TITLE 179 PUBLIC WATER SYSTEMS

CHAPTER 14 CONSUMER CONFIDENCE REPORTS

14-001 SCOPE AND AUTHORITY: This chapter establishes the minimum requirements for the content of annual reports that community water systems must deliver to their customers. These reports must contain information on the quality of the water delivered by the systems and characterize the risks (if any) from exposure to contaminants detected in the drinking water in an accurate and understandable manner. The authority is found in Neb. Rev. Stat. §§ 71-5301 to 71-5313.

14-002 DEFINITIONS: For this chapter:

Customers means billing units or service connections to which water is delivered by a community water system.

Detected means at or above the levels prescribed by 179 NAC 3-005.01 item 4.a for inorganic contaminants; at or above the levels prescribed by 179 NAC 3-007.02G for the contaminants listed in 179 NAC 2-002.~~02B1~~04B1; at or above the level prescribed by 179 NAC 3-007.03 item 17 for the contaminants listed in 179 NAC 2-002.~~02B2~~04B2; at or above the levels prescribed by 179 NAC 16-004.02B item 4 for the contaminants or contaminant groups listed in 179 NAC 2-002.04E1, and at or above the levels prescribed by 179 NAC 3-008.01B for radioactive contaminants.

14-003 DATES REPORTS DUE

14-003.01 Existing Systems: Each existing community water system must deliver its first report by October 19, 1999, its second report by July 1, 2000, and subsequent reports by July 1 annually thereafter.

14-003.02 New Systems: A new community water system must deliver its first report by July 1 of the year after its first full calendar year in operation and annually thereafter.

14-003.03 Systems That Sell Water to Consecutive Systems: A community water system that sells water to another community water system must deliver the applicable information required in 179 NAC 14 to the buyer system:

1. No later than April 19, 1999, by April 1, 2000, and by April 1 annually thereafter or

2. On a date mutually agreed upon by the seller and the purchaser, and specifically included in a contract between the parties.

14-004 CONTENT OF THE REPORTS

14-004.01 Each community water system must provide to its customers an annual report that contains the information specified in 179 NAC 14-004 and 14-005.

14-004.02 Information on the source of the water delivered:

14-004.02A Each report must identify the source(s) of the water delivered by the community water system by providing information on:

1. The type of the water: e.g., surface water, ground water; and
2. The commonly used name (if any) and location of the body (or bodies) of water.

14-004.02B If a source water assessment has been completed, the report must notify consumers of the availability of this information and the means to obtain it. Systems are encouraged to highlight in the report significant sources of contamination in the source water area if they have readily available information. When a source water assessment has been completed, the report must include a brief summary of the system's susceptibility to potential sources of contamination, using language provided by the Department or written by the system.

14-004.03 Definitions

14-004.03A Each report must include the following definitions:

1. Maximum Contaminant Level Goal (MCLG) means the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

2. Maximum Contaminant Level (MCL) means the highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

14-004.03B A community water system operating under a variance or an exemption must include the following definition: Variances and Exemptions means state permission not to meet an MCL or a treatment technique under certain conditions.

14-004.03C A report which contains data on contaminants that the Department regulates using any of the following terms must include the applicable definitions:

1. Treatment Technique means a required process intended to reduce the level of a contaminant in drinking water.

2. Action Level means the concentration of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow.

3. Maximum residual disinfectant level goal or MRDLG: The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

4. Maximum residual disinfectant level or MRDL: The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

14-004.04 Information on Detected Contaminants

14-004.04A 179 NAC 14-004.04A specifies the requirements for information to be included in each report for contaminants subject to mandatory monitoring (except *Cryptosporidium*). It applies to:

1. Contaminants subject to an MCL, action level, maximum residual disinfectant level, or treatment technique (regulated contaminants); and
2. Contaminants for which monitoring is required by 40 CFR 141.40 which is incorporated herein by reference in Attachment 1 (unregulated contaminants).

14-004.04B The data relating to these contaminants must be displayed in one table or in several adjacent tables. Any additional monitoring results which a community water system chooses to include in its report must be displayed separately.

14-004.04C The data must be derived from data collected to comply with state monitoring and analytical requirements during calendar year 1998 for the first report and subsequent calendar years thereafter except that where a system is allowed to monitor for regulated contaminants less often than once a year, the table(s) must include the date and results of the most recent sampling and the report must include a brief statement indicating that the data presented in the report are for the most recent testing done in accordance with the regulations. No data older than five years need be included.

14-004.04D For detected regulated contaminants (listed in Appendix A to this chapter), the table(s) must contain:

1. The MCL for that contaminant expressed as a number equal to or greater than 1.0 (as provided in Appendix A to 179 NAC 14).

2. The MCLG for that contaminant expressed in the same units as the MCL.

3. If there is no MCL for a detected contaminant, the table must indicate that there is a treatment technique, or specify the action level, applicable to that contaminant, and the report must include the definitions for treatment technique and/or action level, as appropriate, specified in 179 NAC 14-004.03C.

4. For contaminants subject to an MCL, except turbidity and total coliforms, the highest contaminant level used to determine compliance with a drinking water standard and the range of detected levels, as follows: (Note that when rounding of results to determine compliance with the MCL is allowed by the regulations, rounding should be done prior to multiplying the results by the factor listed in Appendix A of 179 NAC 14).

   a. When compliance with the MCL is determined annually or less frequently, use the highest detected level at any sampling point and the range of detected levels expressed in the same units as the MCL.

   b. When compliance with the MCL is determined by calculating a running annual average of all samples taken at a ~~sampling point~~monitoring location, use the highest average of any of the ~~sampling points~~monitoring locations and the range of all ~~sampling points~~monitoring locations expressed in the same units as the MCL. For the MCLs for TTHMs and HAA5s in 179 NAC 2-002.04E, systems must include the highest locational running annual average for TTHMs and HAA5s and the range of individual sample results for all monitoring locations expressed in the same units as the MCL. If more than one location exceeds the TTHM or HAA5 MCL, the system must include the locational running annual averages for all locations that exceed the MCL.

   c. When compliance with the MCL is determined on a system-wide basis by calculating a running annual average of all samples at all ~~sampling points~~monitoring locations, use the average and range of detection expressed in the same units as the MCL. When the system has individual sample results for an initial distribution system evaluation (IDSE), the system must include those results when determining the range of TTHM and HAA5 results to be reported in the annual consumer confidence report for the calendar year that the IDSE samples were taken.

5. For Turbidity

   a. When it is reported pursuant to 40 CFR 141.13 which is incorporated herein by reference in Attachment 1, use the highest average monthly value.

b. When it is reported pursuant to the requirements of 179 NAC 13-004, use the highest monthly value. The report should include an explanation of the reasons for measuring turbidity.

c. When it is reported pursuant to 179 NAC 13-006 or 179 NAC 17-005 or 179 NAC19-009.02: the highest single measurement and the lowest monthly percentage of samples meeting the turbidity limits specified in 179 NAC 13-006 or 179 NAC 17-005 or 179 NAC 19-009.02 for the filtration technology being used. The report should include an explanation of the reasons for measuring turbidity.

6. For Lead and Copper, use the 90th percentile value of the most recent round of sampling and the number of sampling sites exceeding the action level.

7. For Total Coliform

a. Use the highest monthly number of positive samples for systems collecting fewer than 40 samples per month, or

b. Use the highest monthly percentage of positive samples for systems collecting at least 40 samples per month.

8. For Fecal Coliform, use the total number of positive samples.

9. Likely Source: Include the likely source(s) of detected contaminants to the best of the operator's knowledge. Specific information regarding contaminants may be available in sanitary surveys and source water assessments, and should be used when available to the operator. If the operator lacks specific information on the likely source, the report must include one or more of the typical sources for that contaminant listed in Appendix A to 179 NAC 14 that is most applicable to the system.

14-004.04E Multiple Independent Distribution Systems: If a community water system distributes water to its customers from multiple hydraulically independent distribution systems that are fed by different raw water sources, the table should contain a separate column for each service area and the report should identify each separate distribution system. Alternatively, systems could produce separate reports tailored to include data for each service area.

14-004.04F The table(s) must clearly identify any data indicating violations of MCLs, MRDLs, or treatment techniques, and the report must contain a clear and readily understandable explanation of the violation including: the length of the violation, the potential adverse health effects, and actions taken by the system to

address the violation. To describe the potential health effects, the system must use the relevant language of Appendix A to 179 NAC 14.

14-004.04G For detected unregulated contaminants for which monitoring is required (except *Cryptosporidium*), the table(s) must contain the average and range at which the contaminant was detected. The report may include a brief explanation of the reasons for monitoring for unregulated contaminants.

