Response to Stakeholder Comments Regarding Revisions to Appendix E of the *Procedures to Implement the Texas Surface Water Quality Standards*

The Texas Commission on Environmental Quality (TCEQ) solicited comments from stakeholders on November 15, 2019 regarding the draft version of Appendix E of the *Procedures to Implement the Texas Surface Water Quality Standards* (IPs), revised to incorporate the U.S. Environmental Protection Agency's (EPA's) 2017 Methods Update Rule (MUR). Comments were accepted through December 30, 2019. Comments were received from Tischler/Kocurek, DHL Analytical, Inc., Trinity River Authority, Gulf Coast Authority, Ana-Lab, and Water Environment Association of Texas (WEAT).

Common concerns

Stakeholders expressed concern that laboratories would be required to achieve the more stringent (i.e., lower) Minimal Analytical Levels (MALs) and seek accreditation for "new" methods noted in the draft Appendix E revision that were not previously included in the 2010 IPs. Stakeholders expressed concern that laboratories may not be accredited for the more "obscure" methods listed in the revised Appendix E. Stakeholders also expressed concern regarding the increased cost associated with adopting additional methods.

Please note, the MALs established in the revised Appendix E are intended to be used for screening applications and permit reporting. The TCEQ is ***not*** requiring applicants and permittees to use the specific analytical methods included in Appendix E. The TCEQ is also not requiring the use of any specific analytical technology or practice over others; it is only noting that the selected 40 Code of Federal Regulations (CFR) Part 136-approved method is sufficiently sensitive in accordance with 40 CFR §122.21(e)(3). In a situation where no EPA-approved methods exist in 40 CFR Part 136 *and* the TCEQ has not required the use of a specific non-EPA-approved method, the permit applicant may select a suitable non-EPA-approved method and provide a description of the method as allowed by 40 CFR §122.21(e)(3)(ii). In this situation, an applicant will need to select a method from another published source of available analytical methods (e.g., Standard Methods for the Examination of Water and Wastewater) to measure that pollutant in non-potable water matrix. The TCEQ does not require the applicant to develop new analytical methods.

The TCEQ is not requiring that laboratories achieve the MALs unless they are reporting analytical results as non-detect in permit applications or permit reporting. The MAL is the TCEQ's equivalent to EPA's minimum level published in 40 CFR Part 136 and is used to define the level that is sufficiently sensitive for the purposes of the Texas Pollutant Discharge Elimination System (TPDES) program. An analytical result is deemed sufficiently sensitive when it is either 1) below the appropriate regulatory level for a specific discharge to determine compliance or make a regulatory decision, or 2) at the established MAL defined in Appendix E for the respective analyte. When the MAL is below the appropriate regulatory level for a specific discharge, the level of detection needs to be below the appropriate regulatory level specified but does not necessarily have to meet the MAL established in Appendix E. In this situation, any 40 CFR Part 136-approved test method that will achieve a level of detection below the appropriate regulatory level may be used. When the appropriate regulatory level for a specific

discharge is *below* the MAL established in Appendix E, it is critical for the analytical data to meet the MAL in order for the TCEQ to consider the result as a non-detect. In this situation, any 40 CFR Part 136-approved test method that will achieve a level of detection below the MAL established in Appendix E may be used. The June 2010 IPs state "For permitting and compliance purposes, MALs are used to allow an applicant or permittee to submit analytical results as nondetect. Nondetect analytical results are assumed to represent a concentration of zero (0) mg/L (or µg/L as appropriate)." Any analytical results of non-detect to a level higher than the established MAL or appropriate regulatory level will be treated as a hard value by TCEQ.

Concerns Regarding Method Detection Levels (MDLs)

Stakeholders expressed concern that the more stringent MALs calculated using published MDLs are based on ideal conditions and are not attainable. Stakeholders also commented that the MDLs published in the older methods are now outdated and inaccurate following the revised MDL procedure adopted in the 2017 MUR.

Please note, 40 CFR §136.6 gives laboratories the flexibility to tailor approved methods to more challenging wastewater matrices. Applicants have always had the option of providing matrix- or sample-specific minimum levels rather than the published levels and nothing in the revised Appendix E changes that flexibility, including with respect to selecting a sufficiently sensitive EPA-approved method. For these cases, the laboratory needs to demonstrate that a reasonable effort (e.g., published cleanup procedures) was made to achieve as low a minimum level as possible for those samples.

If the most sensitive method listed in 40 CFR Part 136 is not performing adequately in a given wastewater matrix (e.g., with regard to sensitivity, accuracy, and precision), several options are available and should be pursued (i.e., dilution or cleanup). If those cleanups do not prove adequate for a particular matrix, EPA has recommended the analyst consult "Solutions to Analytical Chemistry Problems with Clean Water Act Methods," EPA 821-R-07-002 (or more recent revisions) to determine if another cleanup procedure may be appropriate. If a resolution is still not apparent, the permittee should consult EPA or the TCEQ.

The TCEQ acknowledges stakeholders' concern regarding MDLs. However, applicants have always had the option of calculating a matrix-specific MDL. Extreme matrices may necessitate the use of an elevated sample-specific minimum level, in which case the laboratory should be able to demonstrate that a reasonable effort (e.g., published cleanup procedures) was made to achieve as low a minimum level as possible for those samples. The use of sample- or matrix-specific minimum levels rather than the published levels has always been an available option, and consistent with that flexibility, the use of a matrix-specific minimum level may sometimes be necessary when determining which analytical methods are sufficiently sensitive.

The TCEQ recognizes that MDLs are inherently method- and laboratory-specific, so whenever a permittee or applicant is contracting a laboratory for TPDES work, it is prudent to obtain that laboratory's MDL and compare it to the published MDL for that

analytical method to ensure that both their MDL and minimum level are appropriate for the intended application.

