## 2.3 STACK

The exhaust stack of Incinerator IN-5100 is approximately 125 feet above grade. The stack is nine feet in diameter. The stack is equipped with ports suitable for proper isokinetic sampling.

## 2.4 SECONDARY CONTAINMENT

The incinerator is set on a concrete pad. The concrete paving is sloped to concrete drainage ditches that drain to concrete sumps. The slopes of the concrete are adequate to provide proper drainage. In the event of a spill, the containment area is washed down to the drainage system. The contaminated water is then collected by vacuum truck and disposed of appropriately.

### **3.0 CONTINUOUS MONITORING SYSTEMS**

Incinerator IN-5100 is equipped with CMS, including continuous process monitoring systems (CPMS) and continuous emissions monitoring systems (CEMS). These CMS enable the facility to maintain safe operation of the incinerators in compliance with the HWC NESHAP operating parameter limits (OPLs).

The data measured by the CMS is recorded in the facility operating records. System operations are monitored with process controllers which then transmit the process conditions to the distributed control system (DCS).

#### **3.1 CONTINUOUS PROCESS MONITORING SYSTEMS**

Various CPMS are required for the incinerator to document compliance with the applicable HWC NESHAP OPLs. Table 2 present a summary of the CPMS for Incinerator IN-5100.

**TABLE 2  
INCINERATOR IN-5100 CONTINUOUS PROCESS MONITORING SYSTEMS**

<b>TAG NO.</b>	<b>MEASURED PARAMETER</b>	<b>INSTRUMENT DESCRIPTION</b>
TE-5004-4	Combustion chamber temperature	Type K thermocouple and temperature transmitter
FT-5005-1,2,3	Primary combustion air flow rate	Pitot tube and differential pressure transmitters
FT-5005-4,5,6	Secondary combustion air flow rate	Pitot tube and differential pressure transmitters
FT-5005-7,8,9	Quench combustion air flow rate	Pitot tube and differential pressure transmitters
FT-5003-4	D-1450 blended waste feed rate	Coriolis mass flow meter
FT-5003-1	D-2850 blended waste feed rate	Coriolis mass flow meter
FT-5003-2	D-1451 non-hazardous aqueous waste feed rate	Coriolis mass flow meter
PT-5011-9	Atomizing fluid pressure for D-1450 blended waste	Pressure transmitter
PT-5011-3	Atomizing fluid pressure for D-2850 blended waste	Pressure transmitter

#### **3.2 CONTINUOUS EMISSIONS MONITORING SYSTEMS**

BASF monitors the concentrations of carbon monoxide (CO) and oxygen in the stack gas of the incinerator to comply with the HWC NESHAP. BASF utilizes non-dispersive infrared (NDIR) analyzers to continuously monitor CO concentration in the stack gas for the incinerator. The analyzer is a dual range design with a span of zero to 200 parts per million by volume on a dry basis (ppmv dry) for the low range

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and a span of zero to 3,000 ppmv dry span for the high range. The oxygen analyzer that is used to correct CO emission concentrations to seven percent oxygen is a paramagnetic analyzer. The analyzer has a span of zero to 25 percent oxygen by volume on a dry basis. BASF also utilizes a backup CEMS that consists of the same instruments as the primary unit.

### **3.3 AUTOMATIC WASTE FEED CUTOFF SYSTEMS**

BASF operates the incinerator with an automatic waste feed cutoff (AWFCO) system that immediately and automatically cut off the hazardous waste feed to the incinerator when operating conditions deviate from those established in the HWC NESHAP.

### **3.4 EMERGENCY SHUTDOWN SYSTEMS**

Emergency shutdown features are included to protect the equipment in the event of a malfunction. During an emergency shutdown, all waste feeds and fuel feeds are stopped. The trigger points for an emergency shutdown have been set independent of regulatory test conditions. These limits are based on equipment design and operating specifications and are considered good operating practices. For example, the following conditions will trigger a stop of all feeds to the incinerator:

- Low fuel gas supply pressure;
- High fuel gas pressure to the burner;
- Low combustion air flow rate;
- High combustion chamber temperature;
- Flame failure;
- Forced draft fan failure;
- Steam drum low water level;
- Superheated steam high pressure; and
- Superheated steam high temperature.

