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EPA CONSOLIDATED REGULATIONS FOR THE CHEMICAL PHASES

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NATIONAL PRIMARY DRINKING WATER REGULATIONS

AUTHORITY: *42 U.S.C. 300f, 300g-1, 300g-2, 300g-3, 300g-4, 300g-5, 300g-6, 300j-4 and 300j-9.*

SUBPART A — GENERAL

§141.1 APPLICABILITY

This part establishes primary drinking water regulations pursuant to section 1412 of the Public Health Service Act, as amended by the Safe Drinking Water Act (Pub. L. 93-523); and related regulations applicable to public water systems.

§141.2 DEFINITIONS

"ACT" means the Public Health Service Act, as amended by the Safe Drinking Water Act, Pub. L. 93-523.

"BEST AVAILABLE TECHNOLOGY OR BAT" means the best technology, treatment techniques, or other means which the Administrator finds, after examination for efficacy under field conditions and not solely under laboratory conditions, are available (taking cost into consideration). For the purposes of setting MCLs for synthetic organic chemicals, any BAT must be at least as effective as granular activated carbon.

"COAGULATION" means a process using coagulant chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into flocs.

"COMMUNITY WATER SYSTEM" means a public water system which serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.

"COMPLIANCE CYCLE" means the nine-year calendar year cycle during which public water systems must monitor. Each compliance cycle consists of three three-year compliance periods. The first calendar year cycle begins January 1, 1993 and ends December 31, 2001; the second begins January 1, 2002 and ends December 31, 2010; the third begins January 1, 2011 and ends December 31, 2019.

"COMPLIANCE PERIOD" means a three-year [calendar year] period within a compliance cycle. Each compliance cycle has three three-year compliance periods. Within the first compliance cycle, the first compliance period runs from January 1, 1993 to December 31, 1995; the second from January 1, 1996 to December 31, 1998; the third from January 1, 1999 to December 31, 2001.

"CONTAMINANT" means any physical, chemical, or biological substance or matter in water.

"CONVENTIONAL FILTRATION TREATMENT" means a series of processes including coagulation, flocculation, sedimentation, and filtration resulting in substantial particulate removal.

"DIATOMACEOUS EARTH FILTRATION" means a process resulting in substantial particulate removal in which (1) a precoat cake of diatomaceous earth filter media is deposited on a support membrane (septum), and (2) while the water is filtered by passing through the cake on the septum, additional filter media known as body feed is continuously added to feed water to maintain the permeability of the filter cake.

"DIRECT FILTRATION" means a series of processes including coagulation and filtration but excluding sedimentation resulting in substantial particulate removal.

"FILTRATION" means a process for removing particulate matter from water by passage through porous media.

"FLOCCULATION" means a process to enhance agglomeration or collection of smaller floc particles into larger, more easily settleable particles through gentle stirring by hydraulic or mechanical means.

"GROUND WATER UNDER THE DIRECT INFLUENCE OF SURFACE WATER" means any water beneath the surface of the ground with (1) significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as *Giardia lamblia*, or (2) significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions. Direct influence must be determined for individual sources in accordance with criteria established by the State. The State determination of direct influence may be based on site-specific measurements of water quality and/or documentation of well construction characteristics and geology with field evaluation.

"HALOGEN" means one of the chemical elements chlorine, bromine, or iodine.

"INITIAL COMPLIANCE PERIOD" means the first full three-year compliance period which begins at least 18 months after promulgation, except for contaminants listed at §§ 141.61(a)(19)-(21), (c)(19)-(33), and 141.62(b)(11)-(16), initial compliance period means the first full three-year compliance period after promulgation for systems with 150 or more service connections (January 1993—December 1995), and the first full three-year compliance period after the effective date of the regulation (January 1996—December 1998) for systems having fewer than 150 service connections.

"MAXIMUM CONTAMINANT LEVEL OR MCL" means the maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system, except in the case of turbidity where the maximum permissible level is measured at the point of entry to the distribution

system. Contaminants added to the water under circumstances controlled by the user, except those resulting form corrosion of piping and plumbing caused by water quality, are excluded from this definition.

"MAXIMUM CONTAMINANT LEVEL GOAL OR MCLG" means the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. Maximum contaminant level goals are nonenforceable health goals.

"NEAR THE FIRST SERVICE CONNECTION" means at one of the 20 percent of all service connections in the entire system that are nearest the water supply treatment facility, as measured by water transport time within the distribution system.

"NON-COMMUNITY WATER SYSTEM OR NCWS" means a public water system that is not a community water system.

"NON-TRANSIENT NON-COMMUNITY WATER SYSTEM OR NTNCWS" means a public water system that is not a community water system and that regularly serves at least 25 of the same persons over 6 months per year.

"PERFORMANCE EVALUATION SAMPLE" means a reference sample provided to a laboratory for the purpose of demonstrating that the laboratory can successfully analyze the sample within limits of performance specified by the Agency. The true value of the concentration of the reference material is unknown to the laboratory at the time of the analysis.

"PERSON" means an individual; corporation; company; association; partnership; municipality; or State, Federal or tribal agency.

"POINT-OF-ENTRY TREATMENT DEVICE" is a treatment device applied to the drinking water entering a house or building for the purpose of reducing contaminants in the drinking water distributed throughout the house or building.

"POINT-OF-USE TREATMENT DEVICE" is a treatment device applied to a single tap used for the purpose of reducing contaminants in drinking water at that one tap.

"PUBLIC WATER SYSTEM" means a system for provision to the public of piped water for human consumption, if such system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least 60 days out of the year. Such term includes (1) any collection, treatment, storage, and distribution facilities under control of the operator of such system and used primarily in connection with such system, and (2) any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. A public water system is either a "community water system" or a "noncommunity water system."

"REPEAT COMPLIANCE PERIOD" means any subsequent compliance period after the initial compliance period.

"SANITARY SURVEY" means an onsite review of the water source, facilities, equipment, operation and maintenance of a public water system for the purpose of evaluating the adequacy of such source, facilities, equipment, operation and maintenance for producing and distributing safe drinking water.

"SEDIMENTATION" means a process for removal of solids before filtration by gravity or separation.

"SLOW SAND FILTRATION" means a process involving passage of raw water through a bed of sand at low velocity (generally less than 0.4 m/h) resulting in substantial particulate removal by physical and biological mechanisms.

"STATE" means the agency of the State or Tribal government which has jurisdiction over public water systems. During any period when a State or Tribal government does not have primary enforcement responsibility pursuant to Section 1413 of the Act, the term "State" means the Regional Administrator, U.S. Environmental Protection Agency.

"SUPPLIER OF WATER" means any person who owns or operates a public water system.

"SURFACE WATER" means all water which is open to the atmosphere and subject to surface runoff.

"SYSTEM WITH A SINGLE SERVICE CONNECTION" means a system which supplies drinking water to consumers via a single service line.

"TOTAL TRIHALOMETHANES (TTHM)" means the sum of the concentration in milligrams per liter of the trihalomethane compounds (trichloromethane [chloroform], dibromochloromethane, bromodichloromethane and tribromomethane [bromoform]), rounded to two significant figures.

"TRANSIENT NON-COMMUNITY WATER SYSTEM (TWS)" means a non-community water system that does not regularly serve at least 25 of the same persons over six months per year.

"TRIHALOMETHANE (THM)" means one of the family of organic compounds, named as derivatives of methane, wherein three of the four hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure.

§141.3 COVERAGE

This part shall apply to each public water system, unless the public water system meets all of the following conditions:

§141.3(a) Consists only of distribution and storage facilities (and does not have any collection and treatment facilities);

§141.3(b) Obtains all of its water from, but is not owned or operated by, a public water system to which such regulations apply:

§141.3(c) Does not sell water to any person; and

§141.3(d) Is not a carrier which conveys passengers in interstate commerce.

§141.4 VARIANCES AND EXEMPTIONS

§141.4(a) Requirements: Variances or exemptions from certain provisions of these regulations may be granted pursuant to sections 1415 and 1416 of the Act by the entity with primary enforcement responsibility, except that variances or exemptions from the MCL for total coliforms and variances from any of the treatment technique requirements of Subpart H of this part may not be granted.

§141.5 SITING REQUIREMENTS

Before a person may enter into a financial commitment for or initiate construction of a new public water system or increase the capacity of an existing public water system, he shall notify the State and, to the extent practicable, avoid locating part or all of the new or expanded facility at a site which:

§141.5(a) Disasters: Is subject to a significant risk form earthquakes, floods, fires or other disasters which could cause a breakdown of the public water system or a portion thereof; or

§1141.5(b) Flooding: Except for intake structures, is within the floodplain of a 100-year flood or is lower than any recorded high tide where appropriate records exist. The U.S. Environmental Protection Agency will not seek to override land use decisions affecting public water systems siting which are made at the State or local government levels.

§141.6 EFFECTIVE DATES

§141.6(a) Except as provided in paragraphs (b) through (g) of this section and in paragraph (a)(2) of section 141.80, the regulations set forth in this part shall take effect on June 24, 1977.

§141.6(b) Reference to THMs.

§141.6(c) The regulations set forth in §§141.11(a), (d), and (e); 141.14(a)(1); 141.14(b)(1)(i); 141.14(b)(2)(i); 141.14(d); 141.23(a)(3) and (a)(4); 141.23(f); 141.23(a)(3); 141.24(e) and (f); 141.27(a); 141.31(a), (d) and (e); 141.32(b)(3); and 14132(d) shall take effect immediately upon promulgation.

§141.6(d) Reference to Sodium.

§141.6(e) Reference to Corrosivity.

§141.6(f) The regulations set forth in §141.11(c) and §141.23(g) are effective May 2, 1986. Section 141.23(g)(4) is effective October 2, 1987.

§141.6(g) The regulations contained in Section 141.6 paragraph (c) of the table in 141.12 and 141.62(b)(1) are effective July 1, 1991. The regulations contained in §§141.11(b), 141.23, 141.24, 142.57(b), 143.4(b)(12) and (b)(13) are effective July 30, 1992. The regulations contained in the revisions to §§141.32(e)(16), (25) through (27) and (46); 141.61(c)(16); and 141.62(b)(3) are effective January 1, 1993. The effective date of regulations contained in §§141.61(c)(2), (3) and (4) is postponed.

§141.6(h) Regulations for the analytic methods listed at §141.23(k)(4) for measuring antimony, beryllium, cyanide, nickel, and thallium are effective August 17, 1992. The analytic methods under §141(f)(16) for dichloromethane, 1,2,4-trichlorobenzene, and 1,1,2-trichloroethane are effective August 17, 1992. The analytic methods under §141.24(h)(12) for measuring dalapon, dinoseb, diquat, endothall, endrin, glyphosate, oxamyl, picloram, simazine, benzo(a)pyrene, di(2-ethylhexyl)adipate, di(2-ethylhexyl)phthalate, hexachlorobenzene, hexachlorocyclopentadiene, and 2,3,7,8-TCDD are effective August 17, 1992. The revision to §141.12(a) dated July 17, 1992 is effective August 17, 1992.

SUBPART B — MAXIMUM CONTAMINANT LEVELS (MCLs)

§141.11 MCLs for IOCs

§141.11(a) Applicability: The MCL for nitrate is applicable to both community water systems and non-community water systems except as provided by in paragraph (d) of this section. The levels for the other inorganic chemicals apply only to community water systems. Compliance with MCLs is calculated pursuant to §141.23.

§141.11(b) IPDWR Arsenic MCL: 0.05 mg/l.

§141.11(c) Revised NPDWR Fluoride MCL: The maximum contaminant level for fluoride is 4.0 mg/l. See 40 CFR 143.3, which establishes a secondary maximum contaminant level at 2.0 mg/l.

§141.11(d) Nitrate in Non-Community Water Systems: At the discretion of the State, nitrate levels not to exceed 20 mg/l may be allowed in a non-community water system if the supplier of water demonstrates to the satisfaction of the State that:

§141.11(d)(1) Availability to Infants: Such water will not be available to children under 6 months of age; and

§141.11(d)(2) Continuous Posting: There will be continuous posting of the fact that nitrate levels exceed 10 mg/l and the potential health effects of exposure; and

§141.11(d)(3) Notice to Health Authorities: Local and State public health authorities will be notified annually of nitrate levels that exceed 10 mg/l; and

§141.11(d)(4) Adverse Effects: No adverse health effects shall result.

§141.12 MCLs FOR ORGANIC CHEMICALS

The following are the maximum contaminant levels for organic chemicals. The maximum contaminant levels for organic chemicals in paragraph (a) of this section apply to all community water systems. Compliance with the maximum contaminant level in paragraph (a) of this section is calculated pursuant to §141.24. The maximum contaminant level for total trihalomethanes in paragraph (c) of this section applies only to community water systems which serve a population of 10,000 or more individuals and which add a disinfectant (oxidant) to the water in any part of the drinking water treatment process. Compliance with the maximum contaminant level for total trihalomethanes is calculated pursuant to §141.30.

Contaminant Name	Maximum Contaminant Level (milligrams per liter)
(a) Chlorinated hydrocarbons: Endrin (1,2,3,4,10,10-hexachloro-6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-1,4-endo, endo-5,8-dimethano naphthalene)	0.0002
(b) [Reserved]	
(c) Total trihalomethanes (the sum of the concentrations of bromodichloromethane, dibromochloromethane, tribromomethane (bromoform) and trichloromethane (chloroform)	0.10

SUBPART C - MONITORING AND ANALYTICAL REQUIREMENTS

§141.23 INORGANIC CHEMICALS: SAMPLING & ANALYTICAL REQUIREMENTS

Community water systems shall conduct monitoring to determine compliance with the maximum contaminant levels specified in §141.62 in accordance with this section. Non-transient, non-community water systems shall conduct monitoring to determine compliance with the maximum contaminant levels specified in §141.62 in accordance with this section. Transient, non-community water systems shall conduct monitoring to determine compliance with the nitrate and nitrite maximum contaminant levels in §141.11 and §141.62 (as appropriate) in accordance with this section.

§141.23(a) Sampling Protocol: Monitoring shall be conducted as follows:

§141.23(a)(1) Ground Water Sampling Points: Groundwater 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 sampling point) beginning in the *initial* compliance period starting January 1, 1993. The system shall take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

§141.23(a)(2) Surface Water Sampling Points: Surface water systems shall take a minimum of one sample at every entry point to the distribution system after any application of treatment or in the distribution system at a point which is representative of each source after treatment (hereafter called a sampling point) beginning in the *initial* compliance period. The system shall take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

Note: For purposes of this paragraph, surface water systems include systems with a combination of surface and ground sources.

§141.23(a)(3) Multiple Sources: If a system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water is representative of all sources being used).

§141.23(a)(4) Composite Sampling: The State may reduce the total number of samples which must be analyzed by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed, provided that the detection limit of the method used for analysis is less than one-fifth of the MCL. Compositing of samples must be done in the laboratory.

§141.23(a)(4)(i) Follow-Up Sampling: If the concentration in the composite sample is greater than or equal to one-fifth of the MCL of any inorganic chemical, then a follow-up sample must be taken within 14 days at each sampling point included in the composite. These samples must be analyzed for the contaminants which exceeded one-fifth of the MCL in the composite sample. Detection limits for each analytical method and MCLs for each inorganic contaminant are the following:

DETECTION LIMITS FOR INORGANIC CONTAMINANTS

Contaminant	MCL (mg/L)	Methodology	Detection Limit (mg/L)
Antimony	0.006	Atomic Absorption; Furnace Atomic Absorption; Platform ICP-Mass Spectrometry Hydride-Atomic Absorption	0.003 0.0008(6) 0.0004 0.001
Asbestos	7 MFL(2)	Transmission Electron Microscopy	0.01 MFL
Barium	2	Atomic Absorption; Furnace Atomic Absorption; Direct Aspiration Inductively Coupled Plasma	0.002 0.1 0.002(0.001)(1)
Beryllium	0.004	Atomic Absorption; Furnace Atomic Absorption; Platform Inductively Coupled Plasma(3) ICP-Mass Spectrometry	0.0002 0.00002(6) 0.0003 0.0003
Cadmium	0.005	Atomic Absorption; Furnace Inductively Coupled Plasma	0.0001 0.001(1)
Chromium	0.1	Atomic Absorption; Furnace Inductively Coupled Plasma	0.001 0.007(0.001)(1)
Cyanide	0.2	Distillation, Spectrophotometric(4) Distillation, Automated, Spectrophotometric(4) Selective Electrode(4) Distillation, Amenable, Spectrophotometric(5)	0.02 0.005 0.05 0.02
Fluoride	4.0	Colormetric SPADNS Potentiometric ion selective electrode Automated Alizarin fluoride blue Automated ion selective electrode	1.0 1.0 1.0 1.0
Mercury	0.002	Manual Cold Vapor Technique Automated Cold Vapor Technique	0.0002 0.0002
Nickel	0.1	Atomic Absorption; Furnace Atomic Absorption; Platform Inductively Coupled Plasma(3) ICP-Mass Spectrometry	0.001 0.0006(6) 0.005 0.0005
Nitrate	10 (as N)	Manual Cadmium Reduction Automated Hydrazine Reduction Automated Cadmium Reduction Ion Selective Electrode Ion Chromatography	0.01 0.01 0.05 1 0.01
Nitrite	1 (as N)	Spectrophotometric Automated Cadmium Reduction Manual Cadmium Reduction Ion Chromatography	0.01 0.05 0.01 0.004
Selenium	0.05	Atomic Absorption; Furnace Atomic Absorption; Gaseous Hydride	0.002 0.002
Thallium	0.002	Atomic Absorption; Furnace Atomic Absorption; Platform ICP-Mass Spectrometry	0.001 0.0007(6) 0.0003

(1) Using concentration technique in Appendix A to EPA Method 200.7.
(2) MFL = million fibers per liter >10 μm.
(3) Using a 2X preconcentration step as noted in Method 200.7. Lower MDLs may be achieved when using a 4X preconcentration.
(4) Screening method for total cyanides.
(5) Measures "free" cyanides.
(6) Lower MDLs are reported using stabilized temperature graphite furnace atomic asorption.

