567—41.5(455B) Organic chemicals.

41.5(1) *MCLs and other requirements for organic chemicals.* MCLs, analytical methods, and monitoring requirements for two classes of organic chemical contaminants apply to CWSs and NTNCs as specified herein. The two referenced organic chemical classes are volatile organic chemicals (VOCs) and synthetic organic chemicals (SOCs). BAT for control of these organic contaminants is referenced in 567—paragraph 43.3(10)*"a."*

a. Compliance. Compliance with the VOC and SOC MCL is calculated pursuant to 41.5(1)*"b"*(2).

b. MCLs and analytical methodology for organic compounds. The VOC and SOC MCLs are listed in the following table. VOC and SOC analyses shall be conducted using the methods in the following table and its footnotes or their equivalent as approved by EPA. For analysis of a compliance sample, a certified laboratory must be able to achieve at least the MDL for the specific VOC or SOC shown in the following table.

(1) Table.

Organic Chemical (VOC and SOC) Contaminants, Codes, MCLs, Analytical Methods, and Detection Limits

Contaminant	EPA Contaminant Code	MCL (mg/L)	Methodology[1]	Detection Limit (mg/L)
Volatile Organic Chemicals (VOCs):				
Benzene	2990	0.005	502.2, 524.2, 524.3, 524.4[7]	0.0005
Carbon tetrachloride	2982	0.005	502.2, 524.2, 524.3, 524.4[7], 551.1	0.0005
Chlorobenzene (mono)	2989	0.1	502.2, 524.2, 524.3, 524.4[7]	0.0005
1,2-Dichlorobenzene (ortho)	2968	0.6	502.2, 524.2, 524.3, 524.4[7]	0.0005
1,4-Dichlorobenzene (para)	2969	0.075	502.2, 524.2, 524.3, 524.4[7]	0.0005
1,2-Dichloroethane	2980	0.005	502.2, 524.2, 524.3, 524.4[7]	0.0005
1,1-Dichloroethylene	2977	0.007	502.2, 524.2, 524.3, 524.4[7]	0.0005
cis-1,2-Dichloroethylene	2380	0.07	502.2, 524.2, 524.3, 524.4[7]	0.0005
trans-1,2-Dichloroethylene	2979	0.1	502.2, 524.2, 524.3, 524.4[7]	0.0005
Dichloromethane	2964	0.005	502.2, 524.2, 524.3, 524.4[7]	0.0005
1,2-Dichloropropane	2983	0.005	502.2, 524.2, 524.3, 524.4[7]	0.0005
Ethylbenzene	2992	0.7	502.2, 524.2, 524.3, 524.4[7]	0.0005
Styrene	2996	0.1	502.2, 524.2, 524.3, 524.4[7]	0.0005
Tetrachloroethylene	2987	0.005	502.2, 524.2, 524.3, 524.4[7], 551.1	0.0005
Toluene	2991	1	502.2, 524.2, 524.3, 524.4[7]	0.0005
1,1,1-Trichloroethane	2981	0.2	502.2, 524.2, 524.3, 524.4[7], 551.1	0.0005
Trichloroethylene	2984	0.005	502.2, 524.2, 524.3, 524.4[7], 551.1	0.0005
1,2,4-Trichlorobenzene	2378	0.07	502.2, 524.2, 524.3, 524.4[7]	0.0005
1,1,2-Trichloroethane	2985	0.005	502.2, 524.2, 524.3, 524.4[7], 551.1	0.0005
Vinyl chloride	2976	0.002	502.2, 524.2, 524.3, 524.4[7]	0.0005
Xylenes (total)	2955	10	502.2, 524.2, 524.3, 524.4[7]	0.0005
Synthetic Organic Chemicals (SOCs):				
Alachlor[3]	2051	0.002	505, 507, 508.1, 525.2, 525.3, 551.1	0.0002
Aldicarb	2047	0.003	531.1, 6610	0.0005
Aldicarb sulfone	2044	0.002	531.1, 6610	0.0008