14-004.05 Information on *Cryptosporidium*, radon, and other contaminants:

14-004.05A If the system has performed any monitoring for *Cryptosporidium* which indicates that *Cryptosporidium* may be present in the source water or the finished water, the report must include:

1. A summary of the results of the monitoring, and

2. An explanation of the significance of the results.

14-004.05B If the system has performed any monitoring for radon which indicates that radon may be present in the finished water, the report must include:

1. The results of the monitoring, and
2. An explanation of the significance of the results.

14-004.06 Compliance with Drinking Water Standards: In addition to the requirements of 179 NAC 14-004.04F, the report must note any violation that occurred during the year covered by the report of a requirement listed below, and include a clear and readily understandable explanation of the violation, any potential adverse health effects, and the steps the system has taken to correct the violation.

1. Monitoring and reporting of compliance data;

2. Filtration and disinfection prescribed by 179 NAC 13, Surface Water Treatment (for surface water and ground water under the influence of surface water systems). For systems which have failed to install adequate filtration or disinfection equipment or processes, or have had a failure of such equipment or processes which constitutes a violation, the report must include the following language as part of the explanation of potential adverse health effects: Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites which can cause symptoms such as nausea, cramps, diarrhea, and associated headaches;

3. Lead and copper control requirements prescribed by 179 NAC 12. For systems that fail to take one or more actions prescribed by 179 NAC 12-003.02, 12-004, 12-005, 12-006, 12-007 the report must include the

applicable language of Appendix A to 179 NAC 14 for lead, copper or both;

4. Treatment techniques for Acrylamide and Epichlorohydrin prescribed in 179 NAC 2-002.~~03~~05. For systems that violate the requirements of 179 NAC 2-002.~~03~~05, the report must include the relevant language from Appendix A to 179 NAC 14;

5. Recordkeeping of compliance data;

6. Special monitoring requirements for unregulated contaminants and sodium; and

7. Violation of the terms of a variance, an exemption, or an administrative or judicial order.

14-004.07 Variances and Exemptions: If a system is operating under the terms of a variance or an exemption issued under 179 NAC 6, the report must contain:

1. An explanation of the reasons for the variance or exemption,

2. The date on which the variance or exemption was issued,

3. A brief status report on the steps the system is taking to install treatment, find alternative sources of water, or otherwise comply with the terms and schedules of the variance or exemption, and

4. A notice of any opportunity for public input in the review, or renewal, of the variance or exemption.

14-004.08 Additional Information:

14-004.08A The report must contain a brief explanation regarding contaminants which may reasonably be expected to be found in drinking water including bottled water. This explanation may include the language of 179 NAC 14-004.08A items one to three or systems may use their own comparable language. The report also must include the language of 179 NAC 14-004.08A item 4.

1. The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and ground water wells. As water travels over the surface of the land or through the ground, it dissolves naturally-occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

2. Contaminants that may be present in source water include:

a. Microbial contaminants, such as viruses and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

b. Inorganic contaminants, such as salts and metals, which can be naturally-occurring or result from urban stormwater runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

c. Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.

d. Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by-products of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems.

e. Radioactive contaminants, which can be naturally-occurring or be the result of oil and gas production and mining activities.

3. In order to ensure that tap water is safe to drink, the Director prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. FDA regulations establish limits for contaminants in bottled water which must provide the same protection for public health.

4. Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the Environmental Protection Agency's Safe Drinking Water Hotline (800-426-4791) or the Department of Health and Human Services ~~Regulation and Licensure~~, Division of Public Health ~~Assurance Division~~ at 402-471-2541.

5. The systems may include such additional information as they deem necessary for public education consistent with, and not detracting from, the purpose of the report.

6. Systems required to comply with 179 NAC 8 (upon its effective date)

a. Any ground water system that receives notice from the Department of a significant deficiency or notice from a laboratory of a fecal indicator-positive ground water source sample that is not invalidated by the Department under 179 NAC 8-005.04 must inform its customers of any significant deficiency that is uncorrected at the time of the next report or of any fecal indicator-positive ground water source sample in the next report. The system must continue to inform the public annually until the

Department determines that particular significant deficiency is corrected or the fecal contamination in the ground water source is addressed under 179 NAC 8-006.01. Each report must include the following elements.

(1) The nature of the particular significant deficiency or the source of the fecal contamination (if the source is known) and the date the significant deficiency was identified by the Department or the dates of the fecal indicator-positive ground water source samples;

(2) If the fecal contamination in the ground water source has been addressed under 179 NAC 8-006.01 and the date of such action.

(3) For each significant deficiency or fecal contamination in the ground water source that has not been addressed under 179 NAC 8-006.01, the Department-approved plan and schedule for correction, including interim measures, progress to date, and any interim measures completed; and

(4) If the system receives notice of a fecal indicator-positive ground water source sample that is not invalidated by the Department under 179 NAC 8-005.04, the potential health effects using the health effects language of Appendix A of 179 NAC 14.

b. If directed by the Department, a system with significant deficiencies that have been corrected before the next report is issued must inform its customers of the significant deficiency, how the deficiency was corrected, and the date of correction under 179 NAC 14-004.08A item 6.a.

14-004.08B Phone Number: The report must include the telephone number of the owner, operator, or designee of the community water system as a source of additional information concerning the report.

14-004.08C Other Languages: In communities ~~with a large proportion of~~ that have a population with 20% or more non-English speaking residents, the report must contain information in the appropriate language(s) regarding the importance of the report or contain a telephone number or address where such residents may contact the system to obtain a translated copy of the report or assistance in the appropriate language.

14-004.08D Meetings: The report must include information (e.g., time and place of regularly scheduled board meetings) about opportunities for public participation in decisions that may affect the quality of the water.

14-004.08E The systems may include such additional information as they deem necessary for public education consistent with, and not detracting from, the purpose of the report.

14-005 REQUIRED ADDITIONAL HEALTH INFORMATION

14-005.01 All reports must prominently display the following language: Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. EPA/CDC guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline (800-426-4791) or the Department of Health and Human Services ~~Regulation and Licensure~~, Division of Public Health ~~Assurance Division~~ at 402-471-2541.

14-005.02 A system that detects arsenic above 0.005 mg/L and up to and including 0.010 mg/L:

1. Must include in its report a short informational statement about arsenic, using language such as: While your drinking water meets EPA's standard for arsenic, it does contain low levels of arsenic. EPA's standard balances the current understanding of arsenic's possible health effects against the costs of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.

2. May write its own educational statement, but only in consultation with the Department.

14-005.03 A system which detects nitrate at levels above 5 mg/L, but below the MCL:

1. Must include a short informational statement about the impacts of nitrate on children using language such as: Nitrate in drinking water at levels above 10 ppm is a health risk for infants of less than six months of age. High nitrate levels in drinking water can cause blue baby syndrome. Nitrate levels may rise quickly for short periods of time because of rainfall or agricultural activity. If you are caring for an infant, you should ask advice from your health care provider.

2. May write its own educational statement in consultation with the Department.

14-005.04 ~~Systems which detect lead above the action level in more than 5% and up to and including 10% of homes sampled:~~ Every report must include the following lead-specific information:

1. ~~Must include a~~A short informational statement about ~~the special impact of~~ lead in drinking water and its effects on children ~~using language such as: "Infants and young children are typically more vulnerable to lead in drinking water than the general population~~. The statement must include the following information: If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. [NAME OF UTILITY] is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your water, you may wish to have your water tested. Information on lead in drinking water, testing methods, and steps you can take to minimize exposure is available from the Safe Drinking Water Hotline or at http://www.epa.gov/safewater/lead. ~~It is possible that lead levels at your home may be higher than at other homes in the community as a result of materials used in your home's plumbing. If you are concerned about elevated lead levels in your home's water, you may wish to have your water tested and flush your tap for 30 seconds to 2 minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline (800-426-4791) or the Department of Health and Human Services Regulation and Licensure, Public Health Assurance Division at 402-471-2541.~~

2. ~~May~~ A system may write its own educational statement in consultation with the Department.

14-005.05 Community Water Systems that detect TTHMs above 0.080 mg/L, but below the MCL in 179 NAC 2-002.~~02E1~~04 E1, as an annual average, monitored and calculated under the provisions of 179 NAC 16-005, must include health effects language for TTHMs prescribed by Appendix A to 179 NAC 14.

14-005.06 A community water system that detects arsenic above 0.010 mg/L and up to and including 0.05 mg/L must include the arsenic health effects language prescribed by Appendix A to 179 NAC 14.

14-006 REPORT DELIVERY AND RECORDKEEPING

14-006.01 Except as provided in 179 NAC 14-006.07, each community water system must mail or otherwise directly deliver one copy of the report to each customer.