§141.23(a)(4)(ii) If the population served by the system is >3,300 persons, then compositing may only be permitted by the State at sampling points within a single system. In systems serving ≤3,300 persons, the State may permit compositing among different systems provided the 5-sample limit is maintained.

§141.23(a)(4)(iii) If duplicates of the original sample taken from each sampling point used in the composite are available, the system may use this instead of resampling. The duplicates must be analyzed and the results reported to the State within 14 days of collection.

§141.23(a)(5) Citations for IOC Monitoring Requirements: The frequency of monitoring for asbestos shall be in accordance with paragraph (b) of this section; the frequency of monitoring for barium, cadmium, chromium, fluoride, mercury, and selenium shall be in accordance with paragraph (c) of this section; the frequency of monitoring for nitrate shall be in accordance with paragraph (d) of this section; and the frequency of monitoring for nitrite shall be in accordance with paragraph (e) of this section.

Asbestos

§141.23(b) Asbestos Sampling: The frequency of monitoring conducted to determine compliance with the maximum contaminant level for asbestos specified in §141.62(b) shall be conducted as follows:

§141.23(b)(1) Initial Sampling Frequency: Each community and non-transient, non-community water system is required to monitor for asbestos during the first three-year compliance period of each nine-year compliance cycle beginning in the compliance period starting January 1, 1993.

§141.23(b)(2) Sampling During Waiver: If the system believes it is not vulnerable to either asbestos contamination in its source water or due to corrosion of asbestos-cement pipe, or both, it may apply to the State for a waiver of the monitoring requirement in paragraph (b)(1) of this section. If the State grants the waiver, the system is not required to monitor.

§141.23(b)(3) Bases of an Asbestos Waiver: The State may grant a waiver based on a consideration of the following factors:

(i) Potential asbestos contamination of the water source, and

(ii) The use of asbestos-cement pipe for finished water distribution and the corrosive nature of the water.

§141.23(b)(4) Effect of an Asbestos Waiver: A waiver remains in effect until the completion of the three-year compliance period. Systems not receiving a waiver must monitor in accordance with the provisions of paragraph (b)(1) of this section.

§141.23(b)(5) Distribution System Vulnerability for Asbestos: A system vulnerable to asbestos contamination due solely to corrosion of asbestos-cement pipe shall take one sample at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.

§141.23(b)(6) Source Water Vulnerability for Asbestos: A system vulnerable to asbestos contamination due solely to source water shall monitor in accordance with the provision of paragraph (a) of this section.

§141.23(b)(7) Combined Asbestos Vulnerability: A system vulnerable to asbestos contamination due both to its source water supply and corrosion of asbestos-cement pipe shall take one sample at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.

§141.23(b)(8) Exceedance of the Asbestos MCL: A system which exceeds the maximum contaminant levels as determined in §141.23(i) of this section shall monitor quarterly beginning in the next quarter after the violation occurred.

§141.23(b)(9) Asbestos Reliably & Consistently Below the MCL: The State may decrease the quarterly monitoring requirement to the frequency specified in paragraph (b)(1) of this section provided the State has determined that the system is reliably and consistently below the maximum contaminant level. In no case can a State make this determination unless a groundwater system takes a minimum of two quarterly samples and a surface (or combined surface/ground) water system takes a minimum of four quarterly samples.

§141.23(b)(10) Grandfathered Asbestos Data: If monitoring data collected after January 1, 1990 are generally consistent with the requirements of §141.23(b), then the State may allow systems to use that data to satisfy the monitoring requirement for the initial compliance period beginning January 1, 1993.

IOCs

§141.23(c) Sampling Frequency for IOCs: The frequency of monitoring conducted to determine compliance with the maximum contaminant levels in §141.62 for antimony, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium and thallium shall be as follows:

§141.23(c)(1) IOCs Sampling Frequency: Groundwater systems shall take one sample at each sampling point during each compliance period. Surface water systems (or combined surface/ground) shall take one sample annually at each sampling point.

§141.23(c)(2) IOCs Sampling Waiver: The system may apply to the State for a waiver from the monitoring frequencies specified in paragraph (c)(1) of this section. States may grant waivers for cyanide monitoring upon

determining that a water system is not vulnerable to cyanide contamination.

§141.23(c)(3) IOC Sampling During a Waiver: A condition of the waiver shall require that a system shall take a minimum of one sample while the waiver is effective. The term during which the waiver is effective shall not exceed one compliance cycle (i.e., nine years).

§141.23(c)(4) IOC Waivers & Grandfathered Data: The State may grant a waiver provided surface water systems have monitored annually for at least three years and groundwater systems have conducted a minimum of three rounds of monitoring. (At least one sample shall have been taken since January 1, 1990.) Both surface and groundwater systems shall demonstrate that all previous analytical results were less than the maximum contaminant level. Systems that use a new water source are not eligible for a waiver until three rounds of monitoring from the new source have been completed.

§141.23(c)(5) IOC Sampling Frequency During a Waiver: In determining the appropriate reduced monitoring frequency, the State shall consider:

(i) Reported concentrations from all previous monitoring;

(ii) The degree of variation in reported concentrations; and

(iii) Other factors which may affect contaminant concentrations such as changes in groundwater pumping rates, changes in the system's configuration, changes in the system's operating procedures, or changes in stream flows or characteristics.

§141.23(c)(6) Effect of an IOC Waiver: A decision by the State to grant a waiver shall be made in writing and shall set forth the basis for the determination. The determination may be initiated by the State or upon an application by the public water system. The public water system shall specify the basis for its request. The State shall review and, where appropriate, revise its determination of the appropriate monitoring frequency when the system submits new monitoring data or when other data relevant to the system's appropriate monitoring frequency become available.

§141.23(c)(7) Exceedance of an IOC MCL: Systems which exceed the maximum contaminant levels as calculated in §141.23(i) of this section shall monitor quarterly beginning in the next quarter after the violation occurred.

§141.23(c)(8) IOCs Reliably & Consistently Below the MCL: The State may decrease the quarterly monitoring requirement to the frequencies specified in paragraphs (c)(1) and (c)(2) of this section provided it has determined that the system is reliably and consistently below the maximum contaminant level. In no case can a State make this determination unless a groundwater system takes a minimum of two quarterly samples and a surface water system takes a minimum of four quarterly samples.

Nitrate

§141.23(d) Sampling Frequency for Nitrate: All public water systems (community; non-transient, non-community; and transient, non-community systems) shall monitor to determine compliance with the maximum contaminant level for nitrate in §141.62.

§141.23(d)(1) Initial Nitrate Sampling: Community and non-transient, non-community water systems served by groundwater systems shall monitor annually beginning January 1, 1993; systems served by surface water shall monitor quarterly beginning January 1, 1993.

§141.23(d)(2) Ground Water Repeat Nitrate Sampling: For community and non-transient, non-community water systems, the repeat monitoring frequency for ground water systems shall be quarterly for at least one year following any one sample in which the concentration is ≥50 percent of the MCL. The State may allow a groundwater system to reduce the sampling frequency to annually after four consecutive quarterly samples are reliably and consistently less than the MCL.

§141.23(d)(3) Repeat Nitrate SW Sampling: For community and non-transient, non-community water systems, the State may allow a surface water system to reduce the sampling frequency to annually if all analytical results from four consecutive quarters are <50 percent of the MCL. A surface water system shall return to quarterly monitoring if any one sample is ≥50 percent of the MCL.

§141.23(d)(4) Transient Nitrate Sampling Frequency: Each transient non-community water system shall monitor annually beginning January 1, 1993.

§141.23(d)(5) Scheduling Annual Nitrate Repeat Samples: After the initial round of quarterly sampling is completed, each community and non-transient non-community system which is monitoring annually shall take subsequent samples during the quarter(s) which previously resulted in the highest analytical result.

Nitrite

§141.23(e) Sampling Frequency for Nitrite: All public water systems (community; non-transient, non-community; and transient, non-community systems) shall monitor to determine compliance with the maximum contaminant level for nitrite in §141.62(b).

§141.23(e)(1) Initial Nitrite Sampling: All public water systems shall take one sample at each sampling

point in the compliance period beginning January 1, 1993 and ending December 31, 1995.

§141.23(e)(2) Under the Nitrite Trigger Level: After the initial sample, systems where an analytical result for nitrite is <50 percent of the MCL shall monitor at the frequency specified by the State.

§141.23(e)(3) Above the Nitrite Trigger Level: For community, non-transient, non-community, and transient non-community water systems, the repeat monitoring frequency for any water system shall be quarterly for at least one year following any one sample in which the concentration is ≥50 percent of the MCL. The State may allow a system to reduce the sampling frequency to annually after determining the system is reliably and consistently less than the MCL.

§141.23(e)(4) Scheduling of Annual Nitrite Repeat Samples: Systems which are monitoring annually shall take each subsequent sample during the quarter(s) which previously resulted in the highest analytical result.

§141.23(f), (g), and (h) IOC CONFIRMATION SAMPLING

§141.23(f)(1) Deadline for IOCs Confirmation Samples: Where the results of sampling for asbestos, barium, cadmium, chromium, fluoride, mercury, or selenium indicate an exceedance of the maximum contaminant level, the State may require that one additional sample be collected as soon as possible after the initial sample was taken (but not to exceed two weeks) at the same sampling point.

§141.23(f)(2) Deadline for Nitrate & Nitrite Confirmation Samples: Where nitrate or nitrite sampling results indicate an exceedance of the MCL, the system shall take a confirmation sample within 24 hours of the system's receipt of notification of the analytical results of the first sample. Systems unable to comply with the 24-hour sampling requirement must immediately notify the consumers served by the area served by the public water system in accordance with §141.32. Systems exercising this option must take and analyze a confirmation sample within two weeks of notification of the analytical results of the first sample.

§141.23(f)(3) Compliance Calculations & Confirmation Samples: If a State-required confirmation sample is taken for any contaminant, then the results of the initial and confirmation sample shall be averaged. The resulting average shall be used to determine the system's compliance in accordance with paragraph (i) of this section. States have the discretion to delete results of obvious sampling errors.

§141.23(g) State Designation of Increased Sampling Frequency: The State may require more frequent monitoring than specified in paragraphs (b), (c), (d) and (e) of this section or may require confirmation samples for positive and negative results at its discretion.

§141.23(h) System Request for Increased Sampling Frequency: Systems may apply to the State to conduct more frequent monitoring than the minimum monitoring frequencies specified in this section.

§141.23(i) COMPLIANCE CALCULATIONS:

Compliance with §§ 141.11 or 141.62(b) (as appropriate) shall be determined based on the analytical result(s) obtained at each sampling point.

§141.23(i)(1) Sampling Frequencies Greater Than Annual: For systems which are conducting monitoring at a frequency greater than annual, compliance with the maximum contaminant level for antimony, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium or thallium is determined by a running annual average at any sampling point. If the average of any sampling point is greater than the MCL, then the system is out of compliance. If any one sample would cause the annual average to be exceeded, then the system is out of compliance immediately. Any sample below the method detection limit shall be calculated at zero for the purpose of determining the annual average.

§141.23(i)(2) Sampling Frequencies of Annual or Less: For systems which are monitoring annually, or less frequently, the system is out of compliance with the maximum contaminant level for asbestos, barium, cadmium, chromium, fluoride, mercury, selenium or thallium if the level of a contaminant at any sampling point is greater than the MCL. If a confirmation sample is required by the State, the determination of compliance will be based on the average of the two samples.

§141.23(i)(3) Compliance Calculations for Nitrate & Nitrite: Compliance with the maximum contaminant levels for nitrate and nitrite is determined based on one sample if the levels of these contaminants is below the MCLs. If the levels of nitrate or nitrite exceed the MCLs in the initial sample, a confirmation sample is required in accordance with paragraph (f)(2) of this section, and compliance shall be determined based on the average of the initial and confirmation samples.

§141.23(i)(4) Separable Distribution Systems: If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the State may allow the system to give public notice to only the area served by that portion of the system which is out of compliance.

§ 141.23(j) STATE MONITORING PLANS:

§141.23(j) State Designated Sampling Schedules: Each public water system shall monitor at the time designated by the State during each compliance period.

§141.23(k) INORGANIC ANALYSIS:

§141.23(k)(1) Analytical Methods for IOCs: Analysis for asbestos, barium, cadmium, chromium, mercury, nitrate, nitrite, and selenium shall be conducted using the following methods: ***[Ed. note: The provisions of this section have been replaced by the provisions in §141.23(k)(4).]***

§141.23(k)(2) Analytical Methods for Arsenic: Analyses for arsenic shall be conducted using the following methods:

Method[1] 206.2, Atomic Absorption Furnace Technique; or Method[1] 206.3, or Method[4] D2972-88B, or Method[2] 307A, or Method[3] I-1062-85, Atomic Absorption--Gaseous Hydride; or Method[1] 206.4, or Method[4] D-2972-88A, or Method[2] 307B, Spectrophotometric, Silver Diethyl-dithiocarbamate; or Method 200.7A, Inductively Coupled Plasma Technique[5].

§141.23(k)(3) Analytical Methods for Fluoride: Analysis for fluoride shall be conducted using the following methods:

(1) "Methods of Chemical Analysis of Water and Wastes," EPA Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268 (EPA-600/4-79-020), March 1979. Available from ORD Publications, CERI, EPA, Cincinnati, Ohio 45268. For approved analytical procedures for metals, the technique applicable to total metals must be used.

(2) "Standard Methods for the Examination of Water and Wastewater," 16th Edition, American Public Health Association, American Water Works Association, Water Pollution Control Federation, 1985.

(3) Techniques of Water-Resources Investigation of the United States Geological Survey, Chapter A-1, "Methods for Determination of Inorganic Substances in Water and Fluvial Sediments," Book 5, 1979, Stock #014-001-03177-9. Available from Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

(4) Annual Book of ASTM Standards, part 31 Water, American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.

(5) Appendix to Method 200.7, March 1987, U.S. EPA, Environmental Monitoring Systems Laboratory, Cincinnati, OH 45268.

§141.23(k)(4) Analytical Methods for IOCs: Analysis for the listed inorganic contaminants shall be conducted using the following methods (*see table on next page*):

INORGANIC CONTAMINANTS ANALYTICAL METHODS

Contaminant	Methodology	EPA [1,5,12]	ASTM [2]	SM [3]	USGS [4]	Other
Antimony	Atomic Absorption; Furnace[6] Atomic Absorption; Platform[6] ICP-Mass Spectrometry[6] Hydride-Atomic Absorption[10]	204.2[1] 200.9[5] 200.8[5]	 D-3697-87	3113		
Asbestos	Transmission Electron Microscopy	EPA[12]				
Barium	Atomic Absorption; Furnace[6] Atomic Absorption; Direct[6] Inductively Coupled Plasma[6]	208.2[1] 208.1[1] 200.7[5]		3113B 3111D 3120		
Beryllium	Atomic Absorption; Furnace[6] Atomic Absorption; Platform[6] Inductively Coupled Plasma [6] ICP-Mass Spectrometry[6]	210.2[1] 200.9[5] 200.7[5] 200.8[5]	D-3645-84B	3113 3120		
Cadmium	Atomic Absorption; Furnace[6] Inductively Coupled Plasma[6]	213.2[1] 200.7[5]		3113B		
Chromium	Atomic Absorption; Furnace[6] Inductively Coupled Plasma[6]	218.2[1] 200.7[5]		3113B 3120		
Cyanide	Distillation, Spec. Distillation, Selective Electrode Distillation, Amenable, Spec. Distillation, Automated, Spec.	335.2[1] 335.1[1] 335.3[1]	D-2036-89A D-2036-89A D-2036-89B	4500-CN-D 4500-CN-F 4500-CN-G 4500-CN-E	I330085	Distillation, Automated, Spec.335.3[1]4500-CN-E
Mercury	Manual Cold Vapor Technique[10] Automated Cold Vapor Technique[10]	245.1[1] 245.2[1]	D3223-86	3112B		
Nickel	Atomic Absorption; Furnace[6] Atomic Absorption; Platform[6] Atomic Absorption; Direct[6] Inductively Coupled Plasma[6] ICP-Mass Spectrometry[6]	249.2[1] 200.9[5] 249.1[1] 200.7[5] 200.8[5]		3113 3111B 3120		
Nitrate	Manual Cadmium Reduction Automated Hydrazine Reduction Automated Cadmium Reduction Ion Selective Electrode Ion Chromatography	353.3[1] 353.1[1] 353.2[1] 300.0[11]	D3867-90 D3867-90	4500-NO_3-E 4500-NO_3-F	 WeWWG/5880[7]	 B-1011[8]
Nitrite	Spectophometric Automated Cadmium Reduction Manual Cadmium Reduction Ion Chromatography	354.1[1] 353.2[1] 353.3[1] 300.0[11]	 D3867-90 D3867-90	 4500-NO_3-F 4500-NO_3-E		 B-1011[8]
Selenium	Hydride-Atomic Absorption[10] Atomic Absorption; Furnace[6, 11]	270.2[1]	D3859-84A D3859-88	3114B 3113B		
Thallium	Atomic Absorption; Furnace[5] Atomic Absorption; Platform[6] ICP-Mass Spectrometry[6]	279.2[1] 200.9[5] 200.8[5]		3113		

(Continued on next page -- footnotes only)

(1) Methods of Chemical Analysis of Water and Wastes," EPA Environmental Monitoring Systems Laboratory, Cincinnati, OH 45268 March 1983, EPA-600/4-79-020.

(2) Annual Book of ASTM Standards, Vols. 11.01 and 11.02, 1991, American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

(3) "Standard Methods for the Examination of Water and Wastewater," 17th edition, American Public Health Association, American Water Works Association, Water Pollution Control Federation, 1989.