Finally, the TCEQ is currently considering various options regarding the determination of MDLs for analytical methods published prior to the 2017 MUR. This may include, but is not limited to, soliciting recent data from accredited laboratories using the revised MDL method.

Concerns Regarding Establishment of More Stringent MALs

Stakeholders expressed concern regarding the severe reduction in certain established MALs. One stakeholder inquired why the TCEQ's approach was more stringent than EPA Region 6's minimum quantification levels (MQLs). One stakeholder suggested that only the MALs for pollutants approved in EPA Methods 608.3, 624.1, and 625.1 should be revised. Another stakeholder suggested that all pollutants which have either EPA Method 624.1 or 625.1 as an approved method include the associated MAL without exception, and where no minimum level is published in the method, the MAL from the 2010 IPs be carried forward.

The TCEQ respectfully disagrees on all comments. The TCEQ selected the appropriate MALs based on current Texas Surface Water Quality Standards (TSWQS) criteria in 30 Texas Administrative Code (TAC) Chapter 307 and the sufficiently sensitive determination as described in the introduction of the draft Appendix E. The proposed MALs are not based on the MQLs used by EPA Region 6 because the MQLs are not water quality criteria. The 2017 MUR included changes beyond revisions to the previous EPA Methods 608, 624, and 625. Some methods documented in the 2010 IPs for certain analytes were not listed as approved methods in 40 CFR Part 136 following the 2017 MUR. For example, ASTM D3371 is indicated for benzonitrile in the 2010 IPs; however, it is not included as an approved method for that pollutant in 40 CFR Part 136. In addition, the TSWQS criteria included in 30 TAC §307.6 Table 1 (Aquatic Life Protection) and Table 2 (Human Health Protection) were updated in 2014 and 2018. As a result, certain established MALs in the 2010 IPs are no longer sufficiently sensitive for current TSWQS criteria, per the requirements of 40 CFR §122.21(e)(3).

Considering these two factors, i.e., current Part 136-approved methods and revised water quality criteria in 30 TAC Chapter 307, the TCEQ decided to update Appendix E in its entirety. In addition, while an analytical method for a specific pollutant may be approved for EPA Method 624.1 or 625.1, that does not necessarily mean the method is sufficiently sensitive. The MALs established in the Appendix E revision are intended for screening purposes and permit reporting and are based on the sufficiently sensitive requirements in 40 CFR §122.21. The TCEQ objects to continuing the MALs established in the 2010 IPs for EPA Methods 608, 624, and 625 for pollutants that are approved for EPA Methods 608.3, 624.1, and 625.1, respectively, but do not have a published MDL or minimum level. For analytes that have minimum levels published in the methods, those values are based on the current revised methodology and therefore represent more accurate levels. Applying MALs previously established in the 2010 IPs to the methods updated in the 2017 MUR would be inappropriate.

Stakeholders expressed concern regarding the calculation of MALs for analytes without a minimum level published in the method. The TCEQ calculated MALs as 3 x MDL, following the procedure included in 40 CFR Part 136. One stakeholder commented that a more appropriate method is to use factor of 3.18 as established in a 2018 EPA document (Protocol for Review and Validation of New Methods for Regulated Organic and Inorganic Analytes in Wastewater Under EPA's Alternate Test Procedure Program, EPA 821-B-18-001). Another stakeholder commented that the MALs should be rounded to the next significant figure.

The TCEQ agrees with using the more recently published factor of 3.18 for a pollutant without a published ML in the EPA method. The TCEQ has recalculated the MALs that were calculated as 3 x MDL using the updated factor of 3.18. The TCEQ has also rounded the calculated MALs when appropriate. TCEQ-calculated MALs were rounded to either the next significant figure or the existing MAL in Appendix E if the rounded number was still sufficiently sensitive. The MALs for analytes with minimum levels published in EPA Methods 608.3, 624.1, and 625.1 were *not* rounded and are established in Appendix E as originally provided by EPA in the published method.

Clarification on Determining Sufficiently Sensitive Analytical Methods

Stakeholders requested clarification regarding pollutants with two MALs listed in the revised Appendix E.

When establishing the MALs in the revised Appendix E, the TCEQ took a conservative approach and modeled stringent Texas Toxicity Screening (TexTox) scenarios (e.g. 100% effluent with public water supply designation for human health) to establish the screening values (i.e., 70% of Daily Average values) for comparison when determining the sufficiently sensitive MALs. The TCEQ also modeled less stringent scenarios. For some pollutants, this resulted in screening values several orders of magnitude apart. Rather than establish the MAL based solely on the most stringent scenario, the TCEQ established two MALs to provide greater flexibility to applicants. This practice is currently included in the 2010 IPs for pollutants such as available cyanide, diazinon, and mercury.

TCEQ acknowledges that some applicants may prefer a permit-specific analysis for determining "sufficiently sensitive" prior to completing the pollutant analysis for a permit application. The TCEQ recommends the permittee refer to the TexTox screening conducted for their existing permit for estimated screening levels. The TCEQ also regularly provides updated TexTox reports for all wastewater treatment facilities that are affiliated with an approved pretreatment program. Each TexTox report provides daily average and daily maximum concentrations for parameters based on the aquatic life and human health water quality criteria of the receiving waterbody. These TexTox reports can be used to identify which MAL would be most appropriate to use for the analytical testing purposes of a parameter by selecting an MAL that is lower than the TexTox report value for that parameter. However, it should be noted that changes in the TSWQS criteria for a pollutant and changes in critical conditions for a point source discharge can occur between two permit actions resulting in different screening criteria from one permit action to the next.

One stakeholder suggested two MALs be established for additional analytes.