14-006.02 The system must make a good faith effort to reach consumers who do not get water bills, using means recommended by the Department. An adequate good faith effort must be tailored to the consumers who are served by the system but are not bill-paying customers, such as renters or workers. A good faith effort to reach consumers would include a mix of methods appropriate to the particular system such as: Posting the reports on the internet; mailing to postal patrons in metropolitan areas; advertising the availability of the report in the news media; publication in a local newspaper; posting in public places such as cafeterias or lunch rooms of public buildings; delivery of multiple copies for distribution by single-biller customers such as apartment buildings or large private employers; delivery to community organizations.

14-006.03 No later than the date the system is required to distribute the report to its customers, each community water system must mail a copy of the report to the primacy agency, followed within three months by a certification that the report has been distributed to customers, and that the information is correct and consistent with the compliance monitoring data previously submitted to the Department.

14-006.04 No later than the date the system is required to distribute the report to its customers, each community water system must deliver the report to any other agency or clearinghouse identified by the Department.

14-006.05 Each community water system must make its reports available to the public upon request.

14-006.06 Each community water system serving 100,000 or more ~~persons~~ individuals must post its current year's report to a publicly-accessible site on the internet.

14-006.07 The Governor or his/her designee can waive the requirement of 179 NAC 14-006.01 for community water systems serving fewer than 10,000 ~~persons~~individuals.

14-006.07A Those systems receiving waivers must:

1. Publish the reports in one or more local newspapers serving the area in which the system is located;

2. Inform the customers that the reports will not be mailed, either in the newspapers in which the reports are published or by other means approved by the Department, and

3. Make the reports available to the public upon request.

14-006.07B Systems Serving 500 or Fewer ~~Persons~~ Individuals may forego the requirements of 179 NAC 14-006.07A, items 1 and 2 if they provide notice at least once per year to their customers by mail, door-to-door delivery or by posting in an appropriate location that the report is available upon request.

14-007 RETENTION: Any system subject to this chapter must retain copies of its consumer confidence report for no less than three years.

APPENDIX A to 179 NAC 14

Contaminants (units)	Tradition-al MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects language
Microbiological contaminants: Total Coliform Bacteria.	MCL: (systems that collect ≥40 samples/ month) 5% of monthly samples are positive; (systems that collect <40 samples/ month) 1 positive monthly sample	.....	MCL: (systems that collect ≥40 samples/ month) 5% of monthly samples are positive; (Systems that collect <40 samples/ month) 1 positive monthly sample	0	Naturally present in the environment.	Coliforms are bacteria that are naturally present in the environment and are used as an indicator that other, potentially-harmful, bacteria may be present. Coliforms were found in more samples than allowed and this was a warning of potential problems.
Fecal coliform and *E. coli*	0	.....	0	0	Human and animal fecal waste.	Fecal coliforms and *E. coli* are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely-compromised immune systems.

Contaminants (units)	Tradition-al MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects language
Fecal Indicators (enterococci or coliphage)	TT	.....	TT	N/A	Human and animal fecal waste.	Fecal indicators are microbes whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short-term health effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.
Total organic carbon (ppm)	TT	.....	TT	N/A	Naturally present in the environment.	Total organic carbon (TOC) has no health effects. However, total organic carbon provides a medium for the formation of disinfection byproducts. These byproducts include trihalomethanes (THMs) and haloacetic acids (HAAs). Drinking water containing these byproducts in excess of the MCL may lead to adverse health effects, liver or kidney problems, or nervous system effects, and may lead to an increased risk of getting cancer.
Turbidity (NTU)	TT	.....	TT	N/A	Soil runoff	Turbidity has no health effects. However, turbidity can interfere with disinfection and provide a medium for microbial growth. Turbidity may indicate the presence of disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea and associated headaches.

Contaminants (units)	**Tradition-al MCL in mg/L**	**To convert for CCR, multiply by**	**MCL in CCR units**	**MCLG**	**Major sources in drinking water**	**Health effects language**
Radioactive contaminants: Beta/photon emitters (mrem/yr)	4 mrem/yr .	.....	4	0	Decay of natural and man-made deposits.	Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta particle and photon radioactivity in excess of the MCL over many years may have an increased risk of getting cancer.
Alpha emitters (pCi/L)	15 pCi/L	.....	15	0	Erosion of natural deposits.	Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
Combined radium (pCi/L)	5 pCi/L	.....	5	0	Erosion of natural deposits.	Some people who drink water containing radium-226 or -228 in excess of the MCL over many years may have an increased risk of getting cancer.
Uranium (µg/L)	30 µg/L.....	.....	30.....	0.....	Erosion of natural deposits.	Some people who drink water containing uranium in excess of the MCL over many years may have an increased risk of getting cancer and kidney toxicity.
Inorganic contaminants: Antimony (ppb)	.006..... .	1000	6	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder.	Some people who drink water containing antimony well in excess of the MCL over many years could experience increases in blood cholesterol and decreases in blood sugar.
Arsenic (ppb)	.05 through 01/22/06 0.010 Effective 01/23/06.....	1000	50 through 01/22/06 10 Effective 01/23/06.....	N/A through 01/22/06 0 Effective 01/23/06...	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes.	Some people who drink water containing arsenic in excess of the MCL over many years could experience skin damage or problems with their circulatory system, and may have an increased risk of getting cancer.

Contaminants (units)	Tradition-al MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects language
Asbestos (MFL)	7 MFL	.....	7	7	Decay of asbestos cement water mains; Erosion of natural deposits.	Some people who drink water containing asbestos in excess of the MCL over many years may have an increased risk of developing benign intestinal polyps.
Barium (ppm)	2	.....	2	2	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits.	Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.
Beryllium (ppb)	.004	1000	4	4	Discharge from metal refineries and coal-burning factories; Discharge from electrical, aerospace, and defense industries.	Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.
Bromate (ppb)	0.010.....	1000	10	0	Byproduct of drinking water disinfection	Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.
Cadmium (ppb)	.005	1000	5	5	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; Runoff from waste batteries and paints.	Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.
Chloramines (ppm)	MRDL = 4	.....	MRDL = 4	MRDLG = 4	Water additive used to control microbes.	Some people who use water containing chloramines well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chloramines well in excess of the MRDL could experience stomach discomfort or anemia.

Contaminants (units)	**Tradition-al MCL in mg/L**	**To convert for CCR, multiply by**	**MCL in CCR units**	**MCLG**	**Major sources in drinking water**	**Health effects language**
Chlorine (ppm)	MRDL = 4	.....	MRDL = 4	MRDLG = 4	Water additive used to control microbes.	Some people who use water containing chlorine well in excess of the MRDL could experience irritating effects to their eyes and nose. Some people who drink water containing chlorine well in excess of the MRDL could experience stomach discomfort.
Chlorine dioxide (ppm) ..	MRDL = .8	1000	MRDL = 800	MRDLG = 800	Water additive used to control microbes.	Some infants and young children who drink water containing chlorine dioxide in excess of the MRDL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorine dioxide in excess of the MCL. Some people may experience anemia.
Chlorite (ppm)	1	.....	1	0.8	Byproduct of drinking water disinfection.	Some infants and young children who drink water containing chlorite in excess of the MCL could experience nervous system effects. Similar effects may occur in fetuses of pregnant women who drink water containing chlorite in excess of the MCL. Some people may experience anemia.
Chromium (ppb)	.1	1000	100	100	Discharge from steel and pulp mills; Erosion of natural deposits.	Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.

Contaminants (units)	Tradition-al MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects language
Copper (ppm)	AL = 1.3 ...	.....	AL = 1.3 ...	1.3	Corrosion of household plumbing systems; Erosion of natural deposits;.	Copper is an essential nutrient, but some people who drink water containing copper in excess of the action level over a relatively short amount of time could experience gastrointestinal distress. Some people who drink water containing copper in excess of the action level over many years could suffer liver or kidney damage. People with Wilson's Disease should consult their personal doctor.
Cyanide (ppb)	.2	1000	200	200	Discharge from steel/metal factories; Discharge from plastic and fertilizer factories.	Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve damage or problems with their thyroid.
Fluoride (ppm)	4	.....	4	4	Erosion of natural deposits; Water additive that promotes strong teeth; Discharge from fertilizer and aluminum factories.	Some people who drink water containing fluoride in excess of the MCL over many years could get bone disease, including pain and tenderness of the bones. Fluoride in drinking water at half the MCL or more may cause mottling of children's teeth, usually in children less than nine years old. Mottling, also known as dental fluorosis, may include brown staining and/or pitting of the teeth, and occurs only in developing teeth before they erupt from the gums.
Lead (ppb)	AL = .015	1000	AL = 15	0	Corrosion of household plumbing systems; Erosion of natural deposits.	Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.