(4) Techniques of Water Resources Investigations of the U.S. Geological Survey, "Methods for Determination of Inorganic Substances in Water and Fluvial Sediments," Book 5, Chapter A-1, Third Edition, 1989. Available at Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

(5) "Methods for the Determination of Metals in Environmental Samples." Available at NTIS, PB 91-231498.

(6) Samples that contain less than 1 NTU (nephelometric turbidity unit) and are properly preserved (conc HNO_3 to pH <2) may be analyzed directly (without digestion) for total metals, otherwise, digestion is required. Turbidity must be measured on the preserved samples just prior to the initiation of metal analysis. When digestion is required, the total recoverable technique as defined in the method must be used.

(7) "Orion Guide to Water and Wastewater Analysis." Form WeWWG/5880, p. 5, 1985. Orion Research, Inc., Cambridge, MA.

(8) "Waters Test Method for Determination of Nitrite/Nitrate in Water Using Single Column Ion Chromatography, Method B-1011, Millipore Corporation, Waters Chromatography Division, 34 Maple Street, Milford, MA 01757.

(9) For the gaseous hydride determinations of antimony and selenium and for the determination of mercury by the cold vapor techniques, the proper digestion technique as defined in the method must be followed to ensure the element is in the proper state for analyses.

(10) Add 2 ml of 30% H_2O_2 and an appropriate concentration of matrix modifier $Ni(NO_2) + 6H_20$ (nickel nitrate) to samples.

(11) "Method 300. Determination of Inorganic Anions in Water by Ion Chromatography." Inorganic Chemistry Branch, Environmental Monitoring Systems Laboratory. August 1991.

(12) "Analytical Method For Determination of Asbestos Fibers in Water," EPA-600/4-83-043, September 1983, U.S. EPA Environmental Research Laboratory, Athens, GA 30613.

§141.23(k)(5) IOC Sample Holding Times & Preservation Methods: Sample collection for antimony, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite, selenium, and thallium under this section shall be conducted using the sample preservation, container, and maximum holding time procedures specified in the table below:

Contaminant	Preservative [1]	Container [2]	Maximum Holding Time [3]
Antimony	Conc HNO_3 to pH <2	P or G	6 months
Asbestos	Cool, 4°C	P or G	---
Barium	Conc HNO_3 to pH <2	P or G	6 months
Beryllium	Conc HNO_3 to pH <2	P or G	6 months
Cadmium	Conc HNO_3 to pH <2	P or G	6 months
Chromium	Conc HNO_3 to pH <2	P or G	6 months
Cyanide	Cool, 4°C, NaOH to pH >12 [4]	P or G	14 days
Fluoride	None	P or G	1 month
Mercury	Conc HNO_3 to pH <2	P or G	28 days
Nickel	Conc HNO_3 to pH <2	P or G	6 months
Nitrate			
Chlorinated	Cool, 4°C	P or G	28 days
Non-chlorinated	Conc H_2SO_4 to pH <2	P or G	14 days
Nitrite	Cool, 4°C	P or G	48 hours
Selenium	Conc HNO_3 to pH <2	P or G	6 months
Thallium	Conc HNO_3 to pH <2	P or G	6 months

(1) If HNO_3 cannot be used because of shipping restrictions, sample may be initially preserved by icing and immediately shipping it to the laboratory. Upon receipt in the laboratory, the sample must be acidified with conc HNO_3 to pH <2 and held for 16 hours before analysis.
(2) P = plastic, hard or soft; G = glass, hard or soft.
(3) In all cases, samples should be analyzed as soon after collection as possible.
(4) See method(s) for the information for preservation.

§141.23(k)(6) Laboratory Certification: Analysis under this section shall only be conducted by laboratories that have been certified by EPA or the State. Laboratories may conduct sample analysis under provisional certification until January 1, 1996. To receive certification to conduct analyses for antimony, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite and selenium and thallium, the laboratory must:

(i) Analyze Performance Evaluation samples which include those substances provide by EPA Environmental Monitoring Systems Laboratory or equivalent samples provided by the State.

(ii) Achieve quantitative results on the analyses that are within the following acceptance limits:

Contaminant	Acceptance Limit
Antimony	± 30% at ≥0.006 mg/l
Asbestos	2 standard deviations based on study statistics
Barium	± 15% at ≥0.15 mg/l
Beryllium	± 15% at ≥0.001 mg/l
Cadmium	± 20% at ≥0.002 mg/l
Chromium	± 15% at ≥0.01 mg/l
Cyanide	± 25% at ≥0.1 mg/l
Fluoride	± 10% at 1 to 10 mg/l
Mercury	± 30% at ≥0.0005 mg/l
Nickel	± 15% at ≥0.01 mg/l
Nitrate	± 10% at ≥0.4 mg/l
Nitrite	± 15% at ≥0.4 mg/l
Selenium	± 20% at ≥0.01 mg/l
Thallium	± 30% at ≥0.002 mg/l

§141.23(l) Sampling Requirements for Arsenic: Analysis for the purpose of determining compliance with §141.11 shall be conducted using the requirements specified in paragraphs (1) through (q) of this section.

§141.23(l)(1) IOC Surface Water Sampling: Analysis for all community water systems utilizing surface water sources shall be completed by June 24, 1978. These analyses shall be repeated at yearly intervals.

§141.23(l)(2) IOC Ground Water Sampling: Analyses for all community water systems utilizing only ground water sources shall be completed by June 24, 1979. These analyses shall be repeated at three year intervals.

§141.23(l)(3) NCWS Sampling: For non-community water systems, whether supplied by surface or ground sources, analyses for nitrate shall be completed by December 24, 1980. These analyses shall be repeated at intervals determined by the State.

§141.23(l)(4) State Authority: The State has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by their sanctioned representatives and agencies.

§141.23(m) Initially Exceeding the MCL: If the result of an analysis made under paragraph (l) of this section indicates that the level of any contaminant listed in § 141.11 exceeds the maximum contaminant level, the supplier of the water shall report to the State within 7 days and initiate three additional analyses at the same sampling point within one month.

§141.23(n) MCL Violations: When the average of four analyses made pursuant to paragraph (m) of this section, rounded to the same number of significant figures as the maximum contaminant level for the substance in question, exceeds the maximum contaminant level, the supplier of water shall notify the State pursuant to § 141.31 and give notice to the public pursuant to § 141.32. Monitoring after public notification shall be at a frequency designated by the State and shall continue until the maximum contaminant level has not been exceeded in two successive samples or until a monitoring schedule as a condition to a variance, exemption or enforcement action shall become effective.

§141.24 ORGANIC CHEMICALS OTHER THAN TOTAL TRIHALOMETHANES, SAMPLING & ANALYTICAL REQUIREMENTS

§141.24(a) Endrin Monitoring: Monitoring of endrin for purposes of determining compliance with the maximum contaminant level listed in §141.12(a) shall be conducted as follows:

§141.24(a)(1) Surface Water Monitoring: For all community water systems utilizing surface water sources, analyses shall be completed within one year following the effective date of this part. Samples analyzed shall be collected during the period of the year designated by the State as the period when contamination by pesticides is most likely to occur. These analyses shall be repeated at intervals specified by the State but in no event less frequently than at three year intervals.

§141.24(a)(2) Ground Water Monitoring: For community water systems utilizing only ground water sources, analyses shall be completed by those systems specified by the State.

§141.24(a)(3) Determining Compliance and Enforcement: The State has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by their sanctioned representatives and agencies.

§141.24(b) Exceedance of the MCL: If the result of an analysis made pursuant to paragraph (a) of this section indicates that the level of any contaminant listed in §141.24(a) and (b) exceeds the maximum contaminant level, the supplier of water shall report to the State within 7 days and initiate three additional analyses within one month.

§141.24(c) Results of Additional Analysis: When the average of four analyses made pursuant to paragraph (b) of this section rounded to the same number of significant figures as the maximum contaminant level for the substance in question, exceeds the maximum contaminant level, the supplier of water shall report to the State pursuant to §141.31 and give notice to the public pursuant to §141.32. Monitoring after public notification shall be at a frequency designated by the State and shall continue until the maximum contaminant level has not been exceeded in two successive samples or until a monitoring schedule as a condition to a variance, exemption or enforcement action shall become effective.

§141.24(d) Grandfathering Data: For the initial analysis required by paragraphs (a)(1) and (2) of this section, data for surface water acquired within one year prior to the effective date of this part and data for ground water acquired within three years prior to the effective date of this part may be substituted at the discretion of the State.

§141.24(e) Endrin Analysis: Analysis made to determine compliance with the maximum contaminant level for endrin in §141.12(a) shall be made in accordance with EPA Methods 505, "Analysis of Organohalide Pesticides and Commercial Polychlorinated Biphenyl Products (Aroclors) in Water by Microextraction and Gas Chromatography" and 508, "Determination of Chlorinated Pesticides in Water by Gas Chromatography With an Electron Capture

Detector." The Methods are contained in "Methods for the Determination of Organic Compounds in Drinking Water," ORD Publications, CERI, EPA/600/4-88/039, July 1991. These methods are available from the National Technical Information Service (NTIS), U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161. The toll-free number is 1-800-336-4700.

VOCs

§141.24(f) VOC Sampling Requirements: *[Ed. note: §141.24(f) applies to all VOCs beginning Jan. 1, 1993]* Beginning with the initial compliance period, analysis of the contaminants listed in §141.61(a)(1) through (21) for the purpose of determining compliance with the maximum contaminant level shall be conducted as follows:

§141.24(f)(1) VOC GW Monitoring: Groundwater 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 sampling point). 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.

§141.24(f)(2) VOC SW Monitoring: Surface water systems (or combined surface/ground) shall take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment (hereafter called a sampling point). 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.

§141.24(f)(3) Multiple Sources: If the system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water representative of all sources is being used).

§141.24(f)(4) Initial VOCs Sampling Frequency: Each community and non-transient non-community water system shall take four consecutive quarterly samples for each contaminant listed in §141.61 (a)(2) through (21) during each compliance period, beginning in the initial compliance.

§141.24(f)(5) Results of Initial Sampling: If the initial monitoring for contaminants listed in §141.61(a)(1) through (8) and the monitoring for the contaminants listed in §141.61(a)(9) through (21) as allowed in paragraph (f)(18) has been completed by December 31, 1992, and the system did not detect any contaminant listed in §141.61(a)(1) through (21), then each ground and surface water system shall take one sample annually beginning with the initial compliance period. If the monitoring described in § 141..24(f)(4) is completed on or before December 31, 1992, and the system did not detect any contaminant listed in §§ 141.62(a)(2)-(21), each ground and surface water system shall take one sample annually for the remainder of the compliance period.

§141.24(f)(6) Reduced VOC Sampling for Ground Water Systems: After a minimum of three years of annual sampling, the State may allow groundwater systems with no previous detection of any contaminant listed in §141.61(a) to take one sample during each compliance period.

§141.24(f)(7) VOC Sampling Waivers: Each community and non-transient non-community ground water system which does not detect a contaminant listed in §141.61(a)(1) through (21) may apply to the State for a waiver from the requirements of paragraphs (f)(5) and (f)(6) of this section after completing the initial monitoring. (For purposes of this section, detection is defined as ≥0.0005 mg/l.) A waiver shall be effective for no more than six years (two compliance periods). States may also issue waivers to small systems for the initial round of monitoring for 1,2,4-trichlorobenzene.

§141.24(f)(8) Waiver Criteria: A State may grant a waiver after evaluating the following factor(s):

§141.24(f)(8)(i) USE WAIVERS: Knowledge of previous use (including transport, storage, or disposal) of the contaminant within the watershed or zone of influence of the system. If a determination by the State reveals no previous use of the contaminant within the watershed or zone of influence, a waiver may be granted.

§141.24(f)(8)(ii) SUSCEPTIBILITY WAIVERS: If previous use of the contaminant is unknown or it has been used previously, then the following factors shall be used to determine whether a waiver is granted.

§141.24(f)(8)(ii)(A) Previous analytical results.

§141.24(f)(8)(ii)(B) The proximity of the system to a potential point or non-point 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, or from hazardous and municipal waste landfills and other waste handling or treatment facilities.

§141.24(f)(8)(ii)(C) The environmental persistence and transport of the contaminants.

§141.24(f)(8)(ii)(D) The number of persons served by the public water system and the proximity of a smaller system to a larger system.

§141.24(f)(8)(ii)(E) How well the water source is protected against contamination, such as whether it is a surface or groundwater system. Groundwater systems must consider factors such as depth of the well, the type

of soil, and wellhead protection. Surface water systems must consider watershed protection.

§141.24(f)(9) VOC Waivers for GW Systems: As a condition of the waiver a groundwater system must take one sample at each sampling point during the time the waiver is effective (i.e., one sample during two compliance periods or six years) and update its vulnerability assessment considering the factors listed in paragraph (8) of this section. Based on this vulnerability assessment the State must reconfirm that the system is non-vulnerable. If the State does not make this reconfirmation within three years of the initial determination, then the waiver is invalidated and the system is required to sample annually as specified in paragraph (5) of this section.

§141.24(f)(10) VOC Waivers for SW Systems: Each community and non-transient surface water system which does not detect a contaminant listed in §141.61(a)(1) through (21) may apply to the State for a waiver from the requirements of (f)(5) of this section after completing the initial monitoring. Systems meeting this criterion must be determined by the State to be non-vulnerable based on a vulnerability assessment during each compliance period. Each system receiving a waiver shall sample at the frequency specified by the State (if any).

§141.24(f)(11) Monitoring After Detection: If a contaminant listed in §141.61(a)(2) through (21) is detected at a level exceeding 0.0005 mg/l in any sample:

§141.24(f)(11)(i) Quarterly Sampling: The system must monitor quarterly at each sampling point which resulted in a detection.

§141.24(f)(11)(ii) Reduction of Quarterly Sampling: The State may decrease the quarterly monitoring requirement specified in paragraph (f)(11)(i) of this section provided it has determined that the system is reliably and consistently below the maximum contaminant level. In no case shall the State make this determination unless a groundwater system takes a minimum of two quarterly samples and a surface water system takes a minimum of four quarterly samples.

§141.24(f)(11)(iii) Reliably & Consistently Below MCL: If the State determines that the system is reliably and consistently below the MCL, the State may allow the system to monitor annually. Systems which monitor annually must monitor during the quarter(s) which previously yielded the highest analytical result.

§141.24(f)(11)(iv) Waivers After Detection: Systems which have three consecutive annual samples with no detection of a contaminant may apply to the State for a waiver as specified in paragraph (f)(7) of this section.

§141.24(f)(11)(v) Vinyl Chloride Monitoring: Groundwater systems which 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 State may reduce the quarterly monitoring frequency of vinyl chloride monitoring to one sample during each compliance period. Surface water systems are required to monitor for vinyl chloride as specified by the State.

§141.24(f)(12) Reduced Sampling After MCL Violations: Systems which violate the requirements of §141.61(a)(1) through (21), as determined by paragraph (f)(15) of this section, must monitor quarterly. After a minimum of four consecutive quarterly samples which show the system is in compliance as specified in paragraph (f)(15) of this section the system and the State determines that the system is reliably and consistently below the maximum contaminant level, the system may monitor at the frequency and times specified in paragraph (f)(11)(iii) of this section.

§141.24(f)(13) VOC Confirmation Samples: The State may require a confirmation sample for positive or negative results. If a confirmation sample is required by the State, the result must be averaged with the first sampling result and the average is used for the compliance determination as specified by paragraph (f)(15). States have discretion to delete results of obvious sampling errors from this calculation.

§141.24(f)(14) VOC Composite Samples: The State may reduce the total number of samples a system must analyze by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed, provided that the detection limit of the method used for analysis is less than one-fifth of the MCL. Compositing of samples must be done in the laboratory and analyzed within 14 days of sample collection.

§141.24(f)(14)(i) VOC Detection in a Composite Sample: If the concentration in the composite sample is ≥0.0005 mg/l for any contaminant listed in §141.61(a), then a follow-up sample must be taken and analyzed within 14 days from each sampling point included in the composite. If the concentration in the composite sample is ≥ 1/5 MCL, a follow-up sample must be taken within 14 days at each sampling point included in the composite. These samples must be analyzed for the contaminant(s) ≥ 1/5 MCL in the composite sample.

§141.24(f)(14)(ii) Duplicate VOC Samples: If duplicates of the original sample taken from each sampling point used in the composite are available, the system may use these instead of resampling. The duplicate must be analyzed and the results reported to the State within 14 days of collection.

§141.24(f)(14)(iii) Restrictions on Composite Sampling: Compositing may only be permitted by the State at sampling points within a single system, unless the population served by the system is <3,300 persons. In systems serving <3,300 persons, the State may permit compositing among different systems provided the 5-sample limit is maintained.

§141.24(f)(14)(iv) Instructions for Compositing Samples Prior to GC Analysis:

§141.24(f)(14)(iv)(A) Add 5 ml or equal larger amounts of each sample (up to 5 samples are allowed) to a 25 ml glass syringe. Special precautions must be made to maintain zero headspace in the syringe.

§141.24(f)(14)(iv)(B) The samples must be cooled at 4°C during this step to minimize volatilization losses.

§141.24(f)(14)(iv)(C) Mix well and draw out a 5-ml aliquot for analysis.

§141.24(f)(14)(iv)(D) Follow sample introduction, purging, and desorption steps described in the method.

§141.24(f)(14)(iv)(E) If less than five samples are used for compositing, a proportionately small syringe may be used.

§141.24(f)(14)(v) Compositing Samples Prior to GC/MS Analysis:

§141.24(f)(14)(v)(A) Inject 5-ml or equal larger amounts of each aqueous sample (up to 5 samples are allowed) into a 25-ml purging device using the sample introduction technique described in the method.

§141.24(f)(14)(v)(B) The total volume of the sample in the purging device must be 25 ml.

§141.24(f)(14)(v)(C) Purge and desorb as described in the method.