The alternate methods recommended by the stakeholder for the additional analytes suggested did not have a published MDL or minimum level and therefore no MAL could be established for application screening purposes. Also, applicants may use any EPA-approved method that is sufficiently sensitive, regardless of its inclusion in Appendix E.

Additional Concerns Regarding Pretreatment Programs

Stakeholders expressed concern regarding the application of MALs in pretreatment programs, including industrial waste samples. For clarity purposes, a stakeholder requested that the draft Appendix E contain language to reemphasize that the listed MALs are not applicable to untreated, or partially treated, municipal and industrial wastewaters, as stated on page 171 of the 2010 IPs. Another stakeholder requested that the revisions to Appendix E clarify the required use of MALs for pretreatment reporting, particularly whether or not MALs are required to be met for samples with detections or demonstrated matrix interference.

The TCEQ uses the MALs in Appendix E for TPDES permit application screening and TPDES permit reporting purposes. Influent/effluent testing conducted by approved pretreatment programs is included under TPDES permit reporting purposes. The TCEQ will ensure that the language included in Appendix E clearly states that the listed MALs are to be used for reporting pollutants in non-detectable concentrations. If a pretreatment program uses an analytical method that tests down to the corresponding MAL for a certain parameter, and the concentration is reported back as being non-detectable, the pretreatment program may report this parameter as being non-detectable. If a pretreatment program uses an analytical method that does not test down to the corresponding MAL for a certain parameter, and the concentration is reported back as being non-detectable, the pretreatment program shall report the result to the TCEQ as a hard value. In other words, MALs are used for determining whether a pollutant can be reported as non-detectable or as a hard value. Please contact the Pretreatment Team at 512-239-4671 for additional information regarding pretreatment concerns.

A stakeholder stated that the TPDES permit sampling requirements for pretreatment programs are not mandated in applicable statutes or regulations, and these sampling requirements should not be overly burdensome to the publicly owned treatment works with pretreatment programs as a result.

The TCEQ received delegation from EPA in 1998 to serve as the Approval Authority for all approved pretreatment programs in the State of Texas. Through the issuance of its TPDES permits, the TCEQ requires approved pretreatment programs to conduct regular influent/effluent testing of the wastewater treatment plants. The TCEQ also reviews the influent/effluent analytical data included in the annual report submissions from approved pretreatment programs each year. The implementation of these

requirements ensures that each program's site-specific local limits are effective, and this overall evaluation of the efficiency of the current site-specific local limits is in accordance with 40 CFR §403.5(c). The TCEQ strives to fulfill the objectives of the national pretreatment program, and it is committed to protecting public health and the environment through proactive pretreatment programs that are consistent with sustainable economic development.

Other concerns

One stakeholder stated that the TCEQ is required to follow rulemaking requirements and asked for clarity on the TCEQ's goals for reducing MALs when it was not mandated in the EPA MUR updates.

As stated on page 12 of the 2010 IPs, the IPs constitute a guidance document, not a rule. Therefore, they are not subject to the state rulemaking requirements. However, they are subject to the TCEQ's Continuing Planning Process and will go through the review procedures required for that process, including EPA review and accepting public comments, when the next IPs amendment, including revised Appendix E, is presented for review. While the 2017 MUR does not mandate that permitting authorities adopt certain minimum levels, EPA does require that quantitative data submitted for completion of an application be collected in accordance with a sufficiently sensitive method per 40 CFR §122.21(e)(3). The IPs in general, and Appendix E specifically, provide guidance for screening applications by establishing MALs that are sufficiently sensitive in most cases. The revised MALs were selected in accordance with 40 CFR §122.21(e)(3) and were calculated using an EPA-established method when the published analytical method did not include a specified minimum level (i.e., the MAL in Appendix E has been calculated as 3.18 x MDL). The goals for the revision of Appendix E include incorporating the updated EPA Methods 608.3, 624.1, and 625.1, adding pollutants not previously included, and establishing MALs that are sufficiently sensitive based on current criteria in the 2018 TSWQS.

Stakeholders suggested a phased approach to implementing the revised MALs. Several requested a delay in adopting the revised MALs into wastewater permit application forms.

The TCEQ believes a phased or gradual decrease of revised MALs would cause confusion for applicants, laboratories, and agency staff. However, the TCEQ will not adopt the revised MALs into wastewater permit application forms until after an additional two-week comment period and full consideration of additional stakeholder comments. The Water Quality Division will implement the revised MAL values concurrently and consistently across the wastewater permitting and pretreatment programs.

One stakeholder suggested updating the list of accredited laboratories to be more user friendly.

TCEQ acknowledges the comment. The database used by TCEQ to generate the list of accredited laboratories was purchased from a third-party vendor. TCEQ is working with the vendor to investigate the possibility of creating a searchable list in the future.

In addition to the concerns discussed above, stakeholders provided comments on specific analytes and methods. Please note the following changes and clarifications to the draft revised Appendix E:

- Appendix E will remain in the IPs and will not be converted to a stand-alone document.
- The units for dioxin and furan have been updated to include picograms per liter (pg/L).
- Free cyanide and amenable cyanide have been added for clarity and guidance.
- The CASRNs for 1,2,3,4,6,7,8-HpCDF, 1,2,3,4,7,8,9-HpCDF, and OCDF were corrected.
- To clarify, boron will be screened for water quality-based effluent limits at the concentration indicated in the footnote, 100 µg/L. The revised MAL of 10 µg/L must be achieved if reporting a result as zero on discharge monitoring reports.
- Methods for drinking water matrix have been removed and were replaced with non-potable matrix methods for heptachlor, pentachlorophenol, and methoxychlor.
- A footnote has been added to total phenolics for clarity. "Total phenolics" is a method-defined analyte listed as parameter #48 in 40 CFR §136.3; Table IB. Specific alternative names listed in applicable Federal regulations include, but are not limited to, the following: phenolic compounds, phenolic compounds (4-AAP), phenols, phenols (4-AAP), total phenol, total phenols, total phenols (4-AAP), total phenolic compounds, total phenolics, total phenolics (4-AAP method), and total recoverable phenolics.
- The June 2010 IPs includes an erroneous pairing of bis(2-chloroisopropyl)ether with CASRN 108-60-1. This mismatch is a reflection of historical errors in the EPA methods and federal regulations. The draft Appendix E seeks to provide clarity by including separate entries for bis(2-chloroisopropyl)ether (CASRN 39638-32-9) and bis(2-Chloro-1-methylethyl) ether (CASRN 108-60-1).
- Of the pollutants without criteria included in the revised Appendix E, 60 pollutants have methods other than 608.3, 624.1, and 625.1. If the method previously established in the June 2010 IPs is still approved in 40 CFR Part 136, it is retained in the revision, however the MAL is recalculated as 3.18 x MDL and rounded.
- Table 1 at the end of this document includes a comparison of pollutants with criteria established in the TSWQS. Table 2 includes a comparison of pollutants without criteria. Table 3 includes pollutants included in the draft Appendix E not listed in the 2010 IPs.

Table 1 - Comparison of MALs and methods listed in the 2010 IPs and draft Appendix E for pollutants *with* criteria in the TSWQS.

Pollutant	CASRN[1]	Revised Method	Revised MAL µg/L	2010 IPs Method	2010 IPs MAL µg/L	Change from 2010 IPs MAL
Acrolein	107-02-8	603	2.2	624	50	Decrease
Acrylonitrile	107-13-1	603	2	1624B	50	Decrease
Aldrin	309-00-2	608.3	0.012	608	0.01	Increase
Aluminum, total	7429-90-5	200.8, Rev. 5.4	3.2	200.8	2.5	Increase
Anthracene	120-12-7	625.1	5.7	625	10	Decrease
Antimony, total	7440-36-0	200.8, Rev. 5.4	1.5	200.8	5	Decrease
Arsenic, total	7440-38-2	200.8, Rev. 5.4	5.0	200.8	0.5	Increase
Barium, total	7440-39-3	200.8, Rev. 5.4	2.5	200.8	3	Decrease
Benzene	71-43-2	602 624.1	1.0 13.2	624	10	Decrease Increase
Benzidine	92-87-5	605	0.3	625	50	Decrease
Benzo(*a*)anthracene	56-55-3	610	0.04	625	5	Decrease
Benzo(*a*)pyrene	50-32-8	610	0.1	625	5	Decrease
Bis(2-chloroethyl)ether	111-44-4	611 625.1	1.0 17.1	625	10	Decrease Increase
Bis(chloromethyl)ether	542-88-1	**TBD**	Not specified	--	--	
Bis(2-ethylhexyl)phthalate [Di(2-ethylhexyl)phthalate]	117-81-7	625.1	7.5	625	10	Decrease
Bromodichloromethane [Dichlorobromomethane]	75-27-4	624.1	6.6	624	10	Decrease
Bromoform	75-25-2	624.1	14.1	624	10	Increase
Cadmium, total	7440-43-9	200.8, Rev. 5.4	2	200.8	1	Increase
Carbaryl	63-25-2	632	0.1	632	5	Decrease
Carbon tetrachloride	56-23-5	601 624.1	0.4 8.4	624	2	Decrease Increase
Chlordane	57-74-9	608.3	0.042	608	0.2	Decrease
Chlorobenzene	108-90-7	624.1	18	624	10	Increase
Chlorodibromomethane (Dibromochloromethane)	124-48-1	624.1	9.3	624	10	Decrease
Chloroform	67-66-3	624.1	4.8	624	10	Decrease

[1] Chemical Abstracts Service Registry Number (CASRN)

Pollutant	CASRN[1]	Revised Method	Revised MAL µg/L	2010 IPs Method	2010 IPs MAL µg/L	Change from 2010 IPs MAL
Chlorpyrifos	2921-88-2	1657	0.02	1657	0.05	Decrease
Chromium, hexavalent	18540-29-9	218.6, Rev. 3.3	4.5	218.6 Rev 3.3	3	Increase
Chromium, trivalent	16065-83-1	Trivalent chromium (Cr) determined by subtracting hexavalent Cr from total Cr.	-	---	---	
Chrysene	218-01-9	625.1	7.5	625	5	Increase
Copper, total	7440-50-8	200.8, Rev. 5.4	2.0	200.8	2	Same
Cresols (all isomers)	1319-77-3	625.1	-	625	10	
Cyanide, free	57-12-5	OIA-1667-09	2	Not included.		
4,4'-DDD	72-54-8	608.3	0.033	608	0.1	Decrease
4,4'-DDE	72-55-9	608.3	0.012	608	0.1	Decrease
4,4'-DDT	50-29-3	608.3	0.036	608	0.02	Increase
2,4-D	94-75-7	615	4.0	615 or SM6640B	0.7	Increase
Danitol [Fenpropathrin]	39515-41-8	**TBD**	-	--	--	
Demeton	8065-48-3	1657	0.06-0.07	1657	0.20	Decrease
Diazinon	333-41-5	614	0.04	1657 614	0.5 0.1	Decrease
1,2-Dibromoethane	106-93-4	624.1	-	1624	10	
m-Dichlorobenzene [1,3-Dichlorobenzene]	541-73-1	601	1.0	624	10	Decrease
o-Dichlorobenzene [1,2-Dichlorobenzene]	95-50-1	601	1.0	624	10	Decrease
p-Dichlorobenzene [1,4-Dichlorobenzene]	106-46-7	601	1.0	624	10	Decrease
3,3'-Dichlorobenzidine	91-94-1	605 625.1	0.5 49.5	625	5	Decrease Increase
1,2-Dichloroethane	107-06-2	601 624.1	0.1 8.4	624	10	Decrease Decrease
1,1-Dichloroethene [1,1-Dichloroethylene]	75-35-4	601 624.1	0.5 8.4	624	10	Decrease Decrease
Dichloromethane [Methylene choride]	75-09-2	601 624.1	1.0 8.4	624	20	Decrease Decrease