## 4.0 APPLICATION TABLES

Section V of the Part B application includes several tables intended to define the operating conditions of the incinerators. The following tables are included in Section V for Incinerator IN-5100:

- Table V.H.1., *Incinerators* – This table lists the incinerators included in the permit. This table is applicable to the BASF Freeport Site and has been included in the permit application.
- Table V.H.2., *Incinerator Permit Conditions, Monitoring and Automatic Waste Feed Cutoff Systems* – This table establishes operating conditions for an incinerator. This table is not applicable to Incinerator IN-5100 because the HWC NESHAP Finding of Compliance has been issued.
- Table V.H.3., *Maximum Constituent Feed Rates* – This table establishes constituent feed rate limits for an incinerator. This table is not applicable to Incinerator IN-5100 because the HWC NESHAP Finding of Compliance has been issued.
- Table V.H.4., *Maximum Allowable Emission Rates* – This table establishes emission rate limits for an incinerator. This table is not applicable to IN-5100 because the HWC NESHAP Finding of Compliance has been issued.
- Table V.H.5., *Incinerator Permit Conditions, Monitoring and Automatic Waste Feed Cutoff Systems – Short-Term Operation* – This table establishes operating limits for shakedown and trial burn periods for a new incinerator. Incinerator IN-5100 is an existing incinerator. This table is not applicable to Incinerator IN-5100.
- Table V.H.8., *Principal Organic Hazardous Constituents* – This table establishes the principal organic hazardous constituent (POHCs) to be used for the destruction and removal efficiency (DRE) demonstration during a trial burn. Trial burns are no longer applicable to the incinerator because HWC NESHAP comprehensive performance tests (CPTs) are performed and the HWC NESHAP Finding of Compliance has been issued. This table is not applicable to Incinerator IN-5100.

## **5.0 SPECIAL WASTE CONSIDERATIONS**

This section addresses special considerations for wastes managed in the incinerator.

### **5.1 REACTIVE OR INCOMPATIBLE WASTE**

Incinerator IN-5100 does not manage reactive or incompatible wastes.

### **5.2 DIOXIN WASTES**

Incinerator IN-5100 does not manage F020, F021, F022, F023, F026, and F027 wastes.

### **5.3 PRECAUTIONS FOR IGNITION OR REACTION**

Precautions to prevent the ignition or reaction of wastes are based on normal plant safety protocol and specific hazardous waste area operations. Hazardous waste is hard-piped directly from the process to the incinerator's combustion chamber. There is no exposure to the atmosphere and therefore no potential for ignition or reaction.

## 6.0 STARTUP, SHUTDOWN, AND MALFUNCTION

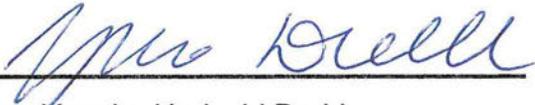
BASF maintains and operates in accordance with an HWC NESHAP startup, shutdown, and malfunction plan for the incinerator. The plan states that BASF intends to utilize the option under 40 CFR § 270.235(a)(1)(iii) to not include permit conditions that address startup, shutdown, and malfunction events in the RCRA permit. As such, the HWC NESHAP startup, shutdown, and malfunction plan for the incinerators has been submitted for review and approval. In the event that the startup, shutdown, and malfunction plan has not been approved prior to issuing this permit renewal, we offer the following alternative for addressing startup, shutdown, and malfunction events in the permit.

As described in the HWC NESHAP startup, shutdown, and malfunction plan, BASF minimizes emissions from startup, shutdown, and malfunction events by not feeding hazardous waste during these time periods. No hazardous waste shall be fed to the incinerator during startup, shutdown, or malfunction event. During a malfunction event, if an exceedance of any HWC NESHAP OPLs occurs, hazardous waste feed to the incinerator must be ceased immediately by activating the AWFCO system. When a malfunction is not associated with an OPL and related AFWCO system, the hazardous waste feed to the incinerator shall be ceased as quickly as possible.

BASF believes that these waste feed restrictions adequately address emissions from startup, shutdown, and malfunction events.

## 7.0 CERTIFICATION

I certify under penalty of law that this engineering report was prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the units, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



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**BASF CORPORATION**  
*FREEPORT, TEXAS*

**INDUSTRIAL AND HAZARDOUS WASTE  
STORAGE/PROCESSING/DISPOSAL FACILITY  
PERMIT No. 50128  
SOLID WASTE REGISTRATION No. 30024  
EPA ID No. TXD008081697**

**INCINERATOR IN-5500  
ENGINEERING REPORT**

**MAY 2025  
REVISION: SEPTEMBER 2025**

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## 1.0 INTRODUCTION

BASF Corporation (BASF) operates a liquid hazardous waste incinerator, designated as Incinerator IN-5500, at its facility in Freeport, Texas. Incinerator IN-5500 is subject to the Resource Conservation and Recovery Act (RCRA) general permitting and operating requirements of Title 40 Code of Federal Regulations (CFR) Parts 264 and 270 and Title 30 Texas Administrative Code (TAC) Chapter 335 Subchapters F and H. The incinerator is also subject to the Hazardous Waste Combustor National Emission Standards for Hazardous Air Pollutants (HWC NESHAP) codified in 40 CFR Part 63 Subpart EEE.