Contaminant	EPA Contaminant Code	MCL (mg/L)	Methodology[1]	Detection Limit (mg/L)
Aldicarb sulfoxide	2043	0.004	531.1, 6610	0.0005
Atrazine[3]	2050	0.003	505, 507, 508.1, 523, 525.2, 525.3, 536, 551.1, Syngenta AG-625[5]	0.0001
Benzo(a)pyrene	2306	0.0002	525.2, 525.3, 550, 550.1	0.00002
Carbofuran	2046	0.04	531.1, 531.2, 6610, 6610B, 6610 B-04[2]	0.0009
Chlordane[3]	2959	0.002	505, 508, 508.1, 525.2, 525.3	0.0002
2,4-D[6] (as acids, salts, and esters)	2105	0.07	515.1, 515.2, 515.3, 515.4, 555, D5317-93, 98 (Reapproved 2003), 6610B, 6640-B, 6640 B-01, 6640 B-06	0.0001
Dalapon	2031	0.2	515.1, 515.3, 515.4, 552.1, 552.2, 552.3, 557, 6640, 6610B, 6640-B, 6640 B-01, 6640 B-06	0.001
1,2-Dibromo-3-chloropropane (DBCP)	2931	0.0002	504.1, 524.3, 551.1	0.00002
Di(2-ethylhexyl)adipate	2035	0.4	506, 525.2, 525.3	0.0006
Di(2-ethylhexyl)phthalate	2039	0.006	506, 525.2, 525.3	0.0006
Dinoseb[6]	2041	0.007	515.1, 515.2, 515.3, 515.4, 555, 6610B, 6640-B, 6640 B-01, 6640 B-06	0.0002
Diquat	2032	0.02	549.2	0.0004
Endothall	2033	0.1	548.1	0.009
Endrin[3]	2005	0.002	505, 508, 508.1, 525.2, 525.3, 551.1	0.00001
Ethylene dibromide (EDB)	2946	0.00005	504.1, 524.3, 551.1	0.00001
Glyphosate	2034	0.7	547, 6651, 6651B, 6651 B-00, 6640 B-05	0.006
Heptachlor[3]	2065	0.0004	505, 508, 508.1, 525.2, 525.3, 551.1	0.00004
Heptachlor epoxide[3]	2067	0.0002	505, 508, 508.1, 525.2, 525.3, 551.1	0.00002
Hexachlorobenzene[3]	2274	0.001	505, 508, 508.1, 525.2, 525.3, 551.1	0.0001
Hexachlorocyclopentadiene[3]	2042	0.05	505, 508, 508.1, 525.2, 525.3, 551.1	0.0001
Lindane (gamma BHC)[3]	2010	0.0002	505, 508, 508.1, 525.2, 525.3, 551.1	0.00002
Methoxychlor[3]	2015	0.04	505, 508, 508.1, 525.2, 525.3, 551.1	0.0001
Oxamyl	2036	0.2	531.1, 531.2, 6610, 6610B, 6610 B-04[2]	0.002
Pentachlorophenol	2326	0.001	515.1, 515.2, 515.3, 515.4, 525.2, 525.3, 555, D5317-93, 98 (Reapproved 2003), 6610B, 6640-B, 6640 B-01, 6640 B-06	0.00004
Picloram[3, 6]	2040	0.5	515.1, 515.2, 515.3, 515.4, 555, D5317-93, 98 (Reapproved 2003), 6610B, 6640-B, 6640 B-01, 6640 B-06	0.0001
PCBs[4] (as decachlorobiphenyl) (as Arochlors)[3]	2383	0.0005	508A 505, 508, 508.1, 525.2, 525.3	0.0001
Simazine[3]	2037	0.004	505, 507, 508.1, 523, 525.2, 525.3, 536, 551.1	0.00007

Contaminant	EPA Contaminant Code	MCL (mg/L)	Methodology[1]	Detection Limit (mg/L)
2,3,7,8-TCDD (dioxin)	2063	$3x10^{-8}$	1613	$5x10^{-9}$
2,4,5-TP[6] (Silvex)	2110	0.05	515.1, 515.2, 515.3, 515.4, 555, D5317-93, 98 (Reapproved 2003), 6610B, 6640-B, 6640 B-01, 6640 B-06	0.0002
Toxaphene[3]	2020	0.003	505, 508, 508.1, 525.2, 525.3	0.001

[1]Analyses for the contaminants in this table shall be conducted using the following EPA methods or their equivalent as approved by EPA. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies may be inspected at EPA's Drinking Water Docket or at NARA.