Contaminants (units)	Tradition-al MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects language
Mercury (inorganic) (ppb)	.002	1000	2	2	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland.	Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.
Nitrate (ppm)	10	.....	10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
Nitrite (ppm)	1.....	.....	1	1	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits.	Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
Selenium (ppb)	.05	1000	50	50	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines.	Selenium is an essential nutrient. However, some people who drink water containing selenium in excess of the MCL over many years could experience hair or fingernail losses, numbness in fingers or toes, or problems with their circulation.
Thallium (ppb)	.002	1000	2	0.5	Leaching from ore-processing sites; Discharge from electronics, glass, and drug factories.	Some people who drink water containing thallium in excess of the MCL over many years could experience hair loss, changes in their blood, or problems with their kidneys, intestines, or liver.

Contaminants (units)	Tradition-al MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects language
Synthetic organic contaminants including pesticides and herbicides: 2,4-D (ppb)	.07	1000	70	70	Runoff from herbicide used on row crops.	Some people who drink water containing the weed killer 2,4-D well in excess of the MCL over many years could experience problems with their kidneys, liver, or adrenal glands.
2,4,5-TP [Silvex] (ppb)	.05	1000	50	50	Residue of banned herbicide.	Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems.
Acrylamide	TT	.....	TT	0	Added to water during sewage/wastewater treatment.	Some people who drink water containing high levels of acrylamide over a long period of time could have problems with their nervous system or blood, and may have an increased risk of getting cancer.
Alachlor (ppb)	.002	1000	2	0	Runoff from herbicide used on row crops.	Some people who drink water containing alachlor in excess of the MCL over many years could have problems with their eyes, liver, kidneys, or spleen, or experience anemia, and may have an increased risk of getting cancer.
Atrazine (ppb)	.003	1000	3	3	Runoff from herbicide used on row crops.	Some people who drink water containing atrazine well in excess of the MCL over many years could experience problems with their cardiovascular system or reproductive difficulties.
Benzo(a)pyrene [PAH] (nanograms/L)	.0002	1,000,000	200	0	Leaching from linings of water storage tanks and distribution lines.	Some people who drink water containing benzo(a)pyrene in excess of the MCL over many years may experience reproductive difficulties and may have an increased risk of getting cancer.
Carbofuran (ppb)	.04	1000	40	40	Leaching of soil fumigant used on rice and alfalfa.	Some people who drink water containing carbofuran in excess of the MCL over many years could experience problems with their blood, or nervous or reproductive systems.

Contaminants (units)	Tradition-al MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects language
Chlordane (ppb)	.002	1000	2	0	Residue of banned termiticide.	Some people who drink water containing chlordane in excess of the MCL over many years could experience problems with their liver or nervous system, and may have an increased risk of getting cancer.
Dalapon (ppb)	.2	1000	200	200	Runoff from herbicide used on rights of way.	Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes.
Di(2-ethylhexyl) adipate (ppb)	.4	1000	400.....	400	Discharge from chemical factories.	Some people who drink water containing di (2-ethylhexyl) adipate well in excess of the MCL over many years could experience toxic effects such as weight loss, liver enlargement or possible reproductive difficulties.
Di(2-ethylhexyl) phthalate (ppb)	.006	1000	6	0	Discharge from rubber and chemical factories.	Some people who drink water containing di (2-ethylhexyl) phthalate well in excess of the MCL over many years may have problems with their liver, or experience reproductive difficulties, and may have an increased risk of getting cancer.
Dibromochloropropane (ppt)	.0002	1,000,000	200	0	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards.	Some people who drink water containing DBCP in excess of the MCL over many years could experience reproductive problems and may have an increased risk of getting cancer.
Dinoseb (ppb)	.007	1000	7	7	Runoff from herbicide used on soybeans and vegetables.	Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.
Diquat (ppb)	.02	1000	20	20	Runoff from herbicide use.	Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.

Contaminants (units)	Tradition-al MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects language
Dioxin [2,3,7,8-TCDD] (ppq)	.00000003	1,000,000,000	30	0	Emissions from waste incineration and other combustion; Discharge from chemical factories.	Some people who drink water containing dioxin in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
Endothall (ppb)	.1	1000	100	100	Runoff from herbicide use.	Some people who drink water containing endothall in excess of the MCL over many years could experience problems with their stomach or intestines.
Endrin (ppb)	.002	1000	2	2	Residue of banned insecticide.	Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems.
Epichlorohydrin	TT	.....	TT	0	Discharge from industrial chemical factories; An impurity of some water treatment chemicals	Some people who drink water containing high levels of epichlorohydrin over a long period of time could experience stomach problems, and may have an increased risk of getting cancer.
Ethylene dibromide (ppt)	.00005	1,000,000	50	0	Discharge from petroleum refineries.	Some people who drink water containing ethylene dibromide in excess of the MCL over many years could experience problems with their liver, stomach, reproductive system, or kidneys, and may have an increased risk of getting cancer.
Glyphosate (ppb)	.7	1000	700	700	Runoff from herbicide use.	Some people who drink water containing glyphosate in excess of the MCL over many years could experience problems with their kidneys or reproductive difficulties.
Heptachlor (ppt)	.0004	1,000,000	400	0	Residue of banned pesticide.	Some people who drink water containing heptachlor in excess of the MCL over many years could experience liver damage and may have an increased risk of getting cancer.

Contaminants (units)	Tradition-al MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects language
Heptachlor epoxide (ppt)	.0002	1,000,000	200	0	Breakdown of heptachlor.	Some people who drink water containing heptachlor epoxide in excess of the MCL over many years could experience liver damage, and may have an increased risk of getting cancer.
Hexachlorobenzene (ppb)	.001	1000	1	0	Discharge from metal refineries and agricultural chemical factories.	Some people who drink water containing hexachlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys, or adverse reproductive effects, and may have an increased risk of getting cancer.
Hexachlorocyclopentadiene (ppb)	.05	1000	50	50	Discharge from chemical factories.	Some people who drink water containing hexachlorocyclopentadiene well in excess of the MCL over many years could experience problems with their kidneys or stomach.
Lindane (ppt)	.0002	1,000,000	200	200	Runoff/leaching from insecticide used on cattle, lumber, gardens.	Some people who drink water containing lindane in excess of the MCL over many years could experience problems with their kidneys or liver.
Methoxychlor (ppb)	.04	1000	40	40	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock.	Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.
Oxamyl [Vydate] (ppb) ..	.2	1000	200	200	Runoff/leaching from insecticide used on apples, potatoes and tomatoes	Some people who drink water containing oxamyl in excess of the MCL over many years could experience slight nervous system effects.
PCBs [Polychlorinated biphenyls] (ppt)	.0005	1,000,000	500	0	Runoff from landfills; Discharge of waste chemicals.	Some people who drink water containing PCBs in excess of the MCL over many years could experience changes in their skin, problems with their thymus gland, immune deficiencies, or reproductive or nervous system difficulties, and may have an increased risk of getting cancer.

Contaminants (units)	Tradition-al MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects language
Pentachlorophenol (ppb)	.001	1000	1	0	Discharge from wood preserving factories.	Some people who drink water containing pentachlorophenol in excess of the MCL over many years could experience problems with their liver or kidneys, and may have an increased risk of getting cancer.
Picloram (ppb)	.5	1000	500	500	Herbicide runoff	Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver.
Simazine (ppb)	.004	1000	4	4	Herbicide runoff	Some people who drink water containing simazine in excess of the MCL over many years could experience problems with their blood.
Toxaphene (ppb)	.003	1000	3	0	Runoff/leaching from insecticide used on cotton and cattle.	Some people who drink water containing toxaphene in excess of the MCL over many years could have problems with their kidneys, liver, or thyroid, and may have an increased risk of getting cancer.
Volatile organic contaminants: Benzene (ppb)	.005	1000	5	0	Discharge from factories; Leaching from gas storage tanks and landfills.	Some people who drink water containing benzene in excess of the MCL over many years could experience anemia or a decrease in blood platelets, and may have an increased risk of getting cancer.
Carbon tetrachloride (ppb)	.005	1000	5	0	Discharge from chemical plants and other industrial activities.	Some people who drink water containing carbon tetrachloride in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
Chlorobenzene (ppb)	.1	1000	100	100	Discharge from chemical and agricultural chemical factories.	Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.