40 CFR § 270.19 requires that BASF submit information about Incinerator IN-5500 with this permit application to demonstrate compliance with the standards contained in 40 CFR §§ 264.340 thru 351. However, pursuant to 40 CFR §§ 264.340(b) and 270.62, all waste analysis, performance standards, operating requirements, monitoring requirements, and inspection requirements do not apply to a hazardous waste incineration unit that becomes subject to RCRA permit requirements after October 12, 2005. Incinerator IN-5500 is being added to the RCRA permit with this permit renewal application. Accordingly, most of the information specified by 40 CFR § 270.19 is not applicable. Details related to operation and design of the incinerator and associated equipment are addressed under the Clean Air Act's HWC NESHAP.

The remaining sections of this report provide the following information:

- Section 2.0 describes the incinerator equipment;
- Section 3.0 discusses the continuous monitoring systems (CMS);
- Section 4.0 discusses the Part B Section V application tables;
- Section 5.0 discusses special waste considerations;
- Section 6.0 addresses startup, shutdown, and malfunction requirements; and
- Section 7.0 provides the certification statement for this engineering report.

## 2.0 EQUIPMENT DESCRIPTION

Incinerator IN-5500 is a liquid injection incinerator. The incinerator is a vertical, cylindrical, down-fired, self-supporting unit designed for forced draft operation. The incinerator is equipped with heat recovery for steam production and combustion air/process vent gas preheating. There is no air pollution control equipment installed on the unit because control is not necessary to comply with the applicable performance standards. The unit has been designed to process non-hazardous and hazardous liquid waste and process vent gas up to a capacity of 100 million British thermal units per hour (MMBtu/hr).

Table 1 provides information on the Incinerator IN-5500 design. Figure 1 provides a general process schematic diagram of Incinerator IN-5500. Process and instrumentation diagrams (P&IDs) are provided in Section XIII. These figures have been identified as confidential information.