NTIS methods:

Methods for the Determination of Organic Compounds in Drinking Water, EPA-600/4-88-039, December 1988, Revised July 1991 (NTIS PB91-231480): Methods 508A and 515.1.

Methods for the Determination of Organic Compounds in Drinking Water—Supplement I, EPA-600/4-90-020, July 1990 (NTIS PB91-146027): Methods 547, 550, 550.1.

Methods for the Determination of Organic Compounds in Drinking Water—Supplement II, EPA-600/R-92-129, August 1992 (NTIS PB92-207703): Methods 548.1, 552.1, 555.

Methods for the Determination of Organic Compounds in Drinking Water—Supplement III, EPA-600/R-95-131, August 1995 (NTIS PB95-261616): Methods 502.2, 504.1, 505, 506, 507, 508, 508.1, 515.2, 524.2, 525.2, 531.1, 551.1, 552.2.

EPA Method 523, "Determination of Triazine Pesticides and Their Degradates in Drinking Water by Gas Chromatography/Mass Spectrometry (GC/MS)," 2011. EPA-815-R-11-002, nepis.epa.gov.

EPA Method 524.3, Version 1.0. "Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry," June 2009. EPA 815-B-09-009, www.nemi.gov.

EPA Method 525.3, "Determination of Semivolatile Organic Chemicals in Drinking Water by Solid Phase Extraction and Capillary Column Gas Chromatograph/Mass Spectrometry (GC/MS)," 2012. EPA/600/R-12-010, nepis.epa.gov.

EPA Method 536, "Determination of Triazine Pesticides and Their Degradates in Drinking Water by Liquid Chromatography Electrospray Ionization Tandem Mass Spectrometry (LC/ESI-MS/MS)," 2007. EPA/815-B-07-002, nepis.epa.gov.

EPA Method 557, "Determination of Haloacetic Acids, Bromate, and Dalapon in Drinking Water by Ion Chromatography Electrospray Ionization Tandem Mass Spectrometry (IC-ESI-MS/MS)," September 2009. EPA 815-B-09-012, www.nemi.gov.

Method 1613 "Tetra-through Octa-Chlorinated Dioxins and Furans by Isotope-Dilution HRGC/HRMS," EPA-821-B-94-005, October 1994 (NTIS PB95-104774).

APHA documents:

SM, supplement to the 18th edition, 1994, 19th edition, 1995, 20th edition, 1998, 21st edition, 2005, or 22nd edition, 2012 (any of these editions may be used), APHA: Method 6610 and (carbofuran and oxamyl only) 6610B and 6610 B-04; Method 6640B (21st and 22nd editions only) and SM online 6640 B-01 for 2,4-D, 2,4,5-TP Silvex, dalapon, dinoseb, pentachlorophenol, and picloram; Method 6651B (21st and 22nd editions only) and SM online 6670-B-00 for glyphosate.

SM, 18th edition, 1992, 19th edition, 1995, or 20th edition, 1998, (any of these editions may be used), APHA: Method 6651.

ASTM, 1999, Vol. 11.02 (or any edition published after 1993), ASTM: D5317-93, 98 (Reapproved 2003).

Methods 515.3 and 549.2, EPA NERL, 26 W. Martin Luther King Drive, Cincinnati, OH 45268.

Method 515.4, "Determination of Chlorinated Acids in Drinking Water by Liquid-Liquid Microextraction, Derivatization and Fast Gas Chromatography with Electron Capture Detection," Revision 1.0, April 2000, EPA 815/B-00/001 and EPA Method 552.3, "Determination of Haloacetic Acids and Dalapon in Drinking Water by Liquid-liquid Microextraction, Derivatization, and Gas Chromatography with Electron Capture Detection," Revision 1.0, July 2003, EPA 815-B-03-002, nepis.epa.gov.

Method 531.2, "Measurement of n-Methylcarbamoyloximes and n-Methylcarbamates in Water by Direct Aqueous Injection HPLC with Postcolumn Derivatization," Revision 1.0, September 2001, EPA 815/B-01/002, nepis.epa.gov.