Contaminants (units)	Tradition-al MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects language
o-Dichlorobenzene (ppb)	.6	1000	600	600	Discharge from industrial chemical factories.	Some people who drink water containing o-dichlorobenzene well in excess of the MCL over many years could experience problems with their liver, kidneys, or circulatory systems.
p-Dichlorobenzene (ppb)	.075	100	75	75	Discharge from industrial chemical factories.	Some people who drink water containing p-dichlorobenzene in excess of the MCL over many years could experience anemia, damage to their liver, kidneys, or spleen, or changes in their blood.
1,2-Dichloroethane (ppb)	.005	1000	5	0	Discharge from industrial chemical factories.	Some people who drink water containing 1,2-dichloroethane in excess of the MCL over many years may have an increased risk of getting cancer.
1,1-Dichloroethylene (ppb)	.007	1000	7	7	Discharge from industrial chemical factories.	Some people who drink water containing 1,1-dichlorethylene in excess of the MCL over many years could experience problems with their liver.
cis-1,2-Dichloroethylene (ppb)	.07	1000	70	70	Discharge from industrial chemical factories.	Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
trans-1,2 -Dichloroethylene (ppb)	.1	1000	100	100	Discharge from industrial chemical factories.	Some people who drink water containing trans-1,2-dichloroethylene well in excess of the MCL over many years could experience problems with their liver.
Dichloromethane (ppb)..	.005	1000	5	0	Discharge from pharmaceutical and chemical factories.	Some people who drink water containing dichloromethane in excess of the MCL over many years could have liver problems and may have an increased risk of getting cancer.
1,2-Dichloropropane (ppb)	.005	1000	5	0	Discharge from industrial chemical factories.	Some people who drink water containing 1,2-dichloropropane in excess of the MCL over many years may have an increased risk of getting cancer.

Contaminants (units)	Tradition-al MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects language
Ethylbenzene (ppb)	.7	1000	700	700	Discharge from petroleum refineries.	Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.
Haloacetic Acids (HAA) (ppb)	.060	1000	60	N/A	Byproduct of drinking water disinfection.	Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.
Styrene (ppb)	.1	1000	100	100	Discharge from rubber and plastic factories; Leaching from landfills.	Some people who drink water containing styrene well in excess of the MCL over many years could have problems with their liver, kidneys, or circulatory system.
Tetrachloroethylene (ppb)	.005	1000	5	0	Discharge from factories and dry cleaners.	Some people who drink water containing tetrachloroethylene in excess of the MCL over many years could have problems with their liver, and may have an increased risk of getting cancer.
1,2,4-Trichlorobenzene (ppb)	.07	1000	70	70	Discharge from textile-finishing factories.	Some people who drink water containing 1,2,4-trichlorobenzene well in excess of the MCL over many years could experience changes in their adrenal glands.
1,1,1-Trichloroethane (ppb)	.2	1000	200	200	Discharge from metal degreasing sites and other factories.	Some people who drink water containing 1,1,1-trichloroethane in excess of the MCL over many years could experience problems with their liver, nervous system, or circulatory system.
1,1,2-Trichloroethane (ppb)	.005	1000	5	3	Discharge from industrial chemical factories.	Some people who drink water containing 1,1,2-trichloroethane well in excess of the MCL over many years could have problems with their liver, kidneys, or immune systems.
Trichloroethylene (ppb) ..	.005	1000	5	0	Discharge from metal degreasing sites and other factories.	Some people who drink water containing trichloroethylene in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.

Contaminants (units)	Tradition-al MCL in mg/L	To convert for CCR, multiply by	MCL in CCR units	MCLG	Major sources in drinking water	Health effects language
TTHMs [Total trihalomethanes] (ppb)	0.10/.080 ..	1000	100/80	N/A	Byproduct of drinking water disinfection.	Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.
Toluene (ppm)	1	.....	1	1	Discharge from petroleum factories.	Some people who drink water containing toluene well in excess of the MCL over many years could have problems with their nervous system, kidneys, or liver.
Vinyl Chloride (ppb)	.002	1000	2	0	Leaching from PVC piping; Discharge from plastics factories.	Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.
Xylenes (ppm)	10	.....	10	10	Discharge from petroleum factories; Discharge from chemical factories.	Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.

Key:

AL = Action Level
MCL = Maximum Contaminant Level
MCLG = Maximum Contaminant Level Goal
MFL = million fibers per liter
MRDL = Maximum Residual Disinfectant Level
MRDLG = Maximum Residual Disinfectant Level Goal
mrem/year = millirems per year (a measure of radiation absorbed by the body)
N/A = Not Applicable
NTU = Nephelometric Turbidity Units (a measure of water clarity)
pCi/L = picocuries per liter (a measure of radioactivity)
ppm = parts per million, or milligrams per liter (mg/L)
ppb = parts per billion, or micrograms per liter (µg/L)
ppt = parts per trillion, or nanograms per liter
ppq = parts per quadrillion, or picograms per liter
TT = Treatment Technique

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on January 23, 2006. Requirements relating to arsenic set forth in §§141.23(i)(4), 141.23(k)(3) introductory text, 141.23(k)(3)(ii), 141.51(b), 141.62(b), 141.62(b)(16), 141.62(c), 141.62(d), and 142.62(b) revisions in Appendix A of subpart O for the consumer confidence rule, and Appendices A and B of subpart Q for the public notification rule are effective for the purpose of compliance on January 23, 2006. However, the consumer confidence rule reporting requirements relating to arsenic listed in §141.154(b) and (f) are effective for the purpose of compliance on February 22, 2002.

(k) Regulations set forth in §§141.23(i)(1), 141.23(i)(2), 141.24(f)(15), 141.24(f)(22), 141.24(h)(11), 141.24(h)(20), 142.16(e), 142.16(j), and 142.16(k) are effective for the purpose of compliance on January 22, 2004.

[44 FR 68641, Nov. 29, 1979, as amended at 45 FR 57342, Aug. 27, 1980; 47 FR 10998, Mar. 12, 1982; 51 FR 11410, Apr. 2, 1986; 56 FR 30274, July 1, 1991; 57 FR 22178, May 27, 1992; 57 FR 31838, July 17, 1992; 59 FR 34322, July 1, 1994; 61 FR 24368, May 14, 1996; 66 FR 7061, Jan. 22, 2001; 66 FR 28350, May 22, 2001]

Subpart B—Maximum Contaminant Levels

§ 141.11 Maximum contaminant levels for inorganic chemicals.

(a) The maximum contaminant level for arsenic applies only to community water systems. The analyses and determination of compliance with the 0.05 milligrams per liter maximum contaminant level for arsenic use the requirements of §141.23.

(b) The maximum contaminant level for arsenic is 0.05 milligrams per liter for community water systems until January 23, 2006.

(c) [Reserved]

(d) 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:

(1) Such water will not be available to children under 6 months of age; and

(2) The non-community water system is meeting the public notification requirements under §141.209, including continuous posting of the fact that nitrate levels exceed 10 mg/l and the potential health effects of exposure; and

(3) Local and State public health authorities will be notified annually of nitrate levels that exceed 10 mg/l; and

(4) No adverse health effects shall result.

[40 FR 59570, Dec. 24, 1975, as amended at 45 FR 57342, Aug. 27, 1980; 47 FR 10998, Mar. 12, 1982; 51 FR 11410, Apr. 2, 1986; 56 FR 3578, Jan. 30, 1991; 56 FR 26548, June 7, 1991; 56 FR 30274, July 1, 1991; 56 FR 32113, July 15, 1991; 60 FR 33932, June 29, 1995; 65 FR 26022, May 4, 2000; 66 FR 7061, Jan. 22, 2001]

§141.12 [Reserved]

§141.13 Maximum contaminant levels for turbidity.

The maximum contaminant levels for turbidity are applicable to both community water systems and non-community water systems using surface water sources in whole or in part. The maximum contaminant levels for turbidity in drinking water, measured at a representative entry point(s) to the distribution system, are:

EDITORIAL NOTE: At 54 FR 27527, June 29, 1989, §141.13 was amended by adding introductory text, effective December 31, 1990. However, introductory text already exists. The added text follows.

The requirements in this section apply to unfiltered systems until December 30, 1991, unless the State has determined prior to that date, in writing pursuant to §1412(b)(7)(C)(iii), that filtration is required. The requirements in this section apply to filtered systems until June 29, 1993. The requirements in this section apply to unfiltered systems that the State has determined, in writing pursuant to §1412(b)(7)(C)(iii), must install filtration, until June 29, 1993, or until filtration is installed, whichever is later.

(a) One turbidity unit (TU), as determined by a monthly average pursuant to §141.22, except that five or fewer turbidity units may be allowed if the supplier of water can demonstrate to the State that the higher turbidity does not do any of the following:

(1) Interfere with disinfection;

(2) Prevent maintenance of an effective disinfectant agent throughout the distribution system; or

(3) Interfere with microbiological determinations.