Pollutant	CASRN[1]	Revised Method	Revised MAL µg/L	2010 IPs Method	2010 IPs MAL µg/L	Change from 2010 IPs MAL
1,2-Dichloropropane	78-87-5	601 624.1	0.2 18	624	10	Decrease Increase
1,3-Dichloropropene	542-75-6	601	1.1	624	10	Decrease
Dicofol [Kelthane]	115-32-2	608.3	-	ASTM D5812-96(02)	1	
Dieldrin	60-57-1	608.3	0.006	608	0.02	Decrease
2,4-Dimethylphenol	105-67-9	625.1	8.1	625	10	Decrease
Di-n-butyl phthalate	84-74-2	625.1	7.5	625	10	Decrease
Dioxins/Furans [TCDD Equivalents]		1613B	See Appendix E	1613B	See Appendix E	**Same**
Diuron	330-54-1	632	0.05	632	0.090	Decrease
Endosulfan I (alpha)	959-98-8	608.3	0.042	608	0.01	Increase
Endosulfan II (beta)	33213-65-9	608.3	0.012	608	0.02	Decrease
Endosulfan sulfate	1031-07-8	608.3	0.198	608	0.1	Increase
Endrin	72-20-8	1656	0.02	608	0.02	**Same**
Epichlorohydrin	106-89-8	**TBD**	Not Specified	ASTM D-3695	1 mg/L	
Ethylbenzene	100-41-4	624.1	21.6	624	10	Increase
Ethylene glycol	107-21-1	**TBD**	Not Specified	Not included. New criteria.		
Fluoride	16984-48-8	300.0, Rev. 2.1	32	300.0, 300.1	500	Decrease
Guthion [Azinphos Methyl]	86-50-0	1657	0.03	1657	0.1	Decrease
Heptachlor	76-44-8	608.3	0.009	608	0.01	Decrease
Heptachlor epoxide	1024-57-3	617	0.01	608	0.01	**Same**
Hexachlorobenzene	118-74-1	612	0.16	625	5	Decrease
Hexachlorobutadiene	87-68-3	612	1.1	625	10	Decrease
alpha-Hexachlorocyclohexane [alpha-BHC]	319-84-6	608.3	0.009	608	0.05	Decrease
beta-Hexachlorocyclohexane [beta-BHC]	319-85-7	608.3	0.018	608	0.05	Decrease
gamma-Hexachlorocyclohexane [Lindane]	58-89-9	608.3	0.012	608	0.05	Decrease

Pollutant	CASRN[1]	Revised Method	Revised MAL µg/L	2010 IPs Method	2010 IPs MAL µg/L	Change from 2010 IPs MAL
Hexachlorocyclopentadiene	77-47-4	612	1.5	625 1625B	10	Decrease
Hexachloroethane	67-72-1	612 625.1	0.1 4.8	625	20	Decrease Decrease
Hexachlorophene	70-30-4	604.1	4.0	604.1	10	Decrease
4,4'-Isopropylidenediphenol [Bisphenol A]	80-05-7	ASTM 7065-11	1.0	Not included. New criteria.		
Lead, total	7439-92-1	200.8, Rev. 5.4	2.0	200.8	0.5	Increase
Malathion	121-75-5	1657	0.04	1657 SM6630C	0.1	Decrease
Mercury, total	7439-97-6	245.7 1631E	0.005 0.0005	245.7, Rev. 2.0 1631E	0.005 0.0005	Same Same
Methoxychlor	72-43-5	617	0.6	617 SM6630B SM6630C	2	Decrease
Methyl ethyl ketone	78-93-3	1624B	159	624	50	Increase
Methyl tert-butyl ether [MTBE]	1634-04-4	624.1	-	Not included. New criteria.		
Mirex	2385-85-5	SM 6630	0.02	SM6630B SM6630C	0.02	Same
Nickel, total	7440-02-0	200.8, Rev 5.4	2.0	200.8	2	Same
Nitrate-nitrogen	14797-55-8	300.0, Rev 2.1	6.4	300.0, Rev. 2.1 300.1, Rev. 1.0	100	Decrease
Nitrobenzene	98-95-3	625.1	5.7	625	10	Decrease
N-Nitrosodiethylamine	55-18-5	625.1	-	625	20	
N-Nitroso-di-n-butylamine	924-16-3	624.1	-	625	20	
Nonylphenol	25154-52-3	D7065-11	3.0	1625	333	Decrease
Parathion (ethyl)	56-38-2	1657	0.032	1657 SM6630C	0.1	Decrease
Pentachlorobenzene	608-93-5	625.1	-	625	20	
Pentachlorophenol	87-86-5	625.1	10.8	625	5	Increase
Phenanthrene	85-01-8	610	2.0	625	10	Decrease
Polychlorinated biphenyls (PCBs)	1336-36-3	1668B	0.0005			
PCB-77	32598-13-3	1668B	0.0005	1668B	0.0005	Same