Syngenta AG-625 Method, "Atrazine in Drinking Water by Immunoassay," February 2001, Syngenta Crop Protection, Inc., 410 Swing Road, P.O. Box 18300, Greensboro, NC 27419.

Other required analytical test procedures germane to the conduct of these analyses are contained in Technical Notes on Drinking Water Methods, EPA-600/R-94-173, October 1994 (NTIS PB95-104766).

[2]SM Online. The year that each method was approved is designated by the last two digits in the method number. The methods listed are the only online versions that may be used.

[3]The detectors specified in Method 505, 507, 508, or 508.1 may be substituted for the purpose of achieving lower MDLs with either an electron capture or nitrogen-phosphorus detector, provided all regulatory requirements and quality control criteria are met.

[4]PCBs are qualitatively identified as Aroclors and measured for compliance purposes as decachlorobiphenyl. Users of Method 505 may have more difficulty in achieving the required detection limits than users of Method 508. 508.1, or 525.2.

[5]This method may not be used for atrazine analysis in any system where chlorine dioxide is used in the drinking water treatment. In samples from all other systems, any atrazine result generated by Method AG-625 that is greater than one-half the MCL must be confirmed using another approved atrazine method and should use additional volume of the original sample collected for compliance monitoring. In instances where a result from Method AG-625 triggers such confirmatory testing, the confirmatory result is to be used to determine compliance.

[6]Accurate determination of the chlorinated esters requires hydrolysis of the sample as described in EPA Methods 515.1, 515.2, 515.3, 515.4, and 555, and ASTM Method D5317-93, 98 (Reapproved 2003).

[7]EPA Method 524.4, Version 1.0. "Measurement of Purgeable Organic Compounds in Water by Gas Chromatography/Mass Spectrometry Using Nitrogen Purge Gas," May 2013, EPA 815-R-13-002.

(2) Organic chemical compliance calculations. Compliance with this paragraph shall be determined based on the analytical results obtained at each sampling point. If one sampling point is in violation of an MCL in this paragraph, the system is in violation of the MCL. If a system fails to collect the required number of samples, compliance will be based on the total number of samples collected. If a sample result is less than the detection limit, zero will be used when calculating the running annual average (RAA). If a system is in violation of an MCL, the water supplier is required to give notice to the department in accordance with 567—subrule 40.8(1) and to provide PN as required by 567—40.5(455B).

1. Monitoring more than once per year for VOC or SOC contaminants. For systems that monitor more than once per year, MCL compliance is determined by an RAA of all samples collected at each sampling point.

2. Monitoring annually or less frequently for VOC contaminants. Systems that monitor annually or less frequently and whose VOC sample result exceeds the MCL must begin quarterly sampling. The system will not be considered in violation of the MCL until it has completed one year of quarterly sampling. However, if any sample result will cause the RAA to exceed the MCL at any sampling point, a system is immediately out of compliance with the MCL.

3. Monitoring annually or less frequently for SOC contaminants. Systems that monitor annually or less frequently and whose SOC sample result exceeds the regulatory detection limit specified in 41.5(1)*"b"*(1) must begin quarterly sampling. The system will not be considered in violation of the MCL until it has completed one year of quarterly sampling. However, if any sample result will cause the RAA to exceed the MCL at any sampling point, a system is immediately out of compliance with the MCL.

(3) TTs for acrylamide and epichlorohydrin. Each PWS must certify annually in writing to the department (using third-party or manufacturer's certification) that when acrylamide and epichlorohydrin are used in drinking water systems, the combination (or product) of dose and monomer level does not exceed the following levels:

Acrylamide = 0.05 percent dosed at 1 ppm (or equivalent)

Epichlorohydrin = 0.01 percent dosed at 20 ppm (or equivalent)

Certifications can rely on information provided by manufacturers or third parties, as approved by the department.

c. VOC and SOC monitoring requirements. Each PWS shall monitor at the time designated within each compliance period. All new systems or systems that use a new source of water must demonstrate compliance with the MCLs within the department-specified time period. The system must also comply with the specified initial sampling frequencies to ensure it can demonstrate MCL compliance. A water source that is determined by the department to be a new SEP is considered to be a new source for the purposes of this paragraph. Routine and increased monitoring shall be conducted in accordance with this in this paragraph.