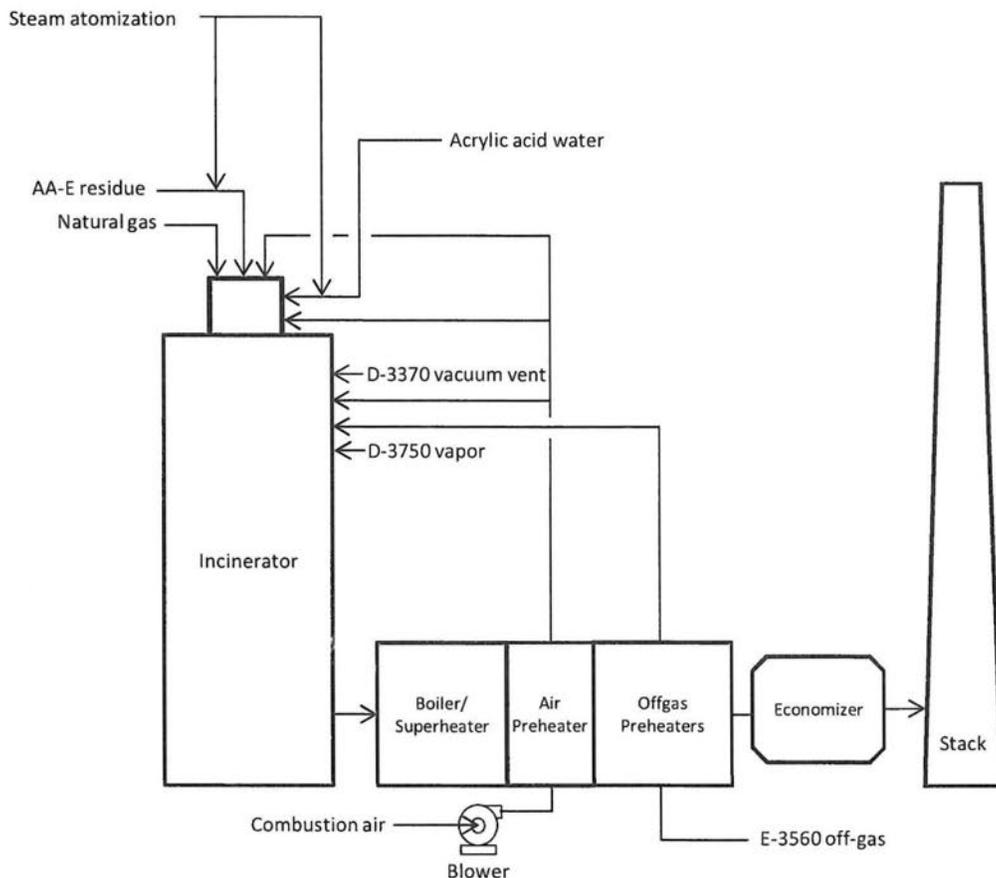
**TABLE 1  
INCINERATOR IN-5500 DESIGN INFORMATION**

ITEM	DESCRIPTION
Manufacturer's name and model number of incinerator	The incinerator was designed and was manufactured by the John Zink Company of Tulsa, Oklahoma. The incinerator was custom designed and does not have a model number.
Type of incinerator	The incinerator is a liquid injection type incinerator. It is a vertical, cylindrical, down-fired, self-supporting unit designed for forced draft operation.
Linear dimension of incinerator unit including cross sectional area of combustion chamber	The combustion chamber is 60 feet tall with a 16-foot outer diameter and is lined with 15 inches of refractory brick. The combustion chamber has a cross-section of approximately 141 square feet.
Description of auxiliary fuel system (type/feed)	Natural gas is supplied to the incinerator from the BASF header. Natural gas flows through self-actuated safety block valves to the burner. Before entering the incinerator, the natural gas pressure is reduced to approximately 30 pounds per square inch gauge (psig). The amount of natural gas fed to the incinerator is controlled to maintain the combustion temperature.
Nozzle and burner design	<p>A combination gas and liquid burner assembly is mounted at the top of the combustion chamber. For the initial lighting of the incinerator flame, there is a pilot fuel gas assembly, and the ignition is via continuous electric ignition electrode. The burner assembly consists of the following nozzles: fuel gas, pilot, and one steam-atomized liquid waste nozzle.</p> <p>The liquid wastes and vent gases are introduced in the burner assembly and combustion chamber inlet section. Residue is fed to the center nozzle of the burner assembly. The acrylic acid water is fed to the incinerator through two steam-atomized guns located downstream of the burner. Process vent gas is introduced downstream of the burner.</p>
Capacity of prime mover	The combustion air fan supplies a maximum of 96,125 actual cubic feet per minute (acfm) at 40 to 50 inches water column (in. w.c.). The fan is driven by a 1,786 revolutions per minute (rpm), 1,000-horsepower (hp) motor.
Description of automatic waste feed cutoff system(s)	The automatic waste feed cutoff system is operated to comply with the HWC NESHAP. There are no cutoffs associated with the RCRA permit.

**TABLE 1 (CONTINUED)**  
**INCINERATOR IN-5500 DESIGN INFORMATION**

ITEM	DESCRIPTION
Stack gas monitoring and pollution control monitoring system	The stack is equipped with a continuous emissions monitoring systems (CEMS) to monitor carbon monoxide (CO) and oxygen. These CEMS are designed and operated to comply with the requirements of the HWC NESHAP. The CEMS are not required for compliance with the RCRA permit.
Construction materials	The incinerator is constructed of carbon steel. The combustion chamber is lined with 15 inches of refractory material.
Location and description of temperature, pressure, and flow indicating devices and control devices	Combustion chamber temperature, combustion air flow rate, total hazardous waste feed rate, and atomizing fluid pressure are monitored to comply with the HWC NESHAP. No process monitors are required for compliance with the RCRA permit. The combustion chamber temperature monitor is located in the combustion chamber before the waste heat boiler inlet. The combustion air flow rate monitors are located in the air plenums before the combustion chamber. The hazardous waste feed rate monitor is located in the feed line of the acrylic acid water prior to the steam-atomized guns. The atomizing fluid pressure is monitored in the steam line to the acrylic acid water feed line.

**FIGURE 1**  
**INCINERATOR IN-5500 PROCESS SCHEMATIC**



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## **2.1 FEEDSTREAMS**

Acrylic acid water (TCEQ No. 1503-105H) carries the 40 CFR Part 261 hazardous waste numbers of D002 (corrosivity) and D018 (benzene). This waste is produced within the Acrylic Acid production areas. This waste is fed to Incinerators IN-701 and IN-5500 in on-line configurations and is not allowed to accumulate.