Pollutant	CASRN[1]	Revised Method	Revised MAL µg/L	2010 IPs Method	2010 IPs MAL µg/L	Change from 2010 IPs MAL
PCB-81	70362-50-4	1668B	0.0005	1668B	0.0005	**Same**
PCB-126	57465-28-8	1668B	0.0005	1668B	0.0005	**Same**
PCB-169	32774-16-6	1668B	0.0005	1668B	0.0005	**Same**
Pyridine	110-86-1	625.1	-	625	20	
Selenium, total	7782-49-2	200.8, Rev 5.4	24	200.8	5	**Increase**
Silver, total	7440-22-4	200.8, Rev. 5.4	0.5	200.8	0.5	**Same**
1,2,4,5-Tetrachlorobenzene	95-94-3	625.1	-	1625	20	
1,1,2,2-Tetrachloroethane	79-34-5	601	0.1	624	10	**Decrease**
Tetrachloroethene [Tetrachloroethylene]	127-18-4	601	0.1	624	10	**Decrease**
Thallium, total	7440-28-0	200.8, Rev. 5.4	1.0	200.8	0.5	**Increase**
Toluene	108-88-3	624.1	18	624	10	**Increase**
Toxaphene	8001-35-2	608.3	0.72	608	0.3	**Increase**
2,4,5-TP [Silvex]	93-72-1	615	1.0	SM6640B	0.3	**Increase**
Tributyltin [TBT]	688-73-3	**TBD**	Not Specified	TNRCC 1001	0.01	
1,1,1-Trichloroethane	71-55-6	624.1	11.4	624	10	**Increase**
1,1,2-Trichloroethane	79-00-5	601 624.1	0.1 15	624	10	**Decrease** **Increase**
Trichloroethene [Trichloroethylene]	79-01-6	601 624.1	0.4 5.7	624	10	**Decrease** **Decrease**
2,4,5-Trichlorophenol	95-95-4	1625B	30	1625	50	**Decrease**
TTHM (Total Trihalomethanes) Bromodichloromethane Dibromochloromethane Tribromomethane [Bromoform] Trichloromethane [Chloroform]	 75-27-4 124-48-1 75-25-2 67-66-3	624.1	 6.6 9.3 14.1 4.8	624	 10 10 10 10	 **Decrease** **Decrease** **Increase** **Decrease**
Vinyl chloride	75-01-4	601	0.6	624	10	**Decrease**
Zinc, total	7440-66-6	200.8, Rev. 5.4	6.0	200.8	5	**Increase**

Table 2- Comparison of MALs and methods listed in the 2010 IPs and draft Appendix E for pollutants ***without*** criteria in the TSWQS. If the method previously established in the June 2010 IPs is other than the 608.3, 624.1, or 625.1 method ***and*** is still approved in 40 CFR Part 136, it is retained in the revision; however, the MAL is recalculated as 3.18 x MDL and rounded.

Pollutant	CASRN	Revised Method	Revised MAL µg/L	2010 IPs Method	2010 IPs MAL µg/L	Change from 2010 IPs MAL
Acenaphthene	83-32-9	***625.1***	5.7	625	10	Decrease
Acenaphthylene	208-96-8	***625.1***	10.5	625	10	Increase
Acetaldehyde	75-07-0	1667	50	1667	50	Same
Allyl alcohol	107-18-6	***624.1***	-	1624	50	
Allyl chloride	107-05-1	***624.1***	-	1624	10	
Amyl acetate	628-63-7	1666	16	1666	5	Increase
Aniline	62-53-3	***625.1***	-	625	10	
Asbestos	1332-21-4	**TBD**	Not Specified	100.1 & 100.2	Not specified	
Benzo(*b*)fluoranthene	205-99-2	***625.1***	14.4	625	10	Increase
Benzo(*g,h,i*)perylene	191-24-2	***625.1***	12.3	625	20	Decrease
Benzo(*k*)fluoranthene	207-08-9	***625.1***	7.5	625	5	Increase
Benzonitrile	100-47-0	**TBD**	Not Specified	ASTM D3371	1 mg/L	
Benzyl chloride	100-44-7	**TBD**	Not Specified	**TBD**	Not specified	
Beryllium, total	7440-41-7	200.8, Rev. 5.4	1	200.8	0.5	Increase
Bis(2-chloroethoxy)methane	111-91-1	***625.1***	15.9	625	10	Increase
Bis(2-Chloro-1-methylethyl) ether	108-60-1	***625.1***	17.1	625	10	Increase
Boron, total	7440-42-8	200.7, Rev. 4.4	10	200.7	20	Decrease (but same screening level of 100 ug/L)
Bromide	—	300.0, Rev. 2.1 300.1, Rev. 1.0	32	300.0, Rev. 2.1 & 300.1, Rev. 1.0	400	Decrease
4-Bromophenyl phenyl ether	101-55-3	***625.1***	5.7	625	10	Decrease
Butyl acetate	540-88-5	1666	5.0	1666	5	Same
n-Butylamine	109-73-9	**TBD**	Not Specified	**TBD**	Not specified	