(1) Routine VOC monitoring requirements. CWSs and NTNCs shall monitor the VOCs listed in 41.5(1)*"b"*(1) to determine MCL compliance.

(2) VOC monitoring protocol.

1. GW monitoring. GW systems shall take a minimum of one sample at every entry point to the distribution system which is representative of each well after treatment (hereafter called a source/entry point or SEP). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.

2. SW monitoring. SW systems (and combined SW/GW systems) shall take a minimum of one sample at each SEP after treatment. Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source, treatment plant, or within the distribution system.

3. Multiple sources. If a system draws water from more than one source and the sources are combined before distribution, it must sample at an SEP during periods of normal operating conditions. If a

representative sample of all water sources cannot be obtained, as determined by the department, separate SEPs with the appropriate monitoring requirements will be assigned by the department.

4. Initial VOC monitoring frequency. Each CWS and NTNC shall take four consecutive quarterly samples for each VOC during each compliance period, beginning in the initial compliance period. If the initial VOC monitoring has been completed by December 31, 1992, and a system did not detect any VOC, then each GW and SW system shall take one sample annually beginning with the initial compliance period.

5. Reduced VOC monitoring for GW systems. After a minimum of three years of annual sampling, the department may allow GW systems with no previous detection of any VOC to take one sample during each compliance period.

6. VOC monitoring waivers. Each CWS and NTNC GW system that does not detect a VOC may apply to the department for a waiver from 41.5(1)*"c"*(2)"4" and "5" after completing the initial monitoring. A waiver shall be effective for no more than six years (two compliance periods). The department may also issue waivers to small systems for the initial round of monitoring for 1,2,4-trichlorobenzene. Detection is defined as greater than or equal to 0.0005 mg/L.

7. Bases of a VOC monitoring waiver. The department may grant a waiver if it finds that there is no knowledge of previous use (including transport, storage, or disposal) of the contaminant within the watershed or the system's zone of influence. If previous use of the contaminant is unknown or it has been used previously, the following factors shall be used to determine whether a waiver is granted.

- Previous analytical results.
- The system's proximity to a potential point or nonpoint source of contamination. Point sources include spills and leaks of chemicals at or near: a water treatment facility or at manufacturing, distribution, or storage facilities, from hazardous and municipal waste landfills, or from other waste handling or treatment facilities.
- The environmental persistence and transport of the contaminants.
- The number of persons served by the PWS and the proximity of a smaller system to a larger system, and
- How well the water source is protected against contamination. GW systems must consider factors such as depth of the well, the type of soil, and wellhead protection. SW systems must consider watershed protection.

8. VOC waivers for GW systems. As a condition of the monitoring waiver, a GW system must take one sample at each sampling point during the time the waiver is effective and update its vulnerability assessment, considering the factors in 41.5(1)*"c"*(2)"7." Based on this vulnerability assessment, the department must reconfirm that the system is nonvulnerable. If the department does not reconfirm within three years of the initial vulnerability determination, the waiver is invalidated and the system is required to sample annually as specified in 41.5(1)*"c"*(2)"4."

9. VOC waivers for SW systems. Each CWS and NTNC that does not detect a VOC may apply to the department for a waiver from 41.5(1)*"c"*(2)"4" after completing the initial monitoring. Systems meeting this criterion must be determined by the department to be nonvulnerable based on a vulnerability assessment during each compliance period. Each system receiving a waiver shall sample at the department-specified frequency (if any).

10. Increased VOC monitoring—quarterly. If a VOC is detected at a level exceeding 0.0005 mg/L in any sample, the system must monitor quarterly at each sampling point which resulted in a detection. The department may decrease the quarterly monitoring specified in 41.5(1)*"c"*(2)"4" provided it has determined that the system is reliably and consistently below the MCL. The department shall not make this determination unless a GW system takes a minimum of two quarterly samples and a SW system takes a minimum of four quarterly samples.

11. Increased VOC monitoring—annual. If the department determines that a system is reliably and consistently below the MCL, the system may be allowed to monitor annually. Systems that monitor annually must monitor during the quarter(s) that previously yielded the highest analytical result. Systems that have three consecutive annual samples with no detection of a contaminant may apply for a waiver as specified in 41.5(1)*"c"*(2)"6."