AA-E residue is a non-hazardous liquid waste stream that is generated within the Acrylic Acid production areas. The waste stream is stored in Tank D-3450 and is fed to Incinerator IN-5500 in a batch mode.

In addition to the liquid wastes, BASF feeds process vent gas to Incinerator IN-5500. The process vent gas streams are identified as the E-3560 off-gas, the D-3370 vacuum vent off-gas, and the D-3750 vapor. The process vent gas is predominantly nitrogen with some organic content. The E-3560 off-gas is routed through the preheater before entering the combustion chamber.

Natural gas is also used as auxiliary fuel during startup and to control temperatures in the incinerator.

## **2.2 AIR POLLUTION CONTROL**

The incinerator is not equipped with any air pollution control device.

## **2.3 STACK**

The exhaust stack of Incinerator IN-5500 is approximately 220 feet above grade. The stack is ten feet in diameter. The stack is equipped with ports suitable for proper isokinetic sampling.

## **2.4 SECONDARY CONTAINMENT**

The incinerator is set on a concrete pad. The concrete paving is sloped to concrete drainage ditches that drain to concrete sumps. The slopes of the concrete are adequate to provide proper drainage. In the event of a spill, the containment area is washed down to the drainage system. The contaminated water is then collected by vacuum truck and disposed of appropriately.

### 3.0 CONTINUOUS MONITORING SYSTEMS

Incinerator IN-5500 is equipped with CMS, including continuous process monitoring systems (CPMS) and continuous emissions monitoring systems (CEMS). These CMS enable the facility to maintain safe operation of the incinerators in compliance with the HWC NESHAP operating parameter limits (OPLs).

The data measured by the CMS is recorded in the facility operating records. System operations are monitored with process controllers which then transmit the process conditions to the distributed control system (DCS).

#### 3.1 CONTINUOUS PROCESS MONITORING SYSTEMS

Various CPMS are required for the incinerator to document compliance with the applicable HWC NESHAP OPLs. Table 2 present a summary of the CPMS for Incinerator IN-5500.

**TABLE 2  
INCINERATOR IN-5500 CONTINUOUS PROCESS MONITORING SYSTEMS**

TAG No.	MEASURED PARAMETER	INSTRUMENT DESCRIPTION
T-5500, T-5501, T-5502	Combustion chamber temperature	Type K thermocouples
FIC-5301	Primary combustion air flow rate	Pitot tube and differential pressure transmitters
FI-5311	Preheated combustion air flow rate	Pitot tube and differential pressure transmitters
FI-5309	Secondary combustion air flow rate	Pitot tube and differential pressure transmitters
F-5610-1, F-5610-2	Acrylic acid water feed rate	Coriolis mass flow meter
F-5820	AA-E residue feed rate	Orifice plate and differential pressure transmitter
P-5234	Atomizing fluid pressure for acrylic acid water	Pressure transmitter

#### 3.2 CONTINUOUS EMISSIONS MONITORING SYSTEMS

BASF monitors the concentrations of carbon monoxide (CO) and oxygen in the stack gas of the incinerator to comply with the HWC NESHAP. BASF utilizes non-dispersive infrared (NDIR) analyzers to continuously monitor CO concentration in the stack gas for the incinerator. The analyzer is a dual range design with a span of zero to 200 parts per million by volume on a dry basis (ppmv dry) for the low range and a span of zero to 3,000 ppmv dry span for the high range. The oxygen analyzer that is used to correct CO emission concentrations to seven percent oxygen is a paramagnetic analyzer. The analyzer has a span of zero to 25 percent oxygen by volume on a dry basis.

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### **3.3 AUTOMATIC WASTE FEED CUTOFF SYSTEMS**

BASF operates the incinerator with an automatic waste feed cutoff (AWFCO) system that immediately and automatically cut off the hazardous waste feed to the incinerator when operating conditions deviate from those established in the HWC NESHAP.

### **3.4 EMERGENCY SHUTDOWN SYSTEMS**

Emergency shutdown features are included to protect the equipment in the event of a malfunction. During an emergency shutdown, all waste feeds and fuel feeds are stopped. The trigger points for an emergency shutdown have been set independent of regulatory test conditions. These limits are based on equipment design and operating specifications and are considered good operating practices. For example, the following conditions will trigger a stop of all feeds to the incinerator:

- Low fuel gas pressure;
- High fuel gas pressure;
- Low combustion air flow rate;
- High combustion chamber temperature;
- Flame failure;
- Forced draft fan failure;
- Steam drum low water level;
- Steam drum high water level;
- Superheated steam high pressure; and
- Superheated steam high temperature.