Pollutant	CASRN	Revised Method	Revised MAL µg/L	2010 IPs Method	2010 IPs MAL µg/L	Change from 2010 IPs MAL
sec-Butylamine	13952-84-6	**TBD**	Not Specified	**TBD**	Not specified	
tert-Butylamine	75-64-9	**TBD**	Not Specified	**TBD**	Not specified	
Butylbenzyl phthalate	85-68-7	***625.1***	7.5	625	10	Decrease
Captan	133-06-2	SM6630B	0.4	SM6630B	0.4	**Same**
Carbazole	86-74-8	1625	64	1625	20	Increase
Carbofuran	1563-66-2	632	10	632	3	Increase
Carbon disulfide	75-15-0	1624C	-	1624	10	
Chlorine	7782-50-5	4500-Cl E or G	32	4500-Cl E or G	33	Decrease
Chloroethane	75-00-3	1624B	50	624	50	**Same**
2-chloroethylvinyl ether	110-75-8	1624B	10	624	10	**Same**
2-Chloronaphthalene	91-58-7	***625.1***	5.7	625	10	Decrease
2-Chlorophenol	95-57-8	***625.1***	9.9	625	10	Decrease
4-Chlorophenyl phenyl ether	7005-72-3	***625.1***	12.6	625	10	Increase
Chromium, total	7440-47-3	200.8, Rev. 5.4	3.0	200.8	3	**Same**
Cobalt, total	7440-48-4	200.8, Rev. 5.4	0.3	200.8	0.3	**Same**
Coumaphos	56-72-4	1657	0.1	1657	0.025	Increase
m-Cresol	108-39-4	***625.1***	-	625	10	
o-Cresol	95-48-7	***625.1***	-	625	10	
p-Cresol [4-Methylphenol]	106-44-5	***625.1***	-	625	10	
Crotonaldehyde	4170-30-3	***624.1***	-	1624	10	
Cyanide, total	57-12-5	335.4 Rev 1.0	16	335.4 or 4500CN D or 4500-CN E	10	Increase
Cyanide, available	57-12-5	4500-CN G OIA-1677	10 2	4500-CN G OIA-1677	10 2	**Same**
Cyclohexane	110-82-7	1666	5	1666	5	**Same**
n-Decane	124-18-5	**TBD**	Not specified	625	30	
Dibenzo(a,h)anthracene	53-70-3	***625.1***	7.5	625	5	Increase
Dicamba	1918-00-9	1658	0.4	1658	0.110	Increase
Dichlobenil	1194-65-6	**TBD**	Not Specified	**TBD**	Not specified	

Pollutant	CASRN	Revised Method	Revised MAL µg/L	2010 IPs Method	2010 IPs MAL µg/L	Change from 2010 IPs MAL
Dichlone	117-80-6	1656	_	1656	Not specified	
1,1-Dichloroethane	75-34-3	***624.1***	14.1	624	10	Increase
2,4-Dichlorophenol	120-83-2	***625.1***	8.1	625	10	Decrease
2,2-Dichloropropionic acid [Dalapon]	75-99-0	615	18	615	2	Increase
Dichlorvos	62-73-7	1657	0.02	1657	0.004	Increase
Diethyl amine	109-89-7	1671	159 mg/L	1671	50 mg/L	Increase
Diethyl phthalate	84-66-2	***625.1***	5.7	625	10	Decrease
Dimethyl amine	124-40-3	1671	159 mg/L	1671	50 mg/L	Increase
Dimethyl phthalate	131-11-3	***625.1***	4.8	625	10	Decrease
Dinitrobenzene	25154-54-5	***625.1***	Not specified	1625	10	
2,4-Dinitrophenol	51-28-5	***625.1***	126	625	50	Increase
2,4-Dinitrotoluene	121-14-2	***625.1***	17.1	625	10	Increase
2,6-Dinitrotoluene	606-20-2	***625.1***	5.7	625	10	Decrease
Di-n-octyl phthalate	117-84-0	***625.1***	7.5	625	10	Decrease
1,2-Diphenylhydrazine (as Azobenzene)	122-66-7	1625	64	1625	20	Increase
Diquat	2764-72-9	**TBD**	Not Specified	549, 549.1	1.5	
Disulfoton	298-04-4	1657	0.1	1657	0.032	Increase
Endrin aldehyde	7421-93-4	***608.3***	0.07	608	0.1	Decrease
Ethion	563-12-2	1657	0.05	1657	0.02	Increase
Ethylenediamine	107-15-3	**TBD**	Not specified	**TBD**	Not Specified	
Ethylene dibromide	106-93-4	**TBD**	Not specified	1624	10	
Formaldehyde	50-00-0	1667	159	1667	50	Increase
Fluoranthene	206-44-0	***625.1***	6.6	625	10	Decrease
Fluorene	86-73-7	***625.1***	5.7	625	10	Decrease
Furfural	98-01-1	1667	50 mg/L	1667	50 mg/L	**Same**
delta-Hexachlorocyclohexane [delta-BHC]	319-86-8	***608.3***	0.027	608	0.05	Decrease
Indeno(1,2,3-cd)pyrene	193-39-5	***625.1***	11.1	625	5	Increase
Iron, total	7439-89-6	200.7, Rev. 4.4	95	200.7	7	Increase

Pollutant	CASRN	Revised Method	Revised MAL µg/L	2010 IPs Method	2010 IPs MAL µg/L	Change from 2010 IPs MAL
Isophorone	78-59-1	***625.1***	6.6	625	10	Decrease
Isopropanolamine dodecylbenzenesulfonate	42504-46-1	**TBD**	Not Specified	**TBD**	Not Specified	
Kepone	143-50-0	1656	0.3	1656	0.3	**Same**
Magnesium, total	7439-95-4	200.7, Rev. 4.4	64	200.7	20	**Increase**
Manganese, total	7439-96-5	200.8, Rev. 5.4	0.32	200.8	0.5	**Decrease (but same screening level of 50 ug/L)**
Mercaptodimethur [Methiocarb]	2032-65-7	632	0.06	632	0.06	**Same**
Methyl bromide [Bromomethane]	74-83-9	601	4.0	624	50	Decrease
Methyl chloride [Chloromethane]	74-87-3	***624.1***	8.4	624	50	Decrease
Methyl mercaptan	74-93-1	**TBD**	Not specified	**TBD**	Not Specified	
Methyl methacrylate	80-62-6	***624.1***	-	1624	10	
Methyl parathion	298-00-0	1657	0.06	1657 SM6630C	0.05	**Increase**
Mevinphos	7786-34-7	1657	0.24	1657	0.2	**Increase**
Mexacarbate	315-18-4	632	2.0	632	1.5	**Increase**
Molybdenum, total	7439-98-7	200.8, Rev 5.4	1.0	200.8	1	**Same**
Monoethyl amine	75-04-7	**TBD**	Not Specified	**TBD**	Not Specified	
Monomethylamine	74-89-5	**TBD**	Not specified	1667	50 mg/L	
Naled	300-76-5	1657	0.054	1657	0.05	**Increase**
Naphthalene	91-20-3	***625.1***	4.8	625	10	Decrease
Napthenic acid	1338-24-5	**TBD**	Not specified	**TBD**	Not Specified	
2-Nitrophenol	88-75-5	***625.1***	10.8	625	20	Decrease
4-Nitrophenol	100-02-7	***625.1***	7.2	625	50	Decrease
N-Nitrosodimethylamine	62-75-9	1625B	50	625 1625B	50	**Same**
N-Nitroso-di-n-propylamine	621-64-7	1625B	64	625 1625B	20	**Increase**