(b) Five turbidity units based on an average for two consecutive days pursuant to § 141.22.

[40 FR 59570, Dec. 24, 1975]

Subpart C—Monitoring and Analytical Requirements

§ 141.21 Coliform sampling.

(a) *Routine monitoring.* (1) Public water systems must collect total coliform samples at sites which are representative of water throughout the distribution system according to a written sample siting plan. These plans are subject to State review and revision.

(2) The monitoring frequency for total coliforms for community water systems is based on the population served by the system, as follows:

TOTAL COLIFORM MONITORING FREQUENCY FOR COMMUNITY WATER SYSTEMS

Population served	Minimum number of samples per month
25 to 1,000[1]	1
1,001 to 2,500	2
2,501 to 3,300	3
3,301 to 4,100	4
4,101 to 4,900	5
4,901 to 5,800	6
5,801 to 6,700	7
6,701 to 7,600	8
7,601 to 8,500	9
8,501 to 12,900	10
12,901 to 17,200	15
17,201 to 21,500	20
21,501 to 25,000	25
25,001 to 33,000	30
33,001 to 41,000	40
41,001 to 50,000	50
50,001 to 59,000	60
59,001 to 70,000	70
70,001 to 83,000	80
83,001 to 96,000	90
96,001 to 130,000	100
130,001 to 220,000	120
220,001 to 320,000	150
320,001 to 450,000	180
450,001 to 600,000	210
600,001 to 780,000	240
780,001 to 970,000	270
970,001 to 1,230,000	300
1,230,001 to 1,520,000	330
1,520,001 to 1,850,000	360
1,850,001 to 2,270,000	390
2,270,001 to 3,020,000	420
3,020,001 to 3,960,000	450
3,960,001 or more	480

[1] Includes public water systems which have at least 15 service connections, but serve fewer than 25 persons.

If a community water system serving 25 to 1,000 persons has no history of total coliform contamination in its current configuration and a sanitary survey conducted in the past five years shows that the system is supplied solely by a protected groundwater source and is free of sanitary defects, the State may reduce the monitoring frequency specified above, except that in no case may the State reduce the monitoring frequency to less than one sample per quarter. The State must approve the reduced monitoring frequency in writing.

(3) The monitoring frequency for total coliforms for non-community water systems is as follows:

(i) A non-community water system using only ground water (except ground water under the direct influence of surface water, as defined in § 141.2) and serving 1,000 persons or fewer must monitor each calendar quarter that the system provides water to the public, except that the State may reduce this monitoring frequency, in writing, if a sanitary survey shows that the system is free of sanitary defects. Beginning June 29, 1994, the State cannot reduce the monitoring frequency for a non-community water system using only ground water (except ground water under the direct influence of surface water, as defined in § 141.2) and serving 1,000 persons or fewer to less than once/year.

(ii) A non-community water system using only ground water (except ground water under the direct influence of surface water, as defined in § 141.2) and serving more than 1,000 persons during any month must monitor at the same frequency as a like-sized community water system, as specified in paragraph (a)(2) of this section, except the State may reduce this monitoring frequency, in writing, for any month the system serves 1,000 persons or fewer. The State cannot reduce the monitoring frequency to less than once/year. For systems using ground water under the direct influence of surface water, paragraph (a)(3)(iv) of this section applies.

(iii) A non-community water system using surface water, in total or in part, must monitor at the same frequency as a like-sized community water system,

TABLE 1—UNREGULATED CONTAMINANT MONITORING REPORTING REQUIREMENTS—Continued

Data element	Definition
	SE2 = represents samples collected to meet the UCMR monitoring requirement for the second sampling period (all source types). **SE3** = represents samples collected to meet the UCMR monitoring requirement for the third sampling period (surface water and ground water under the direct influence of surface water (GWUDI) sources only). **SE4** = represents samples collected to meet the UCMR monitoring requirement for the fourth sampling period (surface water and GWUDI sources only).

[72 FR 389, Jan. 4, 2007]

Subpart E—Special Regulations, Including Monitoring Regulations and Prohibition on Lead Use

§ 141.40 Monitoring requirements for unregulated contaminants.

(a) *General applicability*. This section specifies the monitoring and quality control requirements that must be followed if you own or operate a public water system (PWS) that is subject to the Unregulated Contaminant Monitoring Regulation (UCMR), as specified in paragraphs (a)(1) and (2) of this section. In addition, this section specifies the UCMR requirements for State and Tribal participation. For the purposes of this section, PWS "population served," "State," " PWS Official," "PWS Technical Contact," and "finished water" apply as defined in §141.35(a). The determination of whether a PWS is required to monitor under this rule is based on the type of system (e.g., community water system, non-transient non-community water system, etc.); whether the system purchases all of its water, as finished water, from another system; and its population served as of June 30, 2005.

(1) *Applicability to transient non-community systems*. If you own or operate a transient non-community water system, you do not have to monitor that system for unregulated contaminants.

(2) *Applicability to community water systems and non-transient non-community water systems*.

(i) *Large systems*. If you own or operate a wholesale or retail PWS (other than a transient non-community system) that serves more than 10,000 people, and do not purchase your entire water supply as finished water from another PWS, you must monitor according to the specifications in this paragraph (a)(2)(i). If you believe that your applicability status is different than EPA has specified in the notification letter that you received, or if you are subject to UCMR requirements and you have not been notified by either EPA or your State, you must report to EPA, as specified in §141.35(b)(2) or (c)(4).

(A) *Assessment Monitoring*. You must monitor for the unregulated contaminants on List 1 of Table 1, UCMR Contaminant List, in paragraph (a)(3) of this section. If you serve a population of more than 10,000 people, you are required to perform this monitoring regardless of whether you have been notified by the State or EPA.

(B) *Screening Survey*. You must monitor for the unregulated contaminants on List 2 (Screening Survey) of Table 1, as specified in paragraph (a)(3) of this section, if your system serves 10,001 to 100,000 people and you are notified by EPA or your State that you are part of the State Monitoring Plan for Screening Survey testing. If your system serves more than 100,000 people, you are required to conduct this Screening Survey testing regardless of whether you have been notified by the State or EPA.

(C) *Pre-Screen Testing*. You must monitor for the unregulated contaminants on List 3 of Table 1, in paragraph (a)(3) of this section, if notified by your State or EPA that you are part of the Pre-Screen Testing.

(ii) *Small systems*. Small PWSs, as defined in this paragraph, will not be selected to monitor for any more than one of the three monitoring lists provided in Table 1, UCMR Contaminant List, in paragraph (a)(3) of this section.

EPA will provide sample containers, provide pre-paid air bills for shipping the sampling materials, conduct the laboratory analysis, and report and review monitoring results for all small systems selected to conduct monitoring under paragraphs (a)(2)(ii)(A) through (C) of this section. If you own or operate a PWS (other than a transient system) that serves 10,000 or fewer people and do not purchase your entire water supply from another PWS, you must monitor as follows:

(A) *Assessment Monitoring*. You must monitor for the unregulated contaminants on List 1 of Table 1, in paragraph (a)(3) of this section, if you are notified by your State or EPA that you are part of the State Monitoring Plan for Assessment Monitoring.

(B) *Screening Survey*. You must monitor for the unregulated contaminants on List 2 of Table 1, in paragraph (a)(3) of this section, if notified by your State or EPA that you are part of the State Monitoring Plan for the Screening Survey.

(C) *Pre-Screen Testing*. You must monitor for the unregulated contaminants on List 3 of Table 1, in paragraph (a)(3) of this section, if you are notified by your State or EPA that you are part of the State Monitoring plan for Pre-Screen Testing.