§141.24(f)(15) VOC Compliance Calculations: Compliance with §141.61(a)(1) through (21) shall be determined based on the analytical results obtained at each sampling point.

§141.24(f)(15)(i) Multiple Samples in a Year: For systems which are conducting monitoring at a frequency greater than annual, compliance is determined by a running annual average of all samples taken at each sampling point. If the annual average of any sampling point is greater than the MCL, then the system is out of compliance. If the initial sample or a subsequent sample would cause the annual average to be exceeded, then the system is out of compliance immediately.

§141.24(f)(15)(ii) One or Less Samples a Year: If monitoring is conducted annually, or less frequently, the system is out of compliance if the level of a contaminant at any sampling point is greater than the MCL. If a confirmation sample is required by the State, the determination of compliance will be based on the average of two samples.

§141.24(f)(15)(iii) Separable Distribution Systems: If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the State may allow the system to give public notice to only that area served by that portion of the system which is out of compliance.

§141.24(f)(16) VOC Analytical Methods: Analysis for the contaminants listed in §141.61(a)(1) through (21) shall be conducted using the following EPA methods or their equivalent as approved by EPA. These methods are contained in Methods for the Determination of Organic Compounds in Drinking Water, EPA/600/4-88/039, December 1988,Revised July 1991, and are available from the National Technical Information Service (NTIS) NTIS PB91-231480 and PB91-146027, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161. The toll-free number is 800-553-6847.

§141.24(f)(16)(i) Method 502.1: "Volatile Halogenated Organic Chemicals in Water by Purge and Trap Gas Chromatography."

§141.24(f)(16)(ii) Method 502.2: "Volatile Organic Compounds in Water by Purge and Trap Capillary Column Gas Chromatography with Photoionization and Electrolytic Conductivity Detectors in Series."

§141.24(f)(16)(iii) Method 503.1: "Volatile Aromatic and Unsaturated Organic Compounds in Water by Purge and Trap Gas Chromatography."

§141.24(f)(16)(iv) Method 524.1: "Measurement of Purgeable Organic Compounds in Water by Purged Column Gas Chromatography/Mass Spectrometry."

§141.24(f)(16)(v) Method 524.2: "Measurement of Purgeable Organic Compounds in Water by Capillary Column Gas Chromatography/Mass Spectrometry."

§141.24(f)(17) VOCs Laboratory Certification: Analysis under this section shall only be conducted by laboratories that are certified by EPA or the State according to the following conditions (States may grant provisional certification until January 1, 1996):

§141.24(f)(17)(i) To receive certification to conduct analyses for the contaminants in §141.61(a)(2) through (21) the laboratory must:

§141.24(f)(17)(i)(A) Analyze Performance Evaluation samples which include these substances provided by EPA Environmental Monitoring Systems Laboratory or equivalent samples provided by the State.

§141.24(f)(17)(i)(B) Achieve the quantitative acceptance limits under paragraphs (f)(17)(i)(C) and (D) of this section for at least 80 percent of the regulated organic chemicals listed in §141.61(a)(2) through (21).

§141.24(f)(17)(i)(C) Achieve quantitative results on analyses performed under paragraph (f)(17)(i)(A) of this section within ± 20% of the actual amount of the substances in the Performance Evaluation sample when the actual amount is greater than or equal to 0.010 mg/l.

§141.24(f)(17)(i)(D) Achieve quantitative results on the analyses performed under paragraph (f)(17)(i)(A) of this section that are within ± 40 percent of the actual amount of the substances in the Performance Evaluation sample when the actual amount is less that 0.010 mg/l.
§141.24(f)(17)(i)(E) Achieve a method detection limit of 0.0005 mg/l, according to the procedures in Appendix B of Part 136.
§141.24(f)(17)(ii) Laboratory Certification for Vinyl Chloride: To receive certification for vinyl chloride, the laboratory must:
§141.24(f)(17)(ii)(A) Analyze Performance Evaluation samples provided by EPA Environmental Monitoring Systems Laboratory or equivalent samples provided by the State.
§141.24(f)(17)(ii)(B) Achieve quantitative results on the analyses performed under paragraph (f)(17)(ii)(A) of this section that are within ± 40 percent of the amount of vinyl chloride in the Performance Evaluation sample.
§141.24(f)(17)(ii)(C) Achieve a method detection limit of 0.0005 mg/l, according to the procedures in Appendix B of Part 136.
§141.24(f)(17)(ii)(D) Obtain certification for the contaminants listed in §141.61(a)(2) through (21).
§141.24(f)(18) Grandfathered VOC Data: States may allow the use of monitoring data collected after January 1, 1988, required under section 1445 of the Act for purposes of initial monitoring compliance. If the data are generally consistent with the other requirements of this section, the State may use these data (i.e., a single sample rather than four quarterly samples) to satisfy the initial monitoring requirement of paragraph (f)(4) of this section. Systems which use grandfathered samples and did not detect any contaminant listed §141.61(a)(2) through (21) shall begin monitoring annually in accordance with paragraph (f)(5) of this section beginning with the initial compliance period.
§141.24(f)(19) Increased VOC Sampling: States may increase required monitoring where necessary to detect variations within the system.
§141.24(f)(20) Laboratory Certification: Each approved laboratory must determine the method detection limit (MDL), as defined in Appendix B to Part 136, at which it is capable of detecting VOCs. The acceptable MDL is 0.0005 mg/l. This concentration is the detection concentration for purposes of this section.
§141.24(f)(21) State Designated VOC Sampling Schedules: Each public water system shall monitor at the time designated by the State within each compliance period.

Phase I VOCs

Ed. Note: § 141.24(g) described monitoring requirements for the eight VOCs under Phase I. These requirements have since become obsolete and have therefore been deleted from this consolidation of the rules.

SOCs

§141.24(h) SOC Sampling Requirements: Analysis of the contaminants listed in §141.61(c) for the purposes of determining compliance with the maximum contaminant level shall be conducted as follows:
§141.24(h)(1) SOC Ground Water Monitoring Protocols: Groundwater 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 sampling point). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.
§141.24(h)(2) SOC Surface Water Monitoring: Surface water systems shall take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment (hereafter called a sampling point). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant. [Note: For purposes of this paragraph, surface water systems include systems with a combination of surface and ground sources.]
§141.24(h)(3) SOCs - Multiple Sources: If the system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water representative of all sources is being used).
§141.24(h)(4) SOC Monitoring Frequency:
§141.24(h)(4)(i) Initial Sampling: Each community and non-transient non-community water system shall take four consecutive quarterly samples for each contaminant listed in §141.61(c) during each compliance period beginning with the initial compliance period.
§141.24(h)(4)(ii) Repeat SOC Sampling > 3,300: Systems serving more than 3,300 persons which do not detect a contaminant 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.
§141.24(h)(4)(iii) Repeat SOC Sampling ≤3,300: Systems serving less than or equal to 3,300 persons which do not detect a contaminant in the initial compliance period may reduce the sampling frequency to a minimum of one sample during each repeat compliance period.
§141.24(h)(5) SOC Sampling Waivers: Each community and non-transient water system may apply to the State for a waiver from the requirement of paragraph (h)(4) of this section. A system must reapply for a waiver for each compliance period.
§141.24(h)(6) Bases of an SOC Sampling Waiver: A State may grant a waiver after evaluating the

following factor(s): Knowledge of previous use (including transport, storage, or disposal) of the contaminant within the watershed or zone of influence of the system. If a determination by the State reveals no previous use of the contaminant within the watershed or zone of influence, a waiver may be granted. If previous use of the contaminant is unknown or it has been used previously, then the following factors shall be used to determine whether a waiver is granted.

§141.24(h)(6)(i) Previous analytical results.

§141.24(h)(6)(ii) The proximity of the system to a potential point or non-point 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, or from hazardous and municipal waste landfills and other waste handling or treatment facilities. Non-point sources include the use of pesticides to control insect and weed pests on agricultural areas, forest lands, home and gardens, and other land application uses.

§141.24(h)(6)(iii) The environmental persistence and transport of the pesticide or PCBs.

§141.24(h)(6)(iv) How well the water source is protected against contamination due to such factors as depth of the well and the type of soil and the integrity of the well casing.

§141.24(h)(6)(v) Elevated nitrate levels at the water supply source.

§141.24(h)(6)(vi) Use of PCBs in equipment used in the production, storage, or distribution of water (i.e., PCBs used in pumps, transformers, etc.).

§141.24(h)(7) Detection of an SOC: If an organic contaminant listed in §141.61(c) is detected (as defined by paragraph (h)(18) of this section) in any sample, then:

§141.24(h)(7)(i) Increase SOC Sampling: Each system must monitor quarterly at each sampling point which resulted in a detection.

§141.24(h)(7)(ii) R & C Below MCL: The State may decrease the quarterly monitoring requirement specified in paragraph (7)(i) of this section provided it has determined that the system is reliably and consistently below the maximum contaminant level. In no case shall the State make this determination unless a groundwater system takes a minimum of two quarterly samples and a surface water system takes a minimum of four quarterly samples.

§141.24(h)(7)(iii) Reduced SOC Sampling After Detection: After the State determines the system is reliably and consistently below the maximum contaminant level, the State may allow the system to monitor annually. Systems which monitor annually must monitor during the quarter that previously yielded the highest analytical result.

§141.24(h)(7)(iv) SOC Sampling Waivers After Detection: Systems which have 3 consecutive annual samples with no detection of a contaminant may apply to the State for a waiver as specified in paragraph (h)(6) of this section.

§141.24(h)(7)(v) Detection within a Family of SOCs: If monitoring results in detection of one or more of certain related contaminants (aldicarb, aldicarb sulfone, aldicarb sulfoxide and heptachlor, heptachlor epoxide), then subsequent monitoring shall analyze for all related contaminants.

§141.24(h)(8) R & C Below MCL After a Violation: Systems which violate the requirements of §141.61(c) as determined by paragraph (h)(11) of this section must monitor quarterly. After a minimum of four quarterly samples show the system is in compliance and the State determines the system is reliably and consistently below the MCL, as specified in paragraph (h)(11) of this section, the system shall monitor at the frequency specified in paragraph (h)(7)(iii) of this section.

§141.24(h)(9) SOC Confirmation Sampling: The State may require a confirmation sample for positive or negative results. If a confirmation sample is required by the State, the result must be averaged with the first sampling result and the average used for the compliance determination as specified by paragraph (h)(11) of this section. States have discretion to delete results of obvious sampling errors from this calculation.

§141.24(h)(10) Composite SOC Sampling: The state may reduce the total number of samples a system must analyze by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed, provided that the detection limit of the method used for analysis is less than one-fifth of the MCL. Compositing of samples must be done in the laboratory and analyzed within 14 days of sample collection. If the concentration in the composite sample is $\geq$ 1/5 MCL, a follow-up sample must be taken within 14 days at each sampling point included in the composite. These samples must be analyzed for the contaminant(s) $\geq$ 1/5 MCL in the composite sample.

§141.24(h)(10)(i) Detection in a Composite Sample: If the concentration in the composite sample detects one or more contaminants listed in §141.61(c), then a follow-up sample must be taken and analyzed within 14 days from each sampling point included in the composite.

§141.24(h)(10)(ii) Duplicate Composite Samples: If duplicates of the original sample taken from each sampling point used in the composite are available, the system may use these duplicates instead of resampling. The duplicate must be analyzed and the results reported to the State within 14 days of collection.

§141.24(h)(10)(iii) Population Restrictions on Composite Sampling: If the population served by the system is >3,300 persons, then compositing may only be permitted by the State at sampling points within a single system. In systems serving ≤3,300 persons, the State may permit compositing among different systems provided the 5-sample limit is maintained.

§141.24(h)(11) SOC Compliance Calculations: Compliance with §141.61(c) shall be determined based on the analytical results obtained at each sampling point.

§141.24(h)(11)(i) > One Sample a Year: For systems which are conducting monitoring at a frequency greater than annual, compliance is determined by a running annual average of all samples taken at each sampling point. If the annual average of any sampling point is greater than the MCL, then the system is out of compliance. If the initial sample or a subsequent sample would cause the annual average to be exceeded, then the system is out of compliance immediately. Any samples below the detection limit shall be calculated as zero for purposes of determining the annual average.

§141.24(h)(11)(ii) ≤ One Sample a Year: If monitoring is conducted annually, or less frequently, the system is out of compliance if the level of a contaminant at any sampling point is greater than the MCL. If a confirmation sample is required by the State, the determination of compliance will be based on the average of two samples.

§141.24(h)(11)(iii) Separable Distribution Systems: If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the State may allow the system to give public notice to only that portion of the system which is out of compliance.

§141.24(h)(12) SOC Analytical Methods: Analysis for the contaminants listed in §141.61(c) and for endrin in §141.12(a) shall be conducted using the following EPA methods or their equivalent as approved by EPA. These methods are contained in *Methods for the Determination of Organic Compounds in Drinking Water*, EPA/600/4-90/020, July, 1990, Environmental Systems Monitoring Laboratory, Cincinnati, OH 45268. These documents are available from the National Technical Information Service (NTIS) NTIS PB91-231480, PB91-146027 and PB92-207703, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161. The toll-free number is 1-800-553-6847.

§141.24(h)(12)(i) Method 504: "1,2-Dibromoethane (EDB) and 1,2-Dibromo-3-chloropropane (DBCP) in Water by Microextraction and Gas Chromatography." Method 504 can be used to measure dibromochloropropane (DBCP) and ethylene dibromide (EDB).

§141.24(h)(12)(ii) Method 505: "Analysis of Organohalide Pesticides and Commercial Polychlorinated Biphenyl Products (Aroclors) in Water by Microextraction and Gas Chromatography." Method 505 can be used to measure alachlor, atrazine, chlordane, endrin, heptachlor, heptachlor epoxide, hexachlorobenzene, hexachlorocyclopentadiene, lindane, methoxychlor, toxaphene, and simazine. Method 505 can be used as a screen for PCBs.

§141.24(h)(12)(iii) Method 507: "Determination of Nitrogen- and Phosphorus-Containing Pesticides in Ground Water by Gas Chromatography with a Nitrogen-Phosphorus Detector." Method 507 can be used to measure alachlor, atrazine and simazine.

§141.24(h)(12)(iv) Method 508: "Determination of Chlorinated Pesticides in Water by Gas Chromatography with an Electron Capture Detector." Method 508 can be used to measure chlordane, endrin, heptachlor, heptachlor epoxide, hexachlorobenzene, lindane, methoxychlor and toxaphene. Method 508 can be used as a screen for PCBs.

§141.24(h)(12)(v) Method 508A: "Screening for Polychlorinated Biphenyls by Perchlorination and Gas Chromatography." Method 508A is used to quantitate PCBs as decachlorobiphenyl if detected in Methods 505 or 508.

§141.24(h)(12)(vi) Method 515.1: "Determination of Chlorinated Acids in Water by Gas Chromatography with an Electron Capture Detector." Method 515.1 can be used to measure 2,4-D, dalapon, dinoseb, pentachlorophenol, picloram, and 2,4,5-TP (Silvex).

§141.24(h)(12)(vii) Method 525.1: "Determination of Organic Compounds in Drinking Water by Liquid-Solid Extraction and Capillary Column Gas Chromatography/Mass Spectrometry" Method 525.1 can be used to measure alachlor, atrazine, chlordane, di(2-ethylhexyl)adipate, di(2-ethylhexyl)phthalate, endrin, heptachlor, heptachlor epoxide, hexachlorobenzene, hexachlorocyclopentadiene, lindane, methoxychlor, pentachlorophenol, polynuclear aromatic hydrocarbons, simazine, and toxaphene.

§141.24(h)(12)(viii) Method 531.1: "Measurement of N-Methyl Carbamoyloximes and N-Methyl Carbamates in Water by Direct Aqueous Injection HPLC with Post-Column Derivatization." Method 531.1 can be used to measure aldicarb, aldicarb sulfoxide, aldicarb sulfone, and carbofuran and oxamyl.

§141.24(h)(12)(ix) Method 1613: "Tetra- through Octa- Chlorinated Dioxins and Furans by Isotope Dilution." Method 1613 can be used to measure 2,3,7,8-TCDD (dioxin). This method is available from USEPA-OST, Sample Control Center, P.O. Box 1407, Alexandria, VA 22313.

§141.24(h)(12)(x) Method 547: "Analysis of Glyphosate in Drinking Water by Direct Aqueous Injection HPLC with Post-Column Derivatization" Method 547 can be used to measure glyphosate.

§141.24(h)(12)(xi) Method 548: "Determination of Endothall in Aqueous Samples." Method 548 can be used to measure endothall.

§141.24(h)(12)(xii) Method 549: "Determination of Diquat and Paraquat in Drinking Water by High Performance Liquid Chromatography with Ultraviolet Detection. Method 549 can be used to measure diquat.

§141.24(h)(12)(xiii) Method 550: "Determination of Polycyclic Aromatic Hydrocarbons in Drinking Water by Liquid-Liquid Extraction and HPLC with Coupled Ultraviolet and Fluorescence Detection". Method 550 can be used to measure benzo(a)pyrene and other polynuclear aromatic hydrocarbons.

§141.24(h)(12)(xiv) Method 550.1: "Determination of Polycyclic Aromatic Hydrocarbons in Drinking Water by Liquid-Solid Extraction and HPLC with Coupled Ultraviolet and Fluorescence Detection". Method 550.1 can be used to measure benzo(a)pyrene and other polynuclear aromatic hydrocarbons.

§141.24(h)(13) Analysis for PCBs: Analysis for PCBS shall be conducted as follows:

§141.24(h)(13)(i) Each system which monitors for PCBs shall analyze each sample using either Method 505 or Method 508 (see paragraph (h)(12) of this section).

§141.24(h)(13)(ii) If PCBs (as one of seven Aroclors) are detected (as designated in this paragraph) in any sample analyzed using Methods 505 or 508, the system shall reanalyze the sample using Method 508A to quantitate PCBs (as decachlorobiphenyl).