Pollutant	CASRN	Revised Method	Revised MAL µg/L	2010 IPs Method	2010 IPs MAL µg/L	Change from 2010 IPs MAL
N-Nitrosodiphenylamine	86-30-3	1625B	64	625 1625B	20	Increase
Nitrotoluene	1321-12-6	**TBD**	Not specified	**TBD**	Not Specified	
para-Nonylphenol	84852-15-3	**TBD**	Not specified	1625	333	
n-Octadecane	593-45-3	***625.1***	-	625	30	
Phenol	108-95-2	***625.1***	4.5	625	10	Decrease
p-Phenolsulfonate	127-82-2	**TBD**	Not specified	**TBD**	Not Specified	
Phosgene	75-44-5	Degrades in water	-	Degrades in water	--	
PCB-1016	12674-11-2	***608.3***	-	608	0.2	
PCB-1221	11104-28-2	***608.3***	-	608	0.2	
PCB-1232	11141-16-5	***608.3***	-	608	0.2	
PCB-1242	53469-21-9	***608.3***	0.195	608	0.2	Decrease
PCB-1248	12672-29-6	***608.3***	-	608	0.2	
PCB-1254	11097-69-1	***608.3***	-	608	0.2	
PCB-1260	11096-82-5	***608.3***	-	608	0.2	
Propargite	2312-35-8	**TBD**	Not Specified	GCMS	0.02	
Propylene oxide	75-56-9	**TBD**	Not Specified	624 Heated Purge	25	
Pyrene	129-00-0	***625.1***	5.7	625	10	Decrease
Pyrethrin I	121-21-1	1660	3.1	1660	3.1	**Same**
Pyrethrin II	121-29-9	1660	3.3	1660	3.3	**Same**
Quinoline	91-22-5	**TBD**	Not Specified	ASTM D-4763	1 mg/L	
Resorcinol	108-46-3	**TBD**	Not Specified	1625	100	
Strontium	7440-24-6	200.7, Rev. 4.4	2.5	200.7	1	Increase
Strychnine	57-24-9	**TBD**	Not Specified	1625	40	
Styrene	100-42-5	1625B	32	1625	10	Increase
Tin, total	7440-31-5	200.9, Rev. 2.2	5.4	200.7 200.9	5	Increase
Titanium, total	7440-32-6	283.2	30	283.2	30	**Same**

Pollutant	CASRN	Revised Method	Revised MAL µg/L	2010 IPs Method	2010 IPs MAL µg/L	Change from 2010 IPs MAL
1,2-Trans-dichloroethene [Trans-1,2-dichloroethylene]	156-60-5	***624.1***	4.8	624	10	**Decrease**
1,2,4-Trichlorobenzene	120-82-1	***625.1***	5.7	625	10	**Decrease**
Trichlorofon	52-68-6	1657	0.45	1657	0.45	**Same**
2,4,6-Trichlorophenol	88-06-2	***625.1***	8.1	625	10	**Decrease**
Triethanolmine dodecylbenzenesulfonate	27323-41-7	**TBD**	Not specified	**TBD**	Not Specified	
Triethylamine	121-44-8	1671	50 mg/L	1667	50 mg/L	**Same**
Trimethylamine	75-50-3	**TBD**	Not specified	1666	Not Specified	
Uranium, total	7440-61-1	200.8, Rev. 5.4	0.5	200.8	0.5	**Same**
Vanadium, total	7440-62-2	200.8, Rev. 5.4	8.0	200.8	5	**Increase**
Vinyl acetate	108-05-4	1624C	-	1624	50	
Xylenes, total	1330-20-7	1624C	10	1624C	10	**Same**
Xylenol	1300-71-6	**TBD**	Not specified	625	30	
Zirconium	7440-67-7	1620	318	1620	100	**Increase**

Table 3- Analytes in the draft Appendix E not included in the 2010 IPs.

Analyte	CASRN
p-chloro-m-cresol [4-chloro-3-methylphenol]	59-50-7
Cyanide, free	57-12-5
Cyanide, amenable	-
4,6-Dinitro-o-cresol [2-Methyl-4,6-dinitrophenol]	534-52-1
Ethylene glycol	107-21-1
Isoprene	78-79-5
4,4'-Isopropylidenediphenol [Bisphenol A]	80-05-7
Methyl tert-butyl ether [MTBE]	1634-04-4
Phenolics, total	--
2,4,5-T [Fortex]	93-76-5
2,2'-oxybis(2-chloropropane) *bis(2-chloroisopropyl)ether*	*39638-32-9* †
bis(2-Chloro-1-methylethyl) ether *or 2,2'-oxybis(1-chloropropane)*	*108-60-1* †

† The analyte name and CASRN were incorrectly paired in the 2010 IPs.