## 4.0 APPLICATION TABLES

Section V of the Part B application includes several tables intended to define the operating conditions of the incinerators. The following tables are included in Section V for Incinerator IN-5500:

- Table V.H.1., *Incinerators* – This table lists the incinerators included in the permit. This table is applicable to the BASF Freeport Site and has been included in the permit application.
- Table V.H.2., *Incinerator Permit Conditions, Monitoring and Automatic Waste Feed Cutoff Systems* – This table establishes operating conditions for an incinerator. This table is not applicable to Incinerator IN-5500 because it was initially permitted under RCRA after October 12, 2005.
- Table V.H.3., *Maximum Constituent Feed Rates* – This table establishes constituent feed rate limits for an incinerator. This table is not applicable to Incinerator IN-5500 because it was initially permitted under RCRA after October 12, 2005.
- Table V.H.4., *Maximum Allowable Emission Rates* – This table establishes emission rate limits for an incinerator. This table is not applicable to Incinerator IN-5500 because it was initially permitted under RCRA after October 12, 2005.
- Table V.H.5., *Incinerator Permit Conditions, Monitoring and Automatic Waste Feed Cutoff Systems – Short-Term Operation* – This table establishes operating limits for shakedown and trial burn periods for a new incinerator. This table is not applicable to Incinerator IN-5500 because it was initially permitted under RCRA after October 12, 2005.
- Table V.H.8., *Principal Organic Hazardous Constituents* – This table establishes the principal organic hazardous constituent (POHCs) to be used for the destruction and removal efficiency (DRE) demonstration during a trial burn. Trial burns are not applicable to the incinerator because it was initially permitted under RCRA after October 12, 2005, and complies with the HWC NESHAP DRE standard. This table is not applicable to Incinerator IN-5500.

## 5.0 SPECIAL WASTE CONSIDERATIONS

This section addresses special considerations for wastes managed in the incinerator.

### 5.1 REACTIVE OR INCOMPATIBLE WASTE

Incinerator IN-5500 does not manage reactive or incompatible wastes.

### 5.2 DIOXIN WASTES

Incinerator IN-5500 does not manage F020, F021, F022, F023, F026, and F027 wastes.

### 5.3 PRECAUTIONS FOR IGNITION OR REACTION

Precautions to prevent the ignition or reaction of wastes are based on normal plant safety protocol and specific hazardous waste area operations. Hazardous waste is hard-piped directly from the process to the incinerator's combustion chamber. There is no exposure to the atmosphere and therefore no potential for ignition or reaction.

## 6.0 STARTUP, SHUTDOWN, AND MALFUNCTION

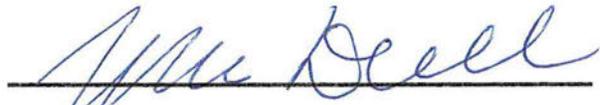
BASF maintains and operates in accordance with an HWC NESHAP startup, shutdown, and malfunction plan for the incinerator. The plan states that BASF intends to utilize the option under 40 CFR § 270.235(a)(1)(iii) to not include permit conditions that address startup, shutdown, and malfunction events in the RCRA permit. As such, the HWC NESHAP startup, shutdown, and malfunction plan for the incinerators has been submitted for review and approval. In the event that the startup, shutdown, and malfunction plan has not been approved prior to issuing this permit renewal, we offer the following alternative for addressing startup, shutdown, and malfunction events in the permit.

As described in the HWC NESHAP startup, shutdown, and malfunction plan, BASF minimizes emissions from startup, shutdown, and malfunction events by not feeding hazardous waste during these time periods. No hazardous waste shall be fed to the incinerator during startup, shutdown, or malfunction event. During a malfunction event, if an exceedance of any HWC NESHAP OPLs occurs, hazardous waste feed to the incinerator must be ceased immediately by activating the AFWCO system. When a malfunction is not associated with an OPL and related AFWCO system, the hazardous waste feed to the incinerator shall be ceased as quickly as possible.

BASF believes that these waste feed restrictions adequately address emissions from startup, shutdown, and malfunction events.

## 7.0 CERTIFICATION

I certify under penalty of law that this engineering report was prepared under my direction or supervision according to a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the units, or those persons directly responsible for gathering the information, the information is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.