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

§141.24(h)(13)(iii) PCB Method: Compliance with the PCB MCL shall be determined based upon the quantitative results of analyses using Method 508A.

§141.24(h)(14) Grandfathered SOC Data: If monitoring data collected after January 1, 1990, are generally consistent with the requirements of §141.24(h), then the State may allow systems to use that data to satisfy the monitoring requirement for the initial compliance period beginning January 1, 1993.

§141.24(h)(15) Increased SOC Sampling: The State may increase the required monitoring frequency, where necessary, to detect variations within the system (e.g., fluctuations in concentration due to seasonal use, changes in water source).

§141.24(h)(16) State Enforcement: The State has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by their sanctioned representatives and agencies.

§141.24(h)(17) State Designated Sampling Schedules: Each public water system shall monitor at the time designated by the State within each compliance period.

§141.24(h)(18) SOC Trigger Levels for Increased Sampling: Detection as used in this paragraph shall be defined as greater than or equal to the following concentrations for each contaminant. *[Ed. Note: These numbers not treated as performance criteria for lab certification. That criteria is listed under § 141.24(h)(19).]*

Contaminant	Detection Limit (mg/l)
Alachlor	0.0002
Aldicarb	0.0005
Aldicarb sulfoxide	0.0005
Aldicarb sulfone	0.0008
Atrazine	0.0001
Benzo[a]pyrene	0.00002
Carbofuran	0.0009
Chlordane	0.0002
Dalapon	0.001
Dibromochloropropane (DBCP)	0.00002
Di(2-ethylhexyl)adipate	0.0006
Di(2-ethylhexyl)phthalate	0.0006
Dinoseb	0.0002
Diquat	0.0004
2,4-D	0.0001
Endothall	0.009
Endrin	0.00001
Ethylene dibromide (EDB)	0.00001
Glyphosate	0.006
Heptachlor	0.00004
Heptachlor epoxide	0.00002
Hexachlorobenzene	0.0001
Hexachlorocyclopentadiene	0.0001
Lindane	0.00002
Methoxychlor	0.0001
Oxamyl	0.002
Picloram	0.0001
Polychlorinated biphenyls (PCBs) (as decachlorobiphenyl)	0.0001
Pentachlorophenol	0.00004
Simazine	0.00007
Toxaphene	0.001
2,3,7,8-TCDD (Dioxin)	0.000000005
2,4,5-TP (Silvex)	0.0002

§141.24(h)(19) Laboratory Certification: Analysis under this section shall only be conducted by laboratories that have received certification by EPA or the State and have met the following conditions:
§141.24(h)(19)(i) To receive certification to conduct analyses for the contaminants in §141.61(c) the laboratory must:
§141.24(h)(19)(i)(A) Analyze Performance Evaluation samples which include those substances provided by EPA Environmental Monitoring and Support Laboratory or equivalent samples provided by the State.
§141.24(h)(19)(i)(B) Achieve quantitative results on the analyses that are within the following acceptance limits:

Contaminant	Acceptance Limit (percent)
DBCP	± 40
EDB	± 40
Alachlor	± 45
Atrazine	± 45
Benzo[a]pyrene	2 standard deviations
Carbofuran	± 45
Chlordane	± 45
Dalapon	2 standard deviations
Di(2-ethylhexyl)adipate	2 standard deviations
Di(2-ethylhexyl)phthalate	2 standard deviations
Dinoseb	2 standard deviations
Diquat	2 standard deviations
Endothall	2 standard deviations
Endrin	± 30
Glyphosate	2 standard deviations
Heptachlor	± 45
Heptachlor Epoxide	± 45
Hexachlorobenzene	2 standard deviations
Hexachlorocyclopentadiene	2 standard deviations
Lindane	± 45
Methoxychlor	± 45
Oxamyl	2 standard deviations
PCBs (as Decachloro-biphenyl)	0-200
Picloram	2 standard deviations
Simazine	2 standard deviations
Toxaphene	± 45
Aldicarb	2 standard deviations
Aldicarb Sulfoxide	2 standard deviations
Aldicarb Sulfone	2 standard deviations
Pentachlorophenol	± 50
2,3,7,8-TCDD (Dioxin)	2 standard deviations
2,4-D	± 50
2,4,5-TP (Silvex)	± 50

§141.24(h)(19)(ii) [Reserved]

§141.27 ALTERNATE ANALYTICAL TECHNIQUES

§141.27(a) Requirements for Permission: With the written permission of the State, concurred in by the Administrator of the U.S. EPA, an alternate analytical technique may be employed. An alternate technique shall be accepted only if it is substantially equivalent to the prescribed test in both precision and accuracy as it relates to the determination of compliance with any MCL. The use of the alternate analytical technique shall not decrease the frequency of monitoring required by this part.

§141.29 MONITORING OF CONSECUTIVE PUBLIC WATER SYSTEM

When a public water system supplies water to one or more other public water systems, the State may modify the monitoring requirements imposed by this part to the extent that the interconnection of the systems justifies treating them as a single system for monitoring purposes. Any modified monitoring shall be conducted pursuant to a schedule specified by the State and concurred in by the Administrator of the U.S. Environmental Protection Agency.

SUBPART D — REPORTING, PUBLIC NOTIFICATION AND RECORDKEEPING

§141.31 REPORTING REQUIREMENTS

§141.31(a) Timing: Except where a shorter period is specified in this part, the supplier of water shall report to the State the results of any test measurement or analysis required by the part within (1) the first ten days following the month in which the result is received, or (2) the first ten days following the end of the required monitoring period as stipulated by the State, whichever of these is shortest.
§141.31(b) Failure to Comply with National Primary Drinking Water Regulations: Except where a different reporting period is specified in this part, the supplier of water must report to the State within 48 hours the failure to comply with any national primary drinking water regulation (including failure to comply with monitoring requirements) set forth in this part.
§141.31(c) State Laboratory Reporting: The supplier of water is not required to report analytical results to the State in cases where a State laboratory performs the analysis and reports the results to the

State office which would normally receive such notification from the supplier.

§141.31(d) Notifying the State: The water supply system, within ten days of completion of each public notification required pursuant to §141.32, shall submit to the State a representative copy of each type of notice distributed, published, posted, and/or made available to the persons served by the system and/or to the media.

§141.31(e) Submittal of Records: The water supply system shall submit to the State within the time stated in the request copies of any records required to be maintained under §141.33 hereof or copies of any documents then in existence which the State or the Administrator is entitled to inspect pursuant to the authority of section 1445 of the Safe Drinking Water Act or the equivalent provisions of State law.

§141.32 GENERAL PUBLIC NOTICE REQUIREMENTS

§141.32(a) Notice of Maximum Contaminant Level (MCL), Treatment Technique,and Variance and Exemption Schedule Violations: The owner or operator of a public water system which fails to comply with an applicable MCL or treatment technique established by this part or which fails to comply with the requirements of any schedule prescribed pursuant to a variance or exemption, shall notify persons served by the system as follows:

§141.32(a)(1) Procedures for Giving Notice: Except as provided in paragraph (a)(3) of this section, the owner or operator of a public water system must give notice:

§141.32(a)(1)(i) Notice by Publication: By publication in a daily newspaper of general circulation in the area served by the system as soon as possible, but in no case later than 14 days after the violation or failure. If the area served by a public water system is not served by a daily newspaper of general circulation serving the area; and

§141.32(a)(1)(ii) Notice by Mail: By mail delivery (by direct mail or with the water bill), or by had delivery, not later than 45 days after the violation or failure. The State may waive mail or hand delivery if it determines that the owner or operator of the public water system in violation has corrected the violation or failure within the 45-day period. The State must make the waiver in writing and within the 45-day period; and

§141.32(a)(1)(iii) Violations Posing Acute Health Risk: For violations of the MCLs of contaminants that may pose an acute risk to human health, by furnishing a copy of the notice to the radio and television stations serving the area served by the public water system as soon as possible but in no case later than 72 hours after the violation. The following violations are acute violations:

§141.32(a)(1)(iii)(A) Any violations specified by the State as posing an acute risk to human health.

§141.32(a)(1)(iii)(B) Violation of the MCL for nitrate or nitrite as defined in §141.11(b) and determined according to §141.23(i)(3).

§141.32(a)(2) Repeat Notice Requirements: Except as provided in paragraph (a)(3) of this section, following the initial notice given under paragraph (a)(1) of this section, the owner or operator of the public water system must give notice at least once every three months by mail delivery (by direct mail or with the water bill) or by hand delivery, for as long as the violation or failure exists.

§141.32(a)(3)(i) Notice in Areas Not Served by Newspapers: In lieu of the requirements of paragraphs (a)(1) and (2) of this section, the owner or operator of a community water system in an area that is not served by a daily or weekly newspaper of general circulation must give notice by hand delivery or by continuous posting in conspicuous places within the area served by the system. Notice by hand delivery or posting must begin as soon as possible, but no later than 72 hours after the violation or failure for acute violations (as defined in paragraph (a)(1)(iii) of this section), or 14 days after the violation or failure (for any other violation). Posting must continue for as long as the violation or failure exists. Notice by hand delivery must be repeated at least every three months for as long as the violation or failure exists.

§141.32(a)(3)(ii) Notice for Noncommunity Water Systems: In lieu of the requirements of paragraphs (a)(1) and (2) of this section, the owner or operator of a noncommunity water system may give notice by hand delivery or by continuous posting in conspicuous places within the areas served by the system. Notice by hand delivery or posting must begin as soon as possible, but no later than 72 hours after the violation or failure for acute violations (as defined in paragraph (a)(1)(iii) of this section), or 14 days after the violation or failure (for any other violation). Posting must continue for as long as the violation or failure exists. Notice by hand delivery must be repeated at least every three months for as long as the violation or failure exists.

§141.32(b) Other Violations, Variances, Exemptions: The owner or operator of a public water system which fails to perform monitoring required by section 1445(a) of the Act (including monitoring required by the National Primary Drinking Water Regulations (NPDWRs) of this part), fails to comply with a testing procedure established by this part, is subject to a variance granted under section 1415(a)(1)(A) or 1415(a)(2) of the Act, or is subject to an exemption under section 1416 of the Act, shall notify persons served by the system as follows:

§141.32(b)(1) Timing & Method of Notice: Except as provided in paragraph (b)(3) or (b)(4) of this section, the owner or operator of a public water system must give notice within three months of the violation or granting of a variance or exemption by publication in a daily newspaper of general circulation in the area served by the system. If the area served by a public water system is not served by a daily newspaper of general circulation, notice shall instead be given publication in a weekly newspaper of general circulation serving the area.

§141.32(b)(2) Repeat Notice: Except as provided in paragraph (b)(3) or (b)(4) of this section, following the initial notice given under paragraph (b)(1) of this section, the owner or operator of the pubic water system must give notice at least once every three months by mail delivery (by direct mail or with the water bill) or by hand delivery, for as long as the violation exists. Repeat notice of the existence of a variance or exemption must be given every three months for as long as the variance or exemption remains in effect.

§141.32(b)(3)(i) Notification in Area not Served by Newspaper: In lieu of the requirements of paragraphs (b)(1) and (b)(2) of this section, the owner or operator of a community water system in an area that is not served by a daily or weekly newspaper of general circulation must give notice, within three months of the violation or granting of the variance or exemption, by hand delivery or by continuous posting in conspicuous places with the area served by the system. Posting must continue for as long as the violation exists or a variance or exemption remains in effects. Notice by hand delivery must be repeated at least every three months for as long as the violation exists or a variance or exemption remains in effect.

§141.32(b)(3)(ii) Notification for Non-Community Water Systems: In lieu of the requirements of paragraphs (b)(1) and (b)(2) of this section, the owner or operator of a non-community water system may give notice, within three months of the violation or the granting of the variance or exemption, by hand delivery or by continuous posting in conspicuous places within the area served by the system. Posting must continue for as long as the violation exists, or a variance or exemption remains in effect. Notice by hand delivery must be repeated at least every three months for as long as the violation exists or a variance or exemption remains in effect.

§141.32(b)(4) Notification of Minor Monitoring Violations: In lieu of the requirements of paragraphs (b)(1), (b)(2), and (b)(3) of this section, the owner or operator of a public water system, at the discretion of the State, may provide less frequent notice for minor monitoring violations as defined by the State, if EPA has approved the State's application for a program revision under § 142.16. Notice of such violations must be given no less frequently than annually.

§141.32(c) Notice to New Billing Units: The owner or operator of a community water system must give a copy of the most recent public notice for any outstanding violation of any maximum contaminant level, or any treatment technique requirement, or any variance or exemption schedule to all new billing units or new hookups prior to or at the time service begins.

§141.32(d) Content of Public Notices: Each notice required by this section must provide a clear and readily understandable explanation of the violation, any potential adverse health effects, the population at risk, the steps that the public water system is taking to correct such violation, the necessity for seeking alternative water supplies, if any, and any preventive measures the consumer should take until the violation is corrected. Each notice shall be conspicuous and shall not contain unduly technical language, unduly small print, or similar problems that frustrate the purpose of the notice. Each notice shall include the telephone number of the owner, operator, or designee of the public water system as a source of additional information concerning the notice. Where appropriate, the notice shall be multilingual.

§141.32(e) Mandatory Health Effects Language: When providing the information on potential adverse health effects required by paragraph (d) of this section in notices of violations of maximum contaminant levels or treatment technique requirements, or notices of the granting or the continued existence of exemptions or variances, or notices of failure to comply with a variance or exemption schedule, the owner or operator of a public water system shall include the language specified below for each contaminant. (If language for a particular contaminant is not specified below at the time notice is required, this paragraph does not apply.)

§141.32(e)(1) Trichlorethylene: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that trichloroethylene is a health concern at certain levels of exposure. This chemical is a common metal cleaning and dry cleaning fluid. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. EPA has set forth the enforceable drinking water standard for trichloroethylene at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with to little to none of this risk and should be considered safe.

§141.32(e)(2) Carbon Tetrachloride: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that carbon tetrachloride is a health concern at certain levels of exposure. This chemical was once a popular household cleaning fluid. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for carbon tetrachloride at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

§141.32(e)(3) 1,2--Dichloroethane: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 1,2--dichloroethane is a health concern at certain levels of exposure. This chemical is used as a cleaning fluid for fats, oils, waxes, and resins. It generally gets into drinking water from improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for 1,2--dichloroethane at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

§141.32(e)(4) Vinyl Chloride: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that vinyl chloride is a health concern at certain levels of exposure. This chemical is used in industry and is found in drinking water as a result of the breakdown of related solvents. The solvents are used as cleaners and degreasers of metals and generally get into drinking water by improper waste disposal. This chemical has been associated with significantly increased risks of cancer among certain industrial workers who were exposed to relatively large amounts of this chemical during their working careers. This chemical has also been shown to cause cancer in laboratory animals when the animals are exposed at high levels over their lifetimes. Chemicals that cause increased risk of cancer among exposed industrial workers and in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standards for vinyl chloride at 0.002 part per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in humans and laboratory animals. drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

§141.32(e)(5) Benzene: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that benzene is a health concern at certain levels of exposure. This chemical is used as a solvent and degreaser of metals. It is also a major component of gasoline. Drinking water contamination generally results from leaking underground gasoline and petroleum tanks or improper waste disposal. This chemical has been associated with significantly increased risks of leukemia among certain industrial workers who were exposed to relatively large amounts of this chemical during their working careers. This chemical has also been shown to cause cancer in laboratory animals when the animals are exposed at high levels over their lifetimes. Chemicals that cause increased risk of cancer among exposed industrial workers and in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for benzene at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in humans and laboratory animals. Drinking Water which meets this standard is associated with little to none of this risk and should be considered safe.

§141.32(e)(6) 1,1--Dichloroethylene: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 1,1--dichloroethylene is a health concern at certain levels of exposure. This chemical is used in industry and is found in drinking water as a result of the breakdown of related solvents. The solvents are used as cleaners and degreasers of metals and generally get into drinking water by improper waste disposal. This chemical has been shown to cause liver and kidney damage in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals which cause adverse effects in laboratory animals also may cause adverse health effects in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for 1,1--dichloroethylene at 0.007 parts per million (ppm) to reduce the risk of these adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

§141.32(e)(7) Para-Dichlorobenzene: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that para-dichlorobenzene is a health concern at certain levels of exposure. This chemical is a component of deodorizers, moth balls, and pesticides. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause liver and kidney damage in laboratory animals such as rats and mice when the animals are exposed to high levels over their lifetimes. Chemicals which cause adverse effects in laboratory animals also may cause adverse health effects in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standards for para-dichlorobenzene at 0.075 parts per million (ppm) to reduce the risk of these adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

§141.32(e)(8) 1,1,1-Trichloroethane: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that the 1,1,1--trichloroethane is a health concern at certain levels of exposure. This chemical is used as a cleaner and degreaser of metals. It generally gets into drinking water by improper waste disposal. This chemical has been shown to damage the liver, nervous system, and circulatory system of laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during their working careers also suffered damage to the liver, nervous system, and circulatory system. Chemicals which cause adverse effects among exposed industrial workers and in laboratory animals also may cause adverse health effects in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for 1,1,1--trichloroethane at 0.2 parts per million (ppm) to protect against the risk of these adverse health effects which have been observed in humans and laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

§141.32(e)(13)-(14) [Reserved]

§141.32(e)(15) Asbestos: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that asbestos fibers greater than 10 micrometers in length are a health concern at certain levels of exposure. Asbestos is a naturally occurring mineral. Most asbestos fibers in drinking water are less than 10 micrometers in length and occur in drinking water from natural sources and from corroded asbestos-cement pipes in the distribution system. The major uses of asbestos were in the production of cements, floor tiles, paper products, paint, and caulking; in transportation-related applications; and in the production of textiles and plastics. Asbestos was once a popular insulating and fire retardant material. Inhalation studies have shown that various forms of asbestos have produced lung tumors in laboratory animals. The available information on the risk of developing gastrointestinal tract cancer associated with the ingestion of asbestos from drinking water is limited. Ingestion of intermediate-range chrysotile asbestos fibers greater than 10 micrometers in length is associated with causing benign tumors in male rats. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for asbestos at 7 million long fibers per liter to reduce the potential risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to asbestos.