(3) *Analytes to be monitored*. Lists 1, 2, and 3 of unregulated contaminants are provided in the following table:

TABLE 1—UCMR CONTAMINANT LIST

[List 1: Assessment Monitoring Chemical Contaminants]

1—Contaminant	2—CAS registry number	3—Analytical methods [a]	4—Minimum reporting level [b]	5—Sampling location [c]	6—Period during which monitoring to be completed
Dimethoate	60–51–5	EPA 527 [d]	0.7 µg/L	EPTDS	1/1/2008–12/31/2010
Terbufos sulfone	56070–16–7	EPA 527 [d]	0.4 µg/L	EPTDS	1/1/2008–12/31/2010
2,2′,4,4′-tetrabromodiphenyl ether (BDE–47).	5436–43–1	EPA 527 [d]	0.3 µg/L	EPTDS	1/1/2008–12/31/2010
2,2′,4,4′,5-pentabromodiphenyl ether (BDE–99).	60348–60–9	EPA 527 [d]	0.9 µg/L	EPTDS	1/1/2008–12/31/2010
2,2′,4,4′,5,5′-hexabromobiphenyl (HBB).	59080–40–9	EPA 527 [d]	0.7 µg/L	EPTDS	1/1/2008–12/31/2010
2,2′,4,4′,5,5′-hexabromodiphenyl ether (BDE–153).	68631–49–2	EPA 527 [d]	0.8 µg/L	EPTDS	1/1/2008–12/31/2010
2,2′,4,4′,6-pentabromodiphenyl ether (BDE–100).	189084–64–8	EPA 527 [d]	0.5 µg/L	EPTDS	1/1/2008–12/31/2010
1,3-dinitrobenzene	99–65–0	EPA 529 [e]	0.8 µg/L	EPTDS	1/1/2008–12/31/2010
2,4,6-trinitrotoluene (TNT)	118–96–7	EPA 529 [e]	0.8 µg/L	EPTDS	1/1/2008–12/31/2010
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX).	121–82–4	EPA 529 [e]	1 µg/L	EPTDS	1/1/2008–12/31/2010

TABLE 1—UCMR CONTAMINANT LIST

[List 2: Screening Survey Chemical Contaminants

1—Contaminant	2—CAS registry number	3—Analytical methods [a]	4—Minimum reporting level [b]	5—Sampling location [c]	6—Period during which monitoring to be completed
Acetanilide Pesticide Degradation Products					
Acetochlor ESA	187022–11–3	EPA 535 [f]	1 µg/L	EPTDS	1/1/2008–12/31/2010
Acetochlor OA	184992–44–4	EPA 535 [f]	2 µg/L	EPTDS	1/1/2008–12/31/2010
Alachlor ESA	142363–53–9	EPA 535 [f]	1 µg/L	EPTDS	1/1/2008–12/31/2010
Alachlor OA	171262–17–2	EPA 535 [f]	2 µg/L	EPTDS	1/1/2008–12/31/2010
Metolachlor ESA	171118–09–5	EPA 535 [f]	1 µg/L	EPTDS	1/1/2008–12/31/2010
Metolachlor OA	152019–73–3	EPA 535 [f]	2 µg/L	EPTDS	1/1/2008–12/31/2010
Acetanilide Pesticide Parent Compounds					
Acetochlor	34256–82–1	EPA 525.2 [g]	2 µg/L	EPTDS	1/1/2008–12/31/2010
Alachlor	15972–60–8	EPA 525.2 [g]	2 µg/L	EPTDS	1/1/2008–12/31/2010
Metolachlor	51218–45–2	EPA 525.2 [g]	1 µg/L	EPTDS	1/1/2008–12/31/2010

TABLE 1—UCMR CONTAMINANT LIST—Continued

[List 2: Screening Survey Chemical Contaminants

1—Contaminant	2—CAS registry number	3—Analytical methods [a]	4—Minimum reporting level [b]	5—Sampling location [c]	6—Period during which monitoring to be completed
Nitrosamines					
N-nitrosodiethylamine (NDEA)	55–18–5	EPA 521 [h]	0.005 µg/L	DSMRT and EPTDS.	1/1/2008–12/31/2010
N-nitroso-dimethylamine (NDMA).	62–75–9	EPA 521 [h]	0.002 µg/L	DSMRT and EPTDS.	1/1/2008–12/31/2010
N-nitroso-di-n-butylamine (NDBA).	924–16–3	EPA 521 [h]	0.004 µg/L	DSMRT and EPTDS.	1/1/2008–12/31/2010
N-nitroso-di-n-propylamine (NDPA).	621–64–7	EPA 521 [h]	0.007 µg/L	DSMRT and EPTDS.	1/1/2008–12/31/2010
N-nitroso-methylethylamine (NMEA).	10595–95–6	EPA 521 [h]	0.003 µg/L	DSMRT and EPTDS.	1/1/2008–12/31/2010
N-nitrosopyrrolidine (NPYR)	930–55–2	EPA 521 [h]	0.002 µg/L	DSMRT and EPTDS.	1/1/2008–12/31/2010

TABLE 1—UCMR CONTAMINANT LIST

[List 3: Pre-Screen Testing to be Sampled After Notice of Analytical Methods Availability]

1—Contaminant	2—CAS registry number	3—Analytical methods [a]	4—Minimum reporting level [b]	5—Sampling location [c]	6—Period during which monitoring to be completed
Reserved [i]	Reserved [i]	Reserved [i]	Reserved [i]	Reserved [i]	Reserved [i]

Column headings are:

1—Contaminant: The name of the contaminant to be analyzed.

2—CAS (Chemical Abstract Service) Registry Number or Identification Number: A unique number identifying the chemical contaminants.

3—Analytical Methods: method numbers identifying the methods that must be used to test the contaminants.

4—Minimum Reporting Level: The value and unit of measure at or above which the concentration of the contaminant must be measured using the approved analytical methods.

5—Sampling Location: The locations within a PWS at which samples must be collected.

6—Period During Which Monitoring To Be Completed: The dates during which the sampling and testing are to occur for the indicated contaminant.

The analytical procedures shall be performed in accordance with the documents associated with each method (per the following footnotes). The incorporation by reference of the following documents listed in footnotes d—h was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Information on how to obtain these documents can be provided by the Safe Drinking Water Hotline at (800) 426–4791. Documents may be inspected at EPA's Drinking Water Docket, 1301 Constitution Avenue, NW., EPA West, Room B102, Washington, DC 20460, Telephone: (202) 566–2426; or at the National Archives and Records Administration (NARA). For information on availability of this material at NARA, call 202–741–6030, or go to:*http://www.archives.gov/federal-register/index.html*.

[a] The version of the EPA methods which you must follow for this Regulation are listed in d—h as follows.

[b] The Minimum Reporting Level (MRL) was established by EPA by adding the mean of the Lowest Concentration Minimum Reporting Levels (LCMRL) determined according to the procedure detailed in "Statistical Protocol for the Determination of The Single-Laboratory Lowest Concentration Minimum Reporting Level (LCMRL) and Validation of the Minimum Reporting Level (MRL)" by the primary and secondary laboratories conducting the development and validation of the analytical method to three times the difference of the LCMRLs. If LCMRL data from three or more laboratories were available, the MRL was established by EPA by adding three times the standard deviation of the LCMRLs to the mean of the LCMRLs. Note that EPA Method 525.2 was developed prior to UCMR 2, hence the LCMRLs were not determined for analytes determined by this method.

[c] Sampling must occur at entry points to the distribution system (EPTDSs) after treatment is applied that represent each non-emergency water source in routine use over the 12-month period of monitoring. See 40 CFR 141.35(c)(3) for an explanation of the requirements related to use of representative EPTDSs. Sampling for nitrosamines on List 2 must also occur at the disinfection byproduct distribution system maximum residence time (DSMRT) sampling locations as defined in 40 CFR 141.132(b)(1)(i) and at EPTDS sampling locations. If a treatment plant/water source is not subject to the sampling required in 40 CFR 141.132(b)(1), then the samples for nitrosamines must be collected only at the EPTDS location(s).

[d] EPA Method 527 "Determination of Selected Pesticides and Flame Retardants in Drinking Water by Solid Phase Extraction and Capillary Column Gas Chromatography/Mass Spectrometry (GC/MS)," Revision 1.0, April 2005 is available at *http://www.epa.gov/safewater/methods/sourcalt.html*.

[e] EPA Method 529 "Determination of Explosives and Related Compounds in Drinking Water by Solid Phase Extraction and Capillary Column Gas Chromatography/Mass Spectrometry (GC/MS)," Revision 1.0, September 2002 is available at *http://www.epa.gov/nerlcwww/ordmeth.htm*.

[f] EPA Method 535 " Measurement of Chloroacetanilide and Other Acetamide Herbicide Degradates in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)," Version 1.1, April 2005 is available at *http://www.epa.gov/nerlcwww/ordmeth.htm*.

[g] EPA Method 525.2 "Determination of Organic Compounds in Drinking Water by Liquid-Solid Extraction and Capillary Column Gas Chromatography/Mass Spectrometry," Revision 2.0, 1995 is available at *http://www.NEMI.gov*.

[h] EPA Method 521 "Determination of Nitrosamines in Drinking Water by Solid Phase Extraction and Capillary Column Gas Chromatography with Large Volume Injection and Chemical Ionization Tandem Mass Spectrometry (MS/MS)," Version 1.0, September 2004 is available at *http://www.epa.gov/nerlcwww/ordmeth.htm*.

[i] To be determined at a later time.