12. Increased VOC monitoring—vinyl chloride. GW systems that have detected one or more of the following two-carbon organic compounds: trichloroethylene, tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1-dichloroethylene shall monitor quarterly for vinyl chloride. A vinyl chloride sample shall be taken at each sampling point at which one or more of the two-carbon organic compounds was detected. If the results of the first analysis do not detect vinyl chloride, the department may reduce the quarterly vinyl chloride monitoring frequency to one sample during each compliance period. SW systems are required to monitor for vinyl chloride as specified by the department.

13. VOCs reliably and consistently below the MCL. Systems that violate the MCL requirements of 41.5(1)*"b"*(1) must monitor quarterly. After a minimum of four consecutive quarterly samples that show the system is in compliance, and a department determination that the system is reliably and consistently below the MCL, the system may monitor at the frequency and times specified in 41.5(1)*"c"*(2)"10," third unnumbered paragraph (following department approval).

(3) Routine and repeat SOC monitoring requirements. Analysis of the SOCs contaminants listed in 41.5(1)*"b"*(1) to determine MCL compliance shall be conducted as follows:

1. SOC GW monitoring protocols. GW systems shall take a minimum of one sample at every SEP. Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

2. SOC SW monitoring protocols. SW systems shall take a minimum of one sample at each SEP after treatment. Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant. For purposes of this paragraph, SW systems include systems with a combination of surface and ground sources.

3. Multiple sources. If a system draws water from more than one source and the sources are combined before distribution, it must sample at an SEP during periods of normal operating conditions. If a representative sample of all water sources cannot be obtained, as determined by the department, separate SEPs with the appropriate monitoring requirements will be assigned by the department.

4. SOC monitoring frequency. CWSs and NTNCs shall take four consecutive quarterly samples for each SOC during each compliance period. Systems serving more than 3,300 persons that do not detect an SOC in the initial compliance period may reduce the sampling frequency to a minimum of two quarterly samples in one year during each repeat compliance period. Systems serving less than or equal to 3,300 persons that do not detect an SOC in the initial compliance period may reduce the sampling frequency to a minimum of one sample during each repeat compliance period.

5. SOC monitoring waivers. Each CWS and NTNC may apply to the department for a waiver from the requirements of 41.5(1)*"c"*(3)"4." A system must reapply for a waiver for each compliance period.

6. Bases of an SOC monitoring waiver. The department may grant a waiver if it finds that there is no knowledge of previous use (including transport, storage, or disposal) of the contaminant within the watershed or zone of influence of the system. If previous use of the contaminant is unknown or it has been used previously, the following factors shall be used to determine whether a waiver is granted:

- Previous analytical results.
- The system proximity to a potential point or nonpoint source of contamination. Point sources include spills and leaks of chemicals at or near a water treatment facility or at manufacturing, distribution, or storage facilities, from hazardous and municipal waste landfills, or from other waste handling or treatment facilities. Nonpoint sources include the use of pesticides to control insect and weed pests on agricultural areas, forest lands, homes, and gardens, and other land application uses.
- The environmental persistence and transport of a pesticide or PCBs.
- How well the water source is protected against contamination due to such factors as depth of the well, the type of soil, and the well casing integrity.
- Elevated nitrate levels at the water source, and
- Use of PCBs in equipment used in the production, storage, or distribution of water.

7. Increased SOC monitoring. If an SOC is detected in any sample, then:

- Each system must monitor quarterly at each sampling point that resulted in a detection.

- The department may decrease the quarterly SOC monitoring if the system is reliably and consistently below the MCL. The department shall not make this determination unless a GW system takes a minimum of two quarterly samples and a SW system takes a minimum of four quarterly samples.
- After the department determines the system is reliably and consistently below the MCL, the system may monitor annually. Systems that monitor annually must monitor during the quarter that previously yielded the highest analytical result.
- Systems that have three consecutive annual samples with no detection of a contaminant may apply for a waiver as specified in 41.5(1)*"c"*(3)"6."
- If monitoring results in detection of one or more of certain related contaminants (aldicarb, aldicarb sulfone, aldicarb sulfoxide, heptachlor, and heptachlor epoxide), subsequent monitoring shall analyze for all related contaminants.