§141.32(e)(16) Barium: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that barium is a health concern at certain levels of exposure. This inorganic chemical occurs naturally in some aquifers that serve as sources of ground water. It is also used in oil and gas drilling muds, automotive paints, bricks, tiles and jet fuels. It generally gets into drinking water after dissolving from naturally occurring minerals in the ground. This chemical may damage the heart and cardiovascular system, and is associated with high blood pressure in laboratory animals such as rats exposed to high levels during their lifetimes. In humans, EPA believes that effects from barium on blood pressure should not occur below 2 parts per million (ppm) in drinking water. EPA has set the drinking water standard for barium at 2 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to barium.

§141.32(e)(17) Cadmium: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that cadmium is a health concern at certain levels of exposure. Food and the smoking of tobacco are common sources of general exposure. This inorganic metal is a contaminant in the metals used to galvanize pipe. It generally gets into water by corrosion of galvanized pipes or by improper waste disposal. This chemical has been shown to damage the kidney in animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during working

careers also suffered damage to the kidney. EPA has set the drinking water standard for cadmium at 0.005 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to cadmium.

§141.32(e)(18) Chromium: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that chromium is a health concern at certain levels of exposure. This inorganic metal occurs naturally in the ground and is often used in the electroplating of metals. It generally gets into water from runoff from old mining operations and improper waste disposal from plating operations. This chemical has been shown to damage the kidney, nervous system, and the circulatory system of laboratory animals such as rats and mice when the animals are exposed at high levels. Some humans who were exposed to high levels of this chemical suffered liver and kidney damage, dermatitis and respiratory problems. EPA has set the drinking water standard for chromium at 0.1 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to chromium.

§141.32(e)(19) Mercury: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that mercury is a health concern at certain levels of exposure. This inorganic metal is used in electrical equipment and some water pumps. It usually gets into water as a result of improper waste disposal. This chemical has been shown to damage the kidney of laboratory animals such as rats when the animals are exposed at high levels over their lifetimes. EPA has set the drinking water standard for mercury at 0.002 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to mercury.

§141.32(e)(20) Nitrate: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that nitrate poses an acute health concern at certain levels of exposure. Nitrate is used in fertilizer and is found in sewage and wastes from human and/or farm animals and generally gets into drinking water from those activities. Excessive levels of nitrate in drinking water have caused serious illness and sometimes death in infants under six months of age. The serious illness in infants is caused because nitrate is converted to nitrite in the body. Nitrite interferes with the oxygen carrying capacity of the child's blood. This is an acute disease in that symptoms can develop rapidly in infants. In most cases, a health deteriorates over a period of days. Symptoms include shortness of breath and blueness of the skin. Clearly, expert medical advice should be sought immediately if these symptoms occur. The purpose of this notice is to encourage parents and other responsible parties to provide infants with an alternate source of drinking water. Local and State health authorities are the best source for information concerning alternate sources of drinking water for infants. EPA has set the drinking water standard at 10 parts per million (ppm) for nitrate to protect against the risk of these adverse effects. EPA has also set a drinking water standard for nitrite at 1 ppm. To allow for the fact that the toxicity of nitrate and nitrite are additive, EPA has also established a standard for the sum of nitrate and nitrite at 10 ppm. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to nitrate.

§141.32(e)(21) Nitrite: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that nitrite poses an acute health concern at certain levels of exposure. This inorganic chemical is used in fertilizers and is found in sewage and wastes from humans and/or farm animals and generally gets into drinking water as a result of those activities. While excessive levels of nitrite in drinking water have not been observed, other sources of nitrite have caused serious illness and sometimes death in infants under six months of age. The serious illness in infants is caused because nitrite interferes with the oxygen carrying capacity of the child's blood. This is an acute disease in that symptoms can develop rapidly. However, in most cases, health deteriorates over a period of days. Symptoms include shortness of breath and blueness of the skin. Clearly, expert medical advice should be sought immediately if these symptoms occur. The purpose of this notice is to encourage parents and other responsible parties to provide infants with an alternate source of drinking water. Local and State health authorities are the best source for information concerning alternate sources of drinking water for infants. EPA has set the drinking water standard at 1 part per million (ppm) for nitrite to protect against the risk of these adverse effects. EPA has also set a drinking water standard for nitrate (converted to nitrite in humans) at 10 ppm and for the sum of nitrate and nitrite at 10 ppm. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to nitrite.

§141.32(e)(22) Selenium: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that selenium is a health concern at certain high levels of exposure. Selenium is also an essential nutrient at low levels of exposure. This inorganic chemical is found naturally in food and soils and is used in electronics, photocopy operations, the manufacture of glass, chemicals, drugs,

and as a fungicide and a feed additive. In humans, exposure to high levels of selenium over a long period of time has resulted in a number of adverse health effects, including a loss of feeling and control in the arms and legs. EPA has set the drinking water standard for selenium at 0.05 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to selenium.

§141.32(e)(23) Acrylamide: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that acrylamide is a health concern at certain levels of exposure. Polymers made from acrylamide are sometimes used to treat water supplies to remove particulate contaminants. Acrylamide has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. Sufficiently large doses of acrylamide are known to cause neurological injury. EPA has set the drinking water standard for acrylamide using a treatment technique to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. This treatment technique limits the amount of acrylamide in the polymer and the amount of the polymer which may be added to drinking water to remove particulates. Drinking water systems which comply with this treatment technique have little to no risk and are considered safe with respect to acrylamide.

§141.32(e)(24) Alachlor: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that alachlor is a health concern at certain levels of exposure. This organic chemical is a widely used pesticide. When soil and climatic conditions are favorable, alachlor may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for alachlor at 0.002 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to alachlor.

§141.32(e)(25)-(27) [Reserved]

§141.32(e)(28) Atrazine: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that atrazine is a health concern at certain levels of exposure. This organic chemical is a herbicide. When soil and climatic conditions are favorable, atrazine may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to affect offspring of rats and the heart of dogs. EPA has set the drinking water standard for atrazine at 0.003 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to atrazine.

§141.32(e)(29) Carbofuran: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that carbofuran is a health concern at certain levels of exposure. This organic chemical is a pesticide. When soil and climatic conditions are favorable, carbofuran may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to damage the nervous and reproductive systems of laboratory animals such as rats and mice exposed at high levels over their lifetimes. Some humans who were exposed to relatively large amounts of this chemical during their working careers also suffered damage to the nervous system. Effects on the nervous system are generally rapidly reversible. EPA has set the drinking water standard for carbofuran at 0.04 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to carbofuran.

§141.32(e)(30) Chlordane: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that chlordane is a health concern at certain levels of exposure. This organic chemical is a pesticide used to control termites. Chlordane is not very mobile in soils. It usually gets into drinking water after application near water supply intakes or wells. This chemical has been shown to cause to cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for chlordane at 0.002 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to chlordane.

§141.32(e)(31) Dibromochloropropane (DBCP): The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that DBCP is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are

favorable, dibromochloropropane may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for DBCP at 0.0002 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to DBCP.

§141.32(e)(32). o-Dichlorobenzene: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that o-dichlorobenzene is a health concern at certain levels of exposure. This organic chemical is used as a solvent in the production of pesticides and dyes. It generally gets into water by improper waste disposal. This chemical has been shown to damage the liver, kidney and the blood cells of laboratory animals such as rats and mice exposed to high levels during their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during working careers also suffered damage to the liver, nervous system, and circulatory system. EPA has set the drinking water standard for o-dichlorobenzene at 0.6 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to o-dichlorobenzene.

§141.32(e)(33) cis-1,2-Dichloroethylene: The United States Environmental Protection Agency (EPA) establishes drinking water standards and has determined that cis-1,2-dichloroethylene is a health concern at certain levels of exposure. This organic chemical is used as a solvent and intermediate in chemical production. It generally gets into water by improper waste disposal. This chemical has been shown to damage the liver, nervous system, and circulatory system of laboratory animals such as rats and mice when exposed at high levels over their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system. EPA has set the drinking water standard for cis-1,2-dichloroethylene at 0.07 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to cis-1,2-dichloroethylene.

§141.32(e)(34) trans-1,2-Dichloroethylene: The United States Environmental Protection Agency (EPA) establishes drinking water standards and has determined that trans-1,2-dichloroethylene is a health concern at certain levels of exposure. This organic chemical is used as a solvent and intermediate in chemical production. It generally gets into water by improper waste disposal. This chemical has been shown to damage the liver, nervous system, and the circulatory system of laboratory animals such as rats and mice when exposed at high levels over their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system. EPA has set the drinking water standard for trans-1,2-dichloroethylene at 0.1 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to trans-1,2-dichloroethylene.

§141.32(e)(35) 1,2-Dichloropropane: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 1,2-dichloropropane is a health concern at certain levels of exposure. This organic chemical is used as a solvent and pesticide. When soil and climatic conditions are favorable, 1,2-dichloropropane may get into drinking water by runoff into surface water or by leaching into ground water. It may also get into drinking water through improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for 1,2-dichloropropane at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to 1,2-dichloropropane.

§141.32(e)(36) 2,4-D: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 2,4-D is a health concern at certain levels of exposure. This organic chemical is used as a herbicide and to control algae in reservoirs. When soil and climatic conditions are favorable, 2,4-D may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to damage the liver and kidney of laboratory animals such as rats exposed at high levels during their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system. EPA has set the drinking water standard for 2,4-D at 0.07 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to 2,4-D.

§141.32(e)(37) Epichlorohydrin: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that epichlorohydrin is a health concern at certain levels of exposure. Polymers made from epichlorohydrin are sometimes used in the treatment of water supplies as a flocculent to remove particulates. Epichlorohydrin generally gets into drinking water by improper use of these polymers. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for epichlorohydrin using a treatment technique to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. This treatment technique limits the amount of epichlorohydrin in the polymer and the amount of the polymer which may be added to drinking water as a flocculent to remove particulates. Drinking water systems which comply with this treatment technique have little to no risk and are considered safe with respect to epichlorohydrin.

§141.32(e)(38) Ethylbenzene: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined ethylbenzene is a health concern at certain levels of exposure. This organic chemical is a major component of gasoline. It generally gets into water by improper waste disposal or leaking gasoline tanks. This chemical has been shown to damage the kidney, liver, and nervous system of laboratory animals such as rats exposed to high levels during their lifetimes. EPA has set the drinking water standard for ethylbenzene at 0.7 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to ethylbenzene.

§141.32(e)(39) Ethylene dibromide (EDB): The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that EDB is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are favorable, EDB may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for EDB at 0.00005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to EDB.

§141.32(e)(40) Heptachlor: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that heptachlor is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are favorable, heptachlor may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standards for heptachlor at 0.0004 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to heptachlor.

§141.32(e)(41) Heptachlor Epoxide: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that heptachlor epoxide is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are favorable, heptachlor epoxide may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standards for heptachlor epoxide at 0.0002 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to heptachlor epoxide.

§141.32(e)(42) Lindane: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that lindane is a health concern at certain levels of exposure. This organic chemical is used as a pesticide. When soil and climatic conditions are favorable, lindane may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to damage the liver, kidney, nervous system, and immune system of laboratory animals such as rats, mice and dogs exposed at high levels during their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the

nervous system and circulatory system. EPA has established the drinking water standard for lindane at 0.0002 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to lindane.

§141.32(e)(43) Methoxychlor: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that methoxychlor is a health concern at certain levels of exposure. This organic chemical is used as a pesticide. When soil and climatic conditions are favorable, methoxychlor may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to damage the liver, kidney, nervous system, and reproductive system of laboratory animals such as rats exposed at high levels during their lifetimes. It has also been shown to produce growth retardation in rats. EPA has set the drinking water standard for methoxychlor at 0.04 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to methoxychlor.

§141.32(e)(44) Monochlorobenzene: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that monochlorobenzene is a health concern at certain levels of exposure. This organic chemical is used as a solvent. It generally gets into water by improper waste disposal. This chemical has been shown to damage the liver, kidney and nervous system of laboratory animals such as rats and mice exposed to high levels during their lifetimes. EPA has set the drinking water standard for monochlorobenzene at 0.1 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to monochlorobenzene.

§141.32(e)(45) Polychlorinated Biphenyls (PCBs): The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that polychlorinated biphenyls (PCBs) are a health concern at certain levels of exposure. These organic chemicals were once widely used in electrical transformers and other industrial equipment. They generally get into drinking water by improper waste disposal or leaking electrical industrial equipment. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for PCBs at 0.0005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to PCBs.

§141.32(e)(46) Pentachlorophenol: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that pentachlorophenol is a health concern at certain levels of exposure. This organic chemical is used as a wood preservative, herbicide, disinfectant, and defoliant. It generally gets into drinking water by runoff into surface water or leaching into ground water. This chemical has been shown to produce adverse reproductive effects and to damage the liver and kidneys of laboratory animals such as rats exposed to high levels during their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the liver and kidneys. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for pentachlorophenol at 0.001 parts per million (ppm) to protect against the risk of cancer or other adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to pentachlorophenol.

§141.32(e)(47) Styrene: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that styrene is a health concern at certain levels of exposure. This organic chemical is commonly used to make plastics and is sometimes a component of resins used for drinking water treatment. Styrene may get into drinking water from improper waste disposal. This chemical has been shown to damage the liver and nervous system in laboratory animals when exposed at high levels during their lifetimes. EPA has set the drinking water standard for styrene at 0.1 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to styrene.

§141.32(e)(48) Tetrachloroethylene: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that tetrachloroethylene is a health concern at certain levels of exposure. This organic chemical has been a popular solvent, particularly for dry cleaning. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals

that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for tetrachloroethylene at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to tetrachloroethylene.

§141.32(e)(49) Toluene: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that toluene is a health concern at certain levels of exposure. This organic chemical is used as a solvent and in the manufacture of gasoline for airplanes. It generally gets into water by improper waste disposal or leaking underground storage tanks. This chemical has been shown to damage the kidney, nervous system, and circulatory system of laboratory animals such as rats and mice exposed to high levels during their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during working careers also suffered damage to the liver, kidney and nervous system. EPA has set the drinking water standard for toluene at 1 part per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to toluene.

§141.32(e)(50) Toxaphene: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that toxaphene is a health concern at certain levels of exposure. This organic chemical was once a pesticide widely used on cotton, corn, soybeans, pineapples and other crops. When soil and climatic conditions are favorable, toxaphene may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for toxaphene at 0.003 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to toxaphene.

§141.32(e)(51) 2,4,5-TP: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 2,4,5-TP is a health concern at certain levels of exposure. This organic chemical is used as a herbicide. When soil and climatic conditions are favorable, 2,4,5-TP may get into drinking water by runoff into surface water or by leaching into ground water. This chemical has been shown to damage the liver and kidney of laboratory animals such as rats and dogs exposed to high levels during their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during working careers also suffered damage to the nervous system. EPA has set the drinking water standard for 2,4,5-TP at 0.05 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to 2,4,5-TP.

§141.32(e)(52) Xylenes: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that xylene is a health concern at certain levels of exposure. This organic chemical is used in the manufacture of gasoline for airplanes and as a solvent for pesticides, and as a cleaner and degreaser of metals. It usually gets into water by improper waste disposal. This chemical has been shown to damage the liver, kidney and nervous system of laboratory animals such as rats and dogs exposed to high levels during their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system. EPA has set the drinking water standard for xylene at 10 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the EPA standard is associated with little to none of this risk and is considered safe with respect to xylene.

§141.32(e)(53) Antimony: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that antimony is a health concern at certain levels of exposure. This inorganic chemical occurs naturally in soils, ground water and surface waters and is often used in the flame retardant industry. It is also used in ceramics, glass, batteries, fireworks and explosives. It may get into drinking water through natural weathering of rock, industrial production, municipal waste disposal or manufacturing processes. This chemical has been shown to decrease longevity, and altered blood levels of cholesterol and glucose in laboratory animals such as rats exposed to high levels during their lifetimes. EPA has set the drinking water standard for antimony at 0.006 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to antimony.

§141.32(e)(54) Beryllium: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that beryllium is a health concern at certain levels of exposure. This inorganic metal occurs naturally in soils, ground water

and surface waters and is often used in electrical equipment and electrical components. It generally gets into water from runoff from mining operations, discharge from processing plants and improper waste disposal. Beryllium compounds have been associated with damage to the bones and lungs and induction of cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. There is limited evidence to suggest that beryllium may pose a cancer risk via drinking water exposure. Therefore, EPA based the health assessment on noncancer effects with an extra uncertainty factor to account for possibel carcinogenicity. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for beryllium at 0.004 part per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to beryllium.

§141.32(e)(55) Cyanide: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that cyanide is a health concern at certain levels of exposure. This inorganic chemical is used in electroplating, steel processing, plastics, synthetic fabrics and fertilizer products. It usually gets into water as a result of improper waste disposal. This chemical has been shown to damage the spleen, brain and liver of humans fatally poisoned with cyanide. EPA has set the drinking water standard for cyanide at 0.2 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to cyanide.

§141.32(e)(56) Nickel: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that nickel poses a health concern at certain levels of exposure. This inorganic metal occurs naturally in soils, ground water and surface waters and is often used in electroplating, stainless steel and alloy products. It generally gets into water from mining and refining operations. This chemical has been shown to damage the heart and liver in laboratory animals when the animals are exposed to high levels over their lifetimes. EPA has set the drinking water standard at 0.1 parts per million (ppm) for nickel to protect against the risk of these adverse effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to nickel.