Name: Yasuko Horiuchi Dodd

Registration No.: 110622

*YH*  
9/9/25

**Appendix VII.A:  
CLOSURE  
(TABLE VII.A AND CLOSURE PLAN)**



**BASF CORPORATION**  
*FREEPORT, TEXAS*

**INDUSTRIAL AND HAZARDOUS WASTE  
STORAGE/PROCESSING/DISPOSAL FACILITY  
PERMIT No. 50128  
SOLID WASTE REGISTRATION No. 30024  
EPA ID No. TXD008081697**

**CLOSURE PLAN**

**MAY 2025  
REVISION: OCTOBER 2025**

## 8.0 CLOSURE COST ESTIMATE

The estimated cost of closing Incinerator IN-701 is \$621,100, the estimated cost of closing Incinerator IN-4702 is \$779,500, the estimated cost of closing Incinerator IN-5100 is \$695,900, and the estimated cost of closing Incinerator IN-5500 is \$812,900. This estimate is in 2024 dollars. The cost calculations are presented in Attachment A. The attachment contains the unit costs and key assumptions used in the closure cost estimate. The cost estimate was prepared in accordance with 40 CFR § 264.142. The following assumptions were used in the estimate:

- All closure activities and supervision are performed by an independent third party;
- All wastes generated in the closure will be shipped offsite to an authorized storage, processing, or disposal facility;
- All onsite monitoring equipment associated with the waste management are inoperable;
- Unit components have no salvage value;
- Hydroblasting is conducted twice, along with pre-wash and post-wash sampling and analysis;
- Assessment via sampling and analysis is necessary and three discrete sampling locations are identified during the operating record survey; and
- Certification of closure will be obtained by a professional engineer registered in the State of Texas.

A summary of the closure cost estimate is provided in Table 2. Calculation and assumptions supporting this estimate are included in Appendix A.

**TABLE 2  
CLOSURE COST ESTIMATE**

TASK	INCINERATOR IN-701	INCINERATOR IN-4702	INCINERATOR IN-5100	INCINERATOR IN-5500
Waste removal	\$ 0	\$ 0	\$ 0	\$ 0
Burn out period	\$ 1,800	\$ 1,800	\$ 3,900	\$ 1,800
Refractory removal/disposal	\$ 143,800	\$ 178,600	\$ 143,600	\$ 209,000
Associated equipment decontamination/testing/disposal	\$ 76,200	\$ 185,400	\$ 142,300	\$ 185,400
Concrete decontamination/testing/disposal	\$ 39,800	\$ 39,800	\$ 39,800	\$ 39,800
Soil contamination assessment/removal	\$ 58,000	\$ 58,000	\$ 58,000	\$ 58,000
Third party oversight	\$ 117,000	\$ 117,000	\$ 117,000	\$ 117,000
Closure certification	\$ 64,000	\$ 64,000	\$ 64,000	\$ 64,000
Final closure report	\$ 64,000	\$ 64,000	\$ 64,000	\$ 64,000
Subtotal	\$ 564,600	\$ 708,600	\$ 632,600	\$ 739,000
Contingency (10 percent)	\$ 56,500	\$ 70,900	\$ 63,300	\$ 73,900
<b>Total</b>	<b>\$ 621,100</b>	<b>\$ 779,500</b>	<b>\$ 695,900</b>	<b>\$ 812,900</b>

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Closure costs estimates subsequent to 2024 will be adjusted once annually for inflation. The adjusted closure cost estimate is obtained using the inflation factor calculated from the annual Implicit Price Deflator (IPD) for Gross National Product. The inflation factor is calculated by dividing the latest IPD by the IPD for the previous year. This inflation factor is then multiplied by the closure cost estimate for the preceding year.

While different types of IPD's are available, the IPD for Gross National Product must be used. The IPD is published by the US Department of Commerce Bureau of Economic Analysis in the Survey of Current Business. The IPD is published quarterly. Annual IPD's are typically published at the end of the first quarter (March) for the previous year.

**Appendix VII.B:  
CLOSURE COST ESTIMATE (INCLUDING CONTINGENT  
CLOSURE)  
(TABLE VII.B)**

**Table VII.B. - Unit Closure Cost Estimate**

Task	Cost
Name: <b>Incinerator IN-701</b>	
Waste removal	\$ 0
Combustion chamber: Includes decontamination by fuel gas firing, removal of refractory, transportation and disposal of refractory, and transportation and disposal of shell.	\$ 145,600
Associated equipment: Includes decontamination by rinsing, verification sampling, transportation and disposal of rinsate, and transportation and disposal of equipment.	\$ 76,200
Concrete pad: Includes decontamination by rinsing, verification sampling, and transportation and disposal of rinsate.	\$ 39,800
Soil contamination: Includes assessment and removal.	\$ 58,000
Other tasks: Includes third party oversight, closure certification, and final closure report.	\$ 245,000
	\$
	\$
Subtotal	\$ 564,600
Contingency (10% minimum)	\$ 56,500
Total Closure Cost <span style="float: right;">Year 2024</span>	\$ 621,100