8. MCL violation and reliably/consistently below the MCL. Systems that violate the requirements of 41.5(1)*"b"* must monitor quarterly. After a minimum of four quarterly samples show the system is in compliance and the department determines the system is reliably and consistently below the MCL, the system shall monitor at the frequency specified in 41.5(1)*"c"*(3)"7."

(4) SOC and VOC confirmation samples. The department may require a confirmation sample for positive or negative results. If a confirmation sample is required, the result must be averaged with the first sampling result and the average must be used for the compliance determination as specified by 41.5(1)*"b"*(2). The department has discretion to disregard results of obvious sampling errors from this calculation.

(5) Grandfathered VOC and SOC data. The department may allow the use of monitoring data collected after January 1, 1988, for VOCs and January 1, 1990, for SOCs required under SDWA Section 1445 for initial monitoring compliance. If the data are generally consistent with the other requirements in this subparagraph, the department may use such data to satisfy the initial monitoring requirement for the initial compliance period beginning January 1, 1993. Systems that use grandfathered samples for VOCs and did not detect any contaminants listed in 41.5(1)*"b"*(1) shall begin monitoring annually in accordance with 41.5(1)*"c"*(2) beginning January 1, 1993.

(6) Increased VOC and SOC monitoring. The department may increase the required monitoring frequency, where necessary, to detect system variations (e.g., fluctuations in concentration due to seasonal use, changes in water source, changes to treatment facilities, or normal operation thereof).

(7) VOC and SOC vulnerability assessment criteria. Vulnerability for each PWS shall be determined by the department based upon an assessment of the following factors.

1. Previous monitoring results. A system will be classified vulnerable if any sample was analyzed to contain one or more VOCs, SOCs, or acrylamide and epichlorohydrin, except for trihalomethanes or other demonstrated DBPs.

2. Proximity of SW supplies to commercial or industrial use, disposal, or storage of VOCs or SOCs. SW supplies that withdraw water directly from reservoirs are considered vulnerable if the drainage basin upgradient and within two miles of the shoreline at the maximum water level contains major transportation facilities or any of the contaminant sources in this subparagraph. SW supplies that withdraw water directly from flowing water courses are considered vulnerable if the drainage basin upgradient and within two miles of the water intake structure contains major transportation facilities or any of the contaminant sources in this subparagraph. Major transportation facilities include but are not limited to primary highways or railroads.

3. Proximity of wells to commercial or industrial use, disposal, or storage of VOCs or SOCs. Wells that are not separated from sources of contamination by at least the following distances will be considered vulnerable.

VOC and SOC Well Separation Distances

Sources of Contamination	Shallow Wells	Deep Wells
Sanitary and industrial point discharges	400 ft	400 ft
Mechanical waste treatment plants	400 ft	200 ft
Lagoons	1,000 ft	400 ft
Chemical and mineral storage (aboveground)	200 ft	100 ft

Sources of Contamination	Shallow Wells	Deep Wells
Chemical and mineral storage including underground storage tanks on or below ground	400 ft	200 ft
Solid waste disposal site	1,000 ft	1,000 ft

4. A system is deemed to be vulnerable for a period of three years after any positive measurement of one or more VOCs or SOCs, except for trihalomethanes or other demonstrated DBPs.

(8) PCB analytical methodology. PCBs analysis shall be conducted using the methods in 41.5(1)*"b"*(1) and as follows:

1. Each system that monitors for PCBs shall analyze each sample using Method 505, 508, 508.1, or 525.2. Users of Method 505 may have more difficulty in achieving the required Aroclor detection limits than users of Method 508, 508.1, or 525.2.

2. If PCBs (as one of seven Aroclors) are detected in any sample analyzed using Method 505 or 508, the system shall reanalyze the sample using Method 508A to quantitate PCBs as decachlorobiphenyl.

PCB Aroclor Detection Limits

Aroclor	Detection Limit (mg/L)
1016	0.00008
1221	0.02
1232	0.0005
1242	0.0003
1248	0.0001
1254	0.0001
1260	0.0002

3. Compliance with the PCB MCL shall be determined based upon the quantitative results of analyses using Method 508A.

41.5(2) *Organic chemicals occurring as (nontrihalomethane) DBPs.* Reserved.

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