§141.32(e)(57) Thallium: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that thallium is a health concern at certain high levels of exposure. This inorganic metal is found naturally in soils and is used in electronics, pharmaceuticals, and the manufacture of glass and alloys. This chemical has been shown to damage the kidney, liver, brain and intestines of laboratory animals when the animals are exposed at high levels over their lifetimes. EPA has set the drinking water standard for thallium at 0.002 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to thallium.

§141.32(e)(58) Benzo[a]pyrene: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that benzo[a]pyrene is a health concern at certain levels of exposure. Cigarette smoke and charbroiled meats are common sources of general exposure. The major source of benzo[a]pyrene in drinking water is the leaching from coal tar lining and sealants in water storage tanks. This chemical has been shown to cause cancer in animals such as rats and mice when the animals are exposed at high levels. EPA has set the drinking water standard for benzo[a]pyrene at 0.0002 parts per million (ppm) to protect against the risk of cancer. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to benzo[a]pyrene.

§141.32(e)(59) Dalapon: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that dalapon is a health concern at certain levels of exposure. This organic chemical is a widely used herbicide. It may get into drinking water after application to control grasses in crops, drainage ditches and along railroads. This chemical has been shown to cause damage to the kidney and liver in laboratory animals when the animals are exposed to high levels over their lifetimes. EPA has set the drinking water standard for dalapon at 0.2 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to dalapon.

§141.32(e)(60) Dichloromethane: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that dichloromethane (methylene chloride) is a health concern at certain levels of exposure. This organic chemical is a widely used solvent. It is used in the manufacture of paint remover, as a metal degreaser and as an aerosol propellant. It generally gets into drinking water after improper discharge of waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals

that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for dichloromethane at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe with respect to dichloromethane.

§141.32(e)(61) Di(2-ethylhexyl)adipate: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that di(2-ethylhexyl)adipate is a health concern at certain levels of exposure. Di(2-ethylhexyl)adipate is a widely used plasticizer in a variety of products, including synthetic rubber, food packaging materials and cosmetics. It may get into drinking water after improper waste disposal. This chemical has been shown to damage liver and testes in laboratory animals such as rats and mice exposed to high levels. EPA has set the drinking water standard for di(2-ethylhexyl)adipate at 0.4 parts per million (ppm) to protect against the risk of adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to di(2-ethylhexyl)adipate.

§141.32(e)(62) Di(ethylhexyl)phthalate: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that di(ethylhexyl)phthalate is a health concern at certain levels of exposure. Di(2-ethylhexyl)phthalate is a widely used plasticizer, which is primarily used in the production of polyvinyl chloride (PVC) resins. It may get into drinking water after improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice exposed to high levels over their lifetimes. EPA has set the drinking water standard for di(2-ethylhexyl)phthalate at 0.006 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to di(2-ethylhexyl)phthalate.

§141.32(e)(63) Dinoseb: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that dinoseb is a health concern at certain levels of exposure. Dinoseb is a widely used pesticide and generally gets into drinking water after application on orchards, vineyards and other crops. This chemical has been shown to damage the thyroid and reproductive organs in laboratory animals such as rats exposed to high levels. EPA has set the drinking water standard for dinoseb at 0.007 parts per million (ppm) to protect against the risk of adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to dinoseb.

§141.32(e)(64) Diquat: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that diquat is a health concern at certain levels of exposure. This organic chemical is a herbicide used to control terrestrial and aquatic weeds. It may get into drinking water by runoff into surface water. This chemical has been shown to damage the liver, kidney and gastrointestinal tract and causes cataract formation in laboratory animals such as dogs and rats exposed at high levels over their lifetimes. EPA has set the drinking water standard for diquat at 0.02 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to diquat.

§141.32(e)(65) Endothall: The United States Environmental has determined that endothall is a health concern at certain levels of exposure. This organic chemical is a herbicide used to control terrestrial and aquatic weeds. It may get into water by runoff into surface water. This chemical has been shown to damage the liver, kidney, gastrointestinal tract and reproductive system of laboratory animals such as rats and mice exposed at high levels over their lifetimes. EPA has set the drinking water standard for endothall at 0.1 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to endothall.

§141.32(e)(66) Endrin: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that endrin is a health concern at certain levels of exposure. This organic chemical is a pesticide no longer registered for use in the United States. However, this chemical is persistent in treated soils and accumulates in sediments and aquatic and terrestrial biota. This chemical has been shown to cause damage to the liver, kidney and heart in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. EPA has set the drinking water standard for endrin at 0.002 parts per million (ppm) to protect against the risk of these adverse health effects which have been observed in laboratory animals. Drinking water that meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to endrin.

§141.32(e)(67) Glyphosate: The United States Environmental Protection Agency (EPA) sets drinking

water standards and has determined that glyphosate is a health concern at certain levels of exposure. This organic chemical is a herbicide used to control grasses and weeds. It may get into drinking water by runoff into surface water. This chemical has been shown to cause damage to the liver and kidneys in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. EPA has set the drinking water standard for glyphosate at 0.7 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to glyphosate.

§141.32(e)(68) Hexachlorobenzene: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that hexachlorobenzene is a health concern at certain levels of exposure. This organic chemical is produced as an impurity in the manufacture of certain solvents and pesticides. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed to high levels during their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for hexachlorobenzene at 0.001 parts per million (ppm) to protect against the risk of cancer and other adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to hexachlorobenzene.

§141.32(e)(69) Hexachlorocyclopentadiene: The United States Environmental Protection Agency (EPA) establishes drinking water standards and has determined that hexachlorocyclopentadiene is a health concern at certain levels of exposure. This organic chemical is used as an intermediate in the manufacture of pesticides and flame retardants. It may get into water by discharge from production facilities. This chemical has been shown to damage the kidney and the stomach of laboratory animals when exposed at high levels over their lifetimes. EPA has set the drinking water standard for hexachlorocyclopentadiene at 0.05 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to hexachlorocyclopentadiene.

§141.32(e)(70) Oxamyl: The United States Environmental Protection Agency (EPA) establishes drinking water standards and has determined that oxamyl is a health concern at certain levels of exposure. This organic chemical is used as a pesticide for the control of insects and other pests. It may get into drinking water by runoff into surface water or leaching into ground water. This chemical has been shown to damage the kidneys of laboratory animals such as rats when exposed at high levels over their lifetimes. EPA has set the drinking water standard for oxamyl at 0.2 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to oxamyl.

§141.32(e)(71) Picloram: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that picloram is a health concern at certain levels of exposure. This organic chemical is used as a pesticide for broadleaf weed control. It may get into drinking water by runoff into surface water or leaching into ground water as a result of pesticide application and improper waste disposal. This chemical has been shown to cause damage to the kidneys and liver in laboratory animals such as rats when the animals are exposed at high levels over their lifetimes. EPA has set the drinking water standard for picloram at 0.5 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to picloram.

§141.32(e)(72) Simazine: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that simazine is a health concern at certain levels of exposure. This organic chemical is a herbicide used to control annual grasses and broadleaf weeds. It may leach into ground water or runs off into surface water after application. This chemical may cause cancer in laboratory animals such as rats and mice exposed at high levels during their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for simazine at 0.004 parts per million (ppm) to reduce the risk of cancer or other adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to simazine.

§141.32(e)(73) 1,2,4-trichlorobenzene: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 1,2,4-trichlorobenzene is a health concern at certain levels of exposure. This organic chemical is used as a dye carrier and as a precursor in herbicide manufacture. It generally gets into drinking water by discharges from industrial activities. This chemical has been shown to cause damage to several organs, including the adrenal glands. EPA has set the drinking water standard for 1,2,4-trichlorobenzene at 0.07 parts per million (ppm) to

protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to 1,2,4-trichlorobenzene.

§141.32(e)(74) 1,1,2-trichloroethane: The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined 1,1,2-trichloroethane is a health concern at certain levels of exposure. This organic chemical is an intermediate in the production of 1,1-dichloroethylene. It generally gets into water by industrial discharge of wastes. This chemical has been shown to damage the kidney and liver of laboratory animals such as rats exposed to high levels during their lifetimes. EPA has set the drinking water standard for 1,1,2-trichloroethane at 0.005 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water which meets the EPA standard is associated with little to none of this risk and should be considered safe with respect to 1,1,2-trichloroethane.

§141.32(e)(75) 2,3,7,8-TCDD (Dioxin): The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that dioxin is a health concern at certain levels of exposure. This organic chemical is an impurity in the production of some pesticides. It may get into drinking water by industrial discharge of wastes. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. EPA has set the drinking water standard for dioxin at 0.00000003 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe with respect to dioxin.

§141.33 RECORD MAINTENANCE

Any owner or operator of a public water system subject to the provisions of this part shall retain on its premises or at a convenient location near its premises the following records:

§141.33(a) Requirements: Records of bacteriological analyses made pursuant to this part shall be kept for not less than 5 years. Records of chemical analyses made pursuant to this part shall be kept for not less than 10 years. Actual laboratory reports may be kept, or data may be transferred to tabular summaries, provided that the following information is included:

§141.33(a)(1) The date, place, and time of sampling, and the name of the person who collected the sample;

§141.33(a)(2) Identification of the sample as to whether it was a routine distribution system sample, check sample, raw or process water sample or other special purpose sample;

§141.33(a)(3) Date of analysis;

§141.33(a)(4) Laboratory and person responsible for performing analysis;

§141.33(a)(5) The analytical technique/method used; and

§141.33(a)(6) The results of the analysis.

§141.33(b) Records of Action to Correct Violations: Records of action taken by the system to correct violations of primary drinking water regulations shall be kept for a period not less than 3 years after the last action taken with respect to the particular violation involved.

§141.33(c) Records of Sanitary Surveys: Copies of any written reports, summaries or communications relating to sanitary surveys of the system conducted by the system itself, by a private consultant, or by any local, State or Federal agency, shall be kept for a period not less than 10 years after completion of the sanitary survey involved.

§141.33(d) Records of Variance or Exemption: Records concerning a variance or exemption granted to the system shall be kept for a period ending not less than 5 years following the expiration of such variance or exemption.

§141.35 REPORTING AND PUBLIC NOTIFICATION FOR CERTAIN UNREGULATED CONTAMINANTS

§141.35(a) Applicability: The requirements of this section only apply to the contaminants listed in §141.40.

§141.35(b) Requirements: The owner or operator of a community water system or non-transient, non-community water system who is required to monitor under §141.40 shall send a copy of the results of such monitoring within 30 days of receipt and any public notice under paragraph (d) of this section to the State.

§141.35(c) Records of Variance or Exemption: The State, or the community water system or non-transient, non-community water system who is required to monitor under §141.40 shall furnish the following information to the Administrator for each sample analyzed under §141.40:

§141.35(c)(1) Results of all analytical methods, including negatives;

§141.35(c)(2) Name and address of the system that supplied the sample;

§141.35(c)(3) Contaminant(s);

§141.35(c)(4) Analytical method(s) used;

§141.35(c)(5) Date of sample;

§141.35(c)(6) Date of analysis.

§141.35(d) Notice of Availability of Sampling Results: The owner or operator shall notify persons

served by the system of the availability of the results of sampling conducted under §141.40 by including a notice in the first set of water bills issued by the system after the receipt of the results or written notice within three months. The notice shall identify a person and supply the telephone number to contact for information on the monitoring results. For surface water systems, public notification is required only after the first quarter's monitoring and must include a statement that additional monitoring will be conducted for three more quarters with the results available upon request.

SUBPART E — SPECIAL REGULATIONS, INCLUDING MONITORING REGULATIONS AND PROHIBITION ON LEAD USE

§141.40 MONITORING FOR UNREGULATED INORGANIC & ORGANIC CONTAMINANTS

§141.40(a) Monitoring for Unregulated Organic Chemicals: All community and non-transient, non-community water systems shall monitor for the contaminants listed in paragraph (e) in this section by date specified in Table 1:

Number of persons served	Monitoring to begin no later than—
Over 10,000	Jan. 1, 1988
3,300 to 10,000	Jan. 1, 1989
Less than 3,300	Jan. 1, 1991

§141.40(b) Surface Water Monitoring: Surface water systems shall sample at points in the distribution system representative of each water source or at entry points to the distribution system after any application of treatment. The minimum number of samples is one year of quarterly samples per water source.

§141.40(c) Ground Water Monitoring: Ground water systems shall sample at points of entry to the distribution system representative of each well after any application of treatment. The minimum number of samples is one sample per entry point to the distribution system.

§141.40(d) Confirmation Samples: The State may require confirmation samples for positive or negative results.

§141.40(e) Contaminants to Monitor: Community water systems and non-transient, non-community water systems shall monitor for the following contaminants except as provided in paragraph (f) of this section:

(1) Chloroform
(2) Bromodichloromethane
(3) Chlorodibromomethane
(4) Bromoform
(5) Dibromomethane
(6) m-Dichlorobenzene
(8) 1,1-Dichloropropene
(9) 1,1-Dichloroethane
(10) 1,1,2,2-Tetrachloroethane
(11) 1,3-Dichloropropane
(12) Chloromethane
(13) Bromomethane
(14) 1,2,3-Trichloropropane
(15) 1,1,1,2-Tetrachloroethane
(16) Chloroethane
(17) 2,2-Dichloropropane
(18) o-Chlorotoluene
(19) p-Chlorotoluene
(20) Bromobenzene
(21) 1,3-Dichloropropene

§141.40(f) [Reserved]

§141.40(g) Analytical Methods: Analysis under this section shall be conducted using the recommended EPA methods as follows, or their equivalent as determined by EPA: 502.1, "Volatile Halogenated Organic Compounds in Water by Purge and Trap Gas Chromatography," 503.1, "Volatile Aromatic and Unsaturated Organic Compounds in Water by Purge and Trap Gas Chromatography," 524.1, "Volatile Organic Compounds in Water by Purge and Trap Gas Chromatography/Mass Spectrometry," 524.2, "Volatile Organic Compounds in Water by Purge and Trap Capillary Column Gas Chromatography/Mass Spectrometry, or 502.2, "Volatile Organic Compounds in Water by Purge and Trap Gas Chromatography with Photoionization and Electrolytic Conductivity Detectors in Series." These methods are contained in "Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Source Water," September 1986, available from the Drinking Water Public Docket or National Technical Information Service (NTIS), NTIS PB91-231480 and PB91-146027, U.S. Dept. of Commerce, 5285 Port Royal Road, Springfield, VA 22161. The toll-free number is 800-336-4700.

§141.40(h) Approved Laboratories: Analysis under this section shall only be conducted by laboratories approved under §141.24(g)(11).

§141.40(i) Grandfathering Data: Public water systems may use monitoring data collected any time after January 1, 1983 to meet the requirements for unregulated monitoring, provided that the monitoring program was consistent with the requirements of this section. In addition, the results of EPA's Ground Water Supply Survey may be used in a similar manner for systems supplied by a single well.

§141.40(j) Contaminants for Discretionary Monitoring: Monitoring for the following compounds is required at the discretion of the State:

(1) 1,2,4-Trimethylbenzene;
(2) 1,2,3-Trichlorobenzene;
(3) n-Propylbenzene;
(4) n-Butylbenzene
(5) Naphthalene;
(6) Hexachlorobutadiene;
(7) 1,3,5-Trimethylbenzene
(8) p-Isopropyltoluene;
(9) Isopropylbenzene;
(10) Tert-butylbenzene;
(11) Sec-butylbenzene;
(12) Fluorotrichloromethane;
(13) Dichlorodifluoromethane;
(14) Bromochloromethane.

§141.40(k) Sampling Systems with Fewer than 150 Service Connections: Instead of performing the monitoring required by this section, a community water system or non-transient non-community water system serving fewer than 150 service connections may send a letter to the State stating that the system is available for sampling.

§141.40(l) Repeat Sampling: All community and non-transient, non-community water systems shall repeat the monitoring required in § 141.40 no less frequently than every five years.

§141.40(m) Composite Sampling: States or Public Water Systems may composite up to five samples when monitoring for substances under §§ 141.40(e) and (j).

§141.40(n) Phase II Unregulated Contaminants: Monitoring of the contaminants listed in § 141.40(n)(11) and 141.40(n)(12) shall be conducted as follows:

§141.40(n)(1) Phase II Organic Compounds: Each community and non-transient, non-community water system shall take four consecutive quarterly samples at each sampling point for each contaminant listed in ¶(n)(11) and report the results to the State. Monitoring must be completed by December 31, 1995.

§141.40(n)(2) Phase II Inorganic Chemicals: Each community and non-community, non-transient water system shall take one sample at each sampling point for each contaminant listed in ¶(n)(12) and report the results to the State. Monitoring must be completed by December 31, 1995.

§141.40(n)(3) Waivers for Unregulated Contaminants: Each community and non-transient, non-community water system may apply to the State for a waiver from the requirements of ¶(n)(1) and (n)(2).

§141.40(n)(4) Waiver Criteria: A State may grant a waiver from the requirements of ¶(n)(1) based on the criteria specified in § 141.24(h)(6). A State may grant a waiver from the requirements of ¶(n)(2) if previous analytical results indicate that contamination would not occur, provided this data was collected after January 1, 1990.

§141.40(n)(5) Ground Water Sampling Points: Ground water 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 sampling point). Each sample must be taken at the same sampling point, unless conditions make another sampling point more representative of each source or treatment plant.

§141.40(n)(6) Surface Water Sampling Points: Surface water systems shall take a minimum of one sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment (hereafter called a sampling point). Each sample must be taken at the same sampling point, unless conditions make another sampling point more representative of each source or treatment plant.

[NOTE: For purposes of this paragraph, surface water systems include systems with a combination of surface and ground water sources.]

§141.40(n)(7) Multiple Sources: If the system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions (i.e., when water representative of all sources is being used).

§141.40(n)(8) Confirmation Sampling: The State may require a confirmation sample for positive or negative results.