Task	Cost
Name: <b>Incinerator IN-4702</b>	
Waste removal	\$ 0
Combustion chamber: Includes decontamination by fuel gas firing, removal of refractory, transportation and disposal of refractory, and transportation and disposal of shell.	\$ 180,400
Associated equipment: Includes decontamination by rinsing, verification sampling, transportation and disposal of rinsate, and transportation and disposal of equipment.	\$ 185,400
Concrete pad: Includes decontamination by rinsing, verification sampling, and transportation and disposal of rinsate.	\$ 39,800
Soil contamination: Includes assessment and removal.	\$ 58,000
Other tasks: Includes third party oversight, closure certification, and final closure report.	\$ 245,000
	\$
	\$
Subtotal	\$ 708,600
Contingency (10% minimum)	\$ 70,900
Total Closure Cost	Year 2024 \$ 779,500

Task	Cost
Name: <b>Incinerator IN-5100</b>	
Waste removal	\$ 0
Combustion chamber: Includes decontamination by fuel gas firing, removal of refractory, transportation and disposal of refractory, and transportation and disposal of shell.	\$ 147,500
Associated equipment: Includes decontamination by rinsing, verification sampling, transportation and disposal of rinsate, and transportation and disposal of equipment.	\$ 142,300
Concrete pad: Includes decontamination by rinsing, verification sampling, and transportation and disposal of rinsate.	\$ 39,800
Soil contamination: Includes assessment and removal.	\$ 58,000
Other tasks: Includes third party oversight, closure certification, and final closure report.	\$ 245,000
	\$
	\$
Subtotal	\$ 632,600
Contingency (10% minimum)	\$ 63,300
Total Closure Cost	Year 2024 \$ 695,900

Task	Cost
Name: <b>Incinerator IN-5500</b>	
Waste removal	\$ 0
Combustion chamber: Includes decontamination by fuel gas firing, removal of refractory, transportation and disposal of refractory, and transportation and disposal of shell.	\$ 210,800
Associated equipment: Includes decontamination by rinsing, verification sampling, transportation and disposal of rinsate, and transportation and disposal of equipment.	\$ 185,400
Concrete pad: Includes decontamination by rinsing, verification sampling, and transportation and disposal of rinsate.	\$ 39,800
Soil contamination: Includes assessment and removal.	\$ 58,000
Other tasks: Includes third party oversight, closure certification, and final closure report.	\$ 245,000
	\$
	\$
Subtotal	\$ 739,000
Contingency (10% minimum)	\$ 73,900
Total Closure Cost <span style="float: right;">Year 2024</span>	\$ 812,900

**Appendix VII.E:  
CLOSURE AND POST-CLOSURE COST SUMMARY  
(TABLE VII.E.1)**

**Table VII.E.1. - Permitted Unit Closure Cost Summary**

Existing Unit Closure Cost Estimate		
Unit		Cost
Incinerator IN-701		\$ 621,100
Incinerator IN-4702		\$ 779,500
Incinerator IN-5100		\$ 695,900
		\$
		\$
		\$
Total Existing Unit Closure Cost Estimate <sup>1</sup>	Year 2024	\$ 2,096,500

Proposed Unit Closure Cost Estimate		
Unit		Cost
Incinerator IN-5500		\$ 812,900
		\$
		\$
		\$
		\$
		\$
Total Proposed Unit Closure Cost Estimate <sup>1</sup>	Year 2024	\$ 812,900

<sup>1</sup> As units are added or deleted from these tables through future permit amendments or modifications, the remaining itemized unit costs should be updated for inflation when recalculating the revised total cost in current dollars.

## **Appendix IX.A: PRELIMINARY REVIEW CHECKLISTS**

B. Reviewed Documents

RCRA:

Part A

Part B

Permit

CERCLA:

Inspection Reports:	Not applicable
Enforcement Actions	Not applicable
Exposure Information	Not applicable
Other Information:	TCEQ "no further action" letter dated October 3, 2002

C. Summary:

RFI conducted for Sludge Drying Beds, Landfill - Class II (001), Caprolactam I Pond, Caprolactam II Pond, and Polycaprolactam Pond. BASF completed all RFI requirements. "No further action" letter received. This information was provided with the previous renewal application.

**There have been no new SWMUs, AOCs, or releases identified at the facility. No units require further investigations. Therefore, no Preliminary Review Unit Checklists are provided.**

D. Recommended Action:

None