§141.40(n)(9) Composite Sampling: The State may reduce the total number of samples a system must analyze by allowing the use of compositing. Composite samples from a maximum of five sampling points are allowed. Compositing of samples must be done in the laboratory and the composite sample must be analyzed within 14 days of collection. If the population served by the system is >3,300 persons, then compositing may only be permitted by the State at sampling points within a single system. In systems serving ≤3,300 persons, the State may permit compositing among different systems provided the 5-sample limit is maintained.

§141.40(n)(10) Small System Exemptions: Instead of performing the monitoring required by this section, a community water system or non-transient non-community water system serving fewer than 150

service connections may send a letter to the State stating that the system is available for sampling. This letter must be sent to the State by January 1, 1994. The system shall not send such samples to the State, unless requested to do so by the State.

§141.40(n)(11) List of Unregulated Organic Contaminants: The listed methods are in the manuals cited at §141.24(h)(12).

Organic Contaminants	EPA Analytical Method
Aldicarb	531.1
Aldicarb Sulfoxide	531.1
Aldicarb Sulfone	531.1
Aldrin	505, 508, 525.1
Butachlor	507, 525.1
Carbaryl	531.1
Dicamba	515.1
Dieldrin	505, 508, 525.1
3-Hydroxycarbofuran	531.1
Methomyl	531.1
Metolachlor	507, 525.1
Metribuzin	507, 508, 525.1
Propachlor	508, 525.1

§141.40(n)(12) List of Unregulated Inorganic Contaminants:

Contaminant	EPA Analytical Method
Sulfate	Colorimetric

SUBPART F — MAXIMUM CONTAMINANT LEVEL GOALS

§141.50 MAXIMUM CONTAMINANT LEVEL GOALS (MCLGs) FOR ORGANIC CONTAMINANTS

§141.50(a) ZERO MCLGs:

(19) Benzo(a)pyrene
(20) Dichloromethane (methylene chloride)
(21) Di(2-ethylhexyl)phthalate
(22) Hexachlorobenzene
(23) 2,3,7,8-TCDD (Dioxin)

§141.50(b) Non-zero MCLGs: MCLGs for the following contaminants are as indicated:

Contaminant	MCLG (mg/l)
(1) 1,1-Dichloroethylene	0.007
(2) 1,1,1-Trichloroethane	0.20
(3) para-Dichlorobenzene	0.075
(4) Aldicarb	0.001
(5) Aldicarb sulfoxide	0.001
(6) Aldicarb sulfone	0.001
(7) Atrazine	0.003
(8) Carbofuran	0.04
(9) o-Dichlorobenzene	0.6
(10) cis-1,2-Dichloroethylene	0.07
(11) trans-1,2-Dichloroethylene	0.1
(12) 2,4-D	0.07
(13) Ethylbenzene	0.7
(14) Lindane	0.0002
(15) Methoxychlor	0.04
(16) Monochlorobenzene	0.1
(17) Styrene	0.1
(18) Toluene	1
(19) 2,4,5-TP	0.05
(20) Xylenes (total)	10
(21) Dalapon	0.2
(22) Di(2-ethylhexyl)adipate	0.4
(23) Dinoseb	0.007
(24) Diquat	0.02
(25) Endothall	0.1
(26) Endrin	0.002
(27) Glyphosate	0.7
(28) Hexachlorocyclopentadiene	0.05
(29) Oxamyl (Vydate)	0.2
(30) Picloram	0.5
(31) Simazine	0.004
(32) 1,2,4-Trichlorobenzene	0.07
(33) 1,1,2-Trichloroethane	0.003

§141.51 MAXIMUM CONTAMINANT LEVEL GOALS FOR INORGANIC CONTAMINANTS

§141.51(a) [Reserved]

§141.51(b) MCLGs: MCLGs for the following contaminants are as indicated:

Contaminant	MCLG (mg/l)[15]
(1) Fluoride	4.0
(2) Asbestos	7 million fibers/liter (longer than 10 μm)
(3) Barium	2
(4) Cadmium	0.005
(5) Chromium	0.1
(6) Mercury	0.002
(7) Nitrate	10 (as Nitrogen)
(8) Nitrite	1 (as Nitrogen)
(9) Total Nitrate + Nitrite	10 (as Nitrogen)
(10) Selenium	0.05
(11) Antimony	0.006
(12) Beryllium	0.004
(13) Cyanide (as free cyanide)	0.2
(14) Nickel	0.1
(15) Thallium	0.0005

SUBPART G — NATIONAL REVISED PRIMARY DRINKING WATER REGULATIONS: MAXIMUM CONTAMINANT LEVELS

§141.60 EFFECTIVE DATES

§141.60(a) VOCs: The effective dates for §141.61 are as follows:

(1) The effective date for paragraphs (a)(1) through (a)(8) of §141.61 is January 9, 1989.

(2) The effective date for paragraphs (a)(9) through (a)(18) and (c)(1) through (c)(18) of §141.61 is July 30, 1992.

(3) The effective date for paragraphs (a)(19) through (a)(21) and (c)(19) through (c)(25), and (c)(27) through (c)(33) of §141.61 is January 17, 1994. The effective date of §141.61(c)(26) is August 17, 1992.

§141.60(b) SOCs: The effective dates for §141.62 are as follows:

(1) The effective date of paragraph (b)(1) of §141.62 is October 2, 1987.

(2) The effective date for paragraphs (b)(2) and (b)(4) through (b)(10) of §141.62 is July 30, 1992.

(3) The effective date for paragraphs (b)(11) through (b)(15) of §141.62 is January 17, 1994.

§141.61 MAXIMUM CONTAMINANT LEVELS (MCLs) FOR ORGANIC COMPOUNDS

§141.61(a) Volatile Organic MCLs: The following maximum contaminant levels for organic contaminants apply to community and non-transient, non-community water systems.

CAS No.	Contaminant	MCL (mg/l)
(1) 75-01-4	Vinyl chloride	0.002
(2) 71-43-2	Benzene	0.005
(3) 56-23-5	Carbon tetrachloride	0.005
(4) 107-06-2	1,2-Dichloroethane	0.005
(5) 79-01-6	Trichloroethylene	0.005
(6) 106-46-7	para-Dichlorobenzene	0.075
(7) 75-35-4	1,1-Dichloroethylene	0.007
(8) 71-55-6	1,1,1-Trichloroethane	0.2
(9) 156-59-2	cis-1,2-Dichloroethylene	0.07
(10) 78-87-5	1,2-Dichloropropane	0.005
(11) 100-41-4	Ethylbenzene	0.7
(12) 108-90-7	Monochlorobenzene	0.1
(13) 95-50-1	o-Dichlorobenzene	0.6
(14) 100-42-5	Styrene	0.1
(15) 127-18-4	Tetrachloroethylene	0.005
(16) 108-88-3	Toluene	1
(17) 156-60-5	trans-1,2-Dichloroethylene	0.1
(18) 1330-20-7	Xylenes (total)	10
(19) 75-09-2	Dichloromethane	0.005
(20) 120-82-1	1,2,4-Trichlorobenzene	0.07
(21) 79-00-5	1,1,2-Trichloroethane	0.005

§141.61(b) Organic BATs: The Administrator, pursuant to Section 1412 of the Act, hereby identifies as indicated in the Table below granular activated carbon (GAC), packed tower aeration (PTA), or oxidation (OX) as the best technology treatment technique, or other means available for achieving compliance with the maximum contaminant level for synthetic organic contaminants identified in paragraphs (a) and (c) of this section:

BAT FOR ORGANIC CONTAMINANTS LISTED IN SECTION 141.61(a) and (c)

CAS No.	Contaminant	GAC	PTA	OX
15972-60-8	Alachlor	X		
116-06-3	Aldicarb	X		
1646-88-4	Aldicarb sulfone	X		
1646-87-3	Aldicarb sulfoxide	X		
1912-24-9	Atrazine	X		
71-43-2	Benzene	X	X	
50-32-8	Benzo[a]pyrene	X		
1563-66-2	Carbofuran	X		
56-23-5	Carbon tetrachloride	X	X	
57-74-9	Chlordane	X		
75-99-0	Dalapon	X		
94-75-7	2,4-D	X		
96-12-8	Dibromochloropropane(DBCP)	X	X	
95-50-1	o-Dichlorobenzene	X	X	
107-06-2	1,2-Dichloroethane	X	X	
156-59-2	cis-1,2-Dichloroethylene	X	X	
156-60-5	trans-1,2-Dichloroethylene	X	X	
75-35-4	1,1-Dichloroethylene	X	X	
75-09-2	Dichloromethane		X	
78-87-5	1,2-Dichloropropane	X	X	
103-23-1	Di(2-ethylhexyl)adipate	X	X	
117-81-7	Di(2-ethylhexyl)phthalate	X		
88-85-7	Dinoseb	X		
85-00-7	Diquat	X		
145-73-3	Endothall	X		
72-20-8	Endrin	X		
106-93-4	Ethylene Dibromide (EDB)	X	X	
100-41-4	Ethylbenzene	X	X	
1071-53-6	Glyphosate			X
76-44-8	Heptachlor	X		
1024-57-3	Heptachlor epoxide	X		
118-74-1	Hexachlorobenzene	X		
77-47-3	Hexachlorocyclopentadiene	X	X	
58-89-9	Lindane	X		
72-43-5	Methoxychlor	X		
108-90-7	Monochlorobenzene	X	X	
23135-22-0	Oxamyl (Vydate)	X		
106-46-7	para-Dichlorobenzene	X	X	
1918-02-1	Picloram	X		
1336-36-3	Polychlorinated biphenyls (PCBs)	X		
87-86-5	Pentachlorophenol	X		
122-34-9	Simazine	X		
100-42-5	Styrene	X	X	
1746-01-6	2,3,7,8-TCDD (Dioxin)	X		
93-72-1	2,4,5-TP (Silvex)	X		
127-18-4	Tetrachloroethylene	X	X	
120-82-1	1,2,4-Trichlorobenzene	X	X	
71-55-6	1,1,1-Trichloroethane	X	X	
79-00-5	1,1,2-Trichloroethane	X	X	
79-01-6	Trichloroethylene	X	X	
108-88-3	Toluene	X		
8001-35-2	Toxaphene	X		
75-01-4	Vinyl chloride		X	
1330-20-7	Xylene	X	X	

§141.61(c) Synthetic Organic MCLs: The following maximum contaminant levels for synthetic organic contaminants apply to community water systems and non-transient, non-community water systems.

CAS No.	Contaminant	MCL (mg/l)
(1) 15972-60-8	Alachlor	0.002
(2) 116-06-3	Aldicarb	0.003
(3) 1646-87-3	Aldicarb sulfoxide	0.003
(4) 1646-87-4	Aldicarb sulfone	0.003
(5) 1912-24-9	Atrazine	0.003
(6) 1563-66-2	Carbofuran	0.04
(7) 57-74-9	Chlordane	0.002
(8) 96-12-8	Dibromochloropropane	0.0002
(9) 94-75-7	2,4-D	0.07
(10) 106-93-4	Ethylene dibromide	0.00005
(11) 76-44-8	Heptachlor	0.0004
(12) 1024-57-3	Heptachlor epoxide	0.0002
(13) 58-89-9	Lindane	0.0002
(14) 72-43-5	Methoxychlor	0.04
(15) 1336-36-3	Polychlorinated biphenyls	0.0005
(16) 87-86-5	Pentachlorophenol	0.001
(17) 8001-35-2	Toxaphene	0.003
(18) 93-72-1	2,4,5-TP	0.05
(19) 50-32-8	Benzo[a]pyrene	0.0002
(20) 75-99-0	Dalapon	0.2
(21) 103-23-1	Di(2-ethylhexyl)adipate	0.4
(22) 117-81-7	Di(2-ethylhexyl)phthalate	0.006
(23) 88-85-7	Dinoseb	0.007
(24) 85-00-7	Diquat	0.02
(25) 145-73-3	Endothall	0.1
(26) 72-20-8	Endrin	0.002
(27) 1071-53-6	Glyphosate	0.7
(28) 118-74-1	Hexachlorobenzene	0.001
(29) 77-47-4	Hexachlorocyclopentadiene	0.05
(30) 23135-22-0	Oxamyl (Vydate)	0.2
(31) 1918-02-1	Picloram	0.5
(32) 122-34-9	Simazine	0.004
(33) 1746-01-6	2,3,7,8-TCDD (Dioxin)	3×10^{-6}

§141.62 MAXIMUM CONTAMINANT LEVELS (MCLs) FOR INORGANIC CONTAMINANTS

§141.62(a) [Reserved]

§141.62(b) MCLs for IOCs: The maximum contaminant levels for inorganic contaminants specified in paragraphs (b)(2) - (6), (b)(10), and (b)(11) - (15) of this section apply to community water systems and non-transient, non-community water systems. The maximum contaminant level specified in paragraph (b)(1) of this section only applies to community water systems. The maximum contaminant levels specified in (b)(7), (b)(8), and (b)(9) of this section apply to community water systems; non-transient, non-community water systems; and transient non-community water systems.

Contaminant	MCL (mg/l)
(1) Fluoride	4.0
(2) Asbestos	7 million fibers/liter (longer than 10 μm)
(3) Barium	2
(4) Cadmium	0.005
(5) Chromium	0.1
(6) Mercury	0.002
(7) Nitrate	10 (as Nitrogen)
(8) Nitrite	1 (as Nitrogen)
(9) Total Nitrate + Nitrite	10 (as Nitrogen)
(10) Selenium	0.005
(11) Antimony	0.006
(12) Beryllium	0.004
(13) Cyanide (as free cyanide)	0.2
(14) Nickel	0.1
(15) Thallium	0.002

§141.62(c) BATs for IOCs: The Administrator, pursuant to Section 1412 of the Act, hereby identifies the following as the best technology, treatment technique, or other means available for achieving compliance with the maximum contaminant levels for inorganic contaminants identified in paragraph (b) of this section, except fluoride:

BAT FOR INORGANIC CONTAMINANTS LISTED IN SECTION 141.62(b)

Chemical Name	BAT(s)
Antimony	2,7
Asbestos	2,3,8
Barium	5,6,7,9
Beryllium	1,2,5,6,7
Cadmium	2,5,6,7
Chromium	2,5,6[2],7
Cyanide	5,7,10
Mercury	2[1],4,6[1],7[1]
Nickel	5,6,7
Nitrate	5,7,9
Nitrite	5,7
Selenium	1,2[3],6,7,9
Thallium	1,5

[1] BAT only if influent Hg concentrations $\leq$10 μg/l.
[2] BAT for Chromium III only.
[3] BAT for Selenium IV only.

Key to BATs in Table:
1 = Activated Alumina
2 = Coagulation/Filtration
3 = Direct and Diatomite Filtration
4 = Granular Activated Carbon
5 = Ion Exchange
6 = Lime Softening
7 = Reverse Osmosis
8 = Corrosion Control
9 = Electrodialysis
10 = Chlorine
11 = Ultraviolet

§141.89 ANALYTICAL METHODS

* * * * *

[9] For analyzing lead and copper, the technique applicable to total metals must be used and samples cannot be filtered. Samples that contain less than 1 NTU (nephelometric turbidity unit) and are properly preseved (conc HNO_3 to pH <2) may be analyzed directly (without digestion) for total metals; otherwise, digestion is required. Turbidity must be measured on the preserved samples just prior to when metal analysis is initiated. When digestion is required, the 'total recoverable' technique as defined in the method must be used.

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SUBPART J — USE OF NON-CENTRALIZED TREATMENT DEVICES

§141.100 CRITERIA AND PROCEDURES FOR PUBLIC WATER SYSTEMS USING POINT-OF-ENTRY DEVICES

§141.100(a) Requirements: Public water systems may use point- of-entry devices to comply with maximum contaminant levels only if they meet the requirements of this section.

§141.100(b) Operation and Maintenance Responsibility: It is the responsibility of the public water system to operate and maintain the point-of-entry treatment system.

§141.100(c) Monitoring Plan: The public water system must develop and obtain State approval for a monitoring plan before point-of-entry devices are installed for compliance. Under the plan approved by the State, point-of-entry devices must provide health protection equivalent to central water treatment. "Equivalent" means that the water would meet all national primary drinking water regulations and would be of acceptable quality similar to water distributed by a well-operated central treatment plant. In addition to the VOCs, monitoring must include physical measurements and observations such as total flow treated and mechanical condition of the treatment equipment.

§141.100(d) Microbiological Safety: Effective technology must be properly applied under a plan approved by the State and the microbiological safety of the water must be maintained.

§141.100(d)(1) System Certification: The State must require adequate certification of performance, field testing, and, if not included in the certification process, a rigorous engineering design review of the point-of-entry devices.

§141.100(d)(2) Point-of-Entry Devices: The design and application of the point-of-entry devices must consider the tendency for increase in heterotrophic bacteria concentrations in water treated with activated carbon. It may be necessary to use frequent back-washing, post-contactor disinfection, and Heterotrophic Plate Count monitoring to ensure that the microbiological safety of the water is not compromised.

§141.100(e) Rights and Responsibilities: All consumers shall be protected. Every building connected to the system must have a point-of-entry device installed, maintained, and adequately monitored. The State must be assured that every building is subject to treatment and monitoring, and that the rights and responsibilities of the public water system customer convey with title upon sale of property.

§141.101 USE OF OTHER NON-CENTRALIZED TREATMENT DEVICES

Public water systems shall not use bottled water or point-of-use devices to achieve compliance with an MCL. Bottled water or point-of-use devices may be used on a temporary basis to avoid an unreasonable risk to health.

SUBPART K — TREATMENT TECHNIQUES

§141.110 GENERAL REQUIREMENTS

The requirements of Subpart K constitute national primary drinking water regulations. These regulations establish treatment techniques in lieu of maximum contaminant levels for specified contaminants.

§141.111 TREATMENT TECHNIQUES FOR ACRYLAMIDE & EPICHLOROHYDRIN

Each public water system must certify annually in writing to the State (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 levels specified as follows:

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

Epichlorohydrin = 0.01% dosed at 20 ppm (or equivalent). Certifications can rely on manufacturers or third parties, as approved by the State.