(4) *Sampling requirements*—(i) *Large systems*. If you serve more than 10,000 people and meet the UCMR applicability criteria specified in paragraph (a)(2)(i) of this section, you must comply with the requirements specified in paragraphs (a)(4)(i)(A) through (I) of this section. Your samples must be collected according to the schedule that you are assigned by EPA or your State, or the schedule that you revised using EPA's electronic data reporting system on or before August 2, 2007. Your schedule must follow both the timing and frequency of monitoring specified in Tables 1 and 2 of this section.

(A) *Monitoring period*. You must collect the samples in one continuous 12-month period for List 1 Assessment Monitoring, and, if applicable, for List 2 Screening Survey, or List 3 Pre-Screen Testing, during the time frame indicated in column 6 of Table 1, in paragraph (a)(3) of this section. EPA or your State will specify the month(s) and year(s) in which your monitoring must occur. As specified in §141.35(c)(5), you must contact EPA if you believe you cannot conduct monitoring according to your schedule.

(B) *Frequency*. You must collect the samples within the time frame and according to the frequency specified by contaminant type and water source type for each sampling location, as specified in Table 2, in this paragraph, with the following exception. For the second round of ground water sampling, if a sample location is non-operational for more than one month before and one month after the scheduled sampling month (*i.e.*, it is not possible for you to sample within the five to seven month window specified the Table 2, in this paragraph), you must notify EPA as specified in §141.35(c)(5).

TABLE 2—MONITORING FREQUENCY BY CONTAMINANT AND WATER SOURCE TYPES

Contaminant type	Water source type	Time frame	Frequency
Chemical	Surface water or ground water under the direct influence of surface water (GWUDI) (includes all sampling locations for which some or all of the water comes from a surface water or GWUDI source at any time during the 12 month monitoring period).	12 months	You must monitor for 4 consecutive quarters. Sample events must occur 3 months apart.
	Ground water	12 months	You must monitor twice in a consecutive 12-month period. Sample events must occur 5–7 months apart.

(C) *Location*. You must collect samples for each List 1 Assessment Monitoring contaminant, and, if applicable, for each List 2 Screening Survey, or List 3 Pre-Screen Testing contaminant, as specified in Table 1, in paragraph (a)(3) of this section. Samples must be collected at each sample point that is specified in column 5 of Table 1, in paragraph (a)(3) of this section. If you are a ground water system with multiple EPTDSs, and you request and receive approval from EPA or the State for sampling at representative EPTDS(s), as specified in §141.35(c)(3), you must collect your samples from the approved representative sampling location(s). Systems conducting Screening Survey monitoring must also sample for nitrosamines at the disinfection byproduct distribution system maximum residence time (DSMRT) sampling location(s) if they are subject to sampling requirements in §141.132(b)(1).

(D) *Sampling instructions*. For each List 1 Assessment Monitoring contaminant, and, if applicable, for each List 2 Screening Survey, or List 3 Pre-Screen Testing contaminant, you must follow the sampling procedure for the method specified in column 3 of Table 1, in paragraph (a)(3) of this section. In addition, you must not composite (that is, combine, mix, or blend) the samples; you must collect and preserve each sample separately. Samples collected

for the analysis of Acetanilide ''parent'' pesticides and their degradation products (Methods 525.2 and 535) must be collected at the same sampling point, at the same time.

(E) *Sample collection and shipping time.* If you must ship the samples for analysis, you must collect the samples early enough in the day to allow adequate time to send the samples for overnight delivery to the laboratory. You should not collect samples on Friday, Saturday, or Sunday because sampling on these days may not allow samples to be shipped and received at the laboratory at the required temperature, unless you have made special arrangements with your laboratory to receive the samples.

(F) *Analytical methods.* For each contaminant, you must use the respective analytical methods for List 1, and, if applicable, for List 2, or List 3 that are specified in column 3 of Table 1, in paragraph (a)(3) of this section; report values at or above the minimum reporting levels for List 1, and, if applicable, for List 2 Screening Survey, or List 3 Pre-Screen Testing, that are specified in column 4 of Table 1, in paragraph (a)(3) of this section; and conduct the quality control procedures specified in paragraph (a)(5) of this section.

(G) *Laboratory errors or sampling deviations.* If the laboratory data do not meet the required QC criteria, as specified in paragraph (a)(5) of this section, or you do not follow the required sampling procedures, as specified in paragraphs (a)(4) of this section, you must resample within 30 days of being informed or becoming aware of these facts. This resampling is not for the purpose of confirming previous results, but to correct the sampling or laboratory error. All systems must report the results obtained from the first sampling for each sampling period, except for cases of sampling or laboratory errors. For the purposes of this rule, no samples are to be recollected for the purposes of confirming the results observed in a previous sampling.

(H) *Analysis.* For the List 1 contaminants, and, if applicable, List 2 Screening Survey, or List 3 Pre-Screen Testing contaminants, identified in Table 1, paragraph (a)(3) of this section, you must arrange for testing by a laboratory that has been approved by EPA according to requirements in paragraph (a)(5)(ii) of this section.

(I) *Review and reporting of results.* After you have received the laboratory results, you must review, approve, and submit the system information, and sample collection data and test results. You must report the results as provided in § 141.35(c)(6).

(ii) *Small systems.* If you serve 10,000 or fewer people and are notified that you are part of the State Monitoring Plan for Assessment Monitoring, Screening Survey or Pre-Screen monitoring, you must comply with the requirements specified in paragraphs (a)(4)(i)(A) through (H) of this section. If EPA or the State informs you that they will be collecting your UCMR samples, you must assist them in identifying the appropriate sampling locations and in collecting the samples.

(A) *Monitoring period and frequency.* You must collect samples at the times specified for you by the State or EPA. Your schedule must follow both the timing of monitoring specified in Table 1, List 1, and, if applicable, List 2, or List 3, and the frequency of monitoring in Table 2 of this section.

(B) *Location.* You must collect samples at the locations specified for you by the State or EPA.

(C) *Sample kits.* You must store and maintain the sample collection kits sent to you by the UCMR Sampling Coordinator in accordance with the kit's instructions. The sample kit will include all necessary containers, packing materials and cold packs, instructions for collecting the sample and sample treatment (such as dechlorination or preservation), report forms for each sample, contact name and telephone number for the laboratory, and a prepaid return shipping docket and return address label. If any of the materials listed in the kit's instructions are not included in the kit or arrive damaged, you must notify the UCMR Sampling Coordinator who sent you the sample collection kits.

(D) *Sampling instructions.* You must comply with the instructions sent to you by the State or EPA concerning the use of containers, collection (how to fill the sample bottle),

dechlorination and/or preservation, and sealing and preparation of sample and shipping containers for shipment. You must not composite (that is, combine, mix, or blend) the samples. You also must collect, preserve, and test each sample separately. You must also comply with the instructions sent to you by the UCMR Sampling Coordinator concerning the handling of sample containers for specific contaminants.

(E) *Sampling deviations.* If you do not collect a sample according to the instructions provided to you for a listed contaminant, you must report the deviation within 7 days of the scheduled monitoring on the sample reporting form, as specified in §141.35(d)(2). You must resample following instructions that you will be sent from the UCMR Sampling Coordinator or State. A copy of the form must be sent to the laboratory with the recollected samples, and to the UCMR Sampling Coordinator.

(F) *Duplicate samples.* EPA will select a subset of systems in the State Monitoring Plan that must collect duplicate samples for quality control. If your system is selected, you will receive two sample kits for an individual sampling location that you must use. You must use the same sampling protocols for both sets of samples, following the instructions in the duplicate sample kit.

(G) *Sampling forms.* You must completely fill out each of the sampling forms and bottles sent to you by the UCMR Sampling Coordinator, including data elements listed in §141.35(e) for each sample. If you are conducting Assessment Monitoring, you must include elements 1 through 5, and 7; and if you are conducting Screening Survey, you must include elements 1 through 7. You must sign and date the sampling forms.

(H) *Sample collection and shipping.* You must collect the samples early enough in the day to allow adequate time to send the samples for overnight delivery to the laboratory. You should not collect samples on Friday, Saturday, or Sunday because sampling on these days may not allow samples to be shipped and received at the laboratory at the required temperature unless you have made special arrangements with EPA for the laboratory to receive the samples. Once you have collected the samples and completely filled in the sampling forms, you must send the samples and the sampling forms to the laboratory designated on the air bill.

(5) *Quality control requirements.* If your system serves more than 10,000 people, you must ensure that the quality control requirements listed below are met during your sampling procedures and by the laboratory conducting your analyses. You must also ensure that all method quality control procedures and all UCMR quality control procedures are followed.

(i) *Sample collection/preservation.* You must follow the sample collection and preservation requirements for the specified method for each of the contaminants in Table 1, in paragraph (a)(3) of this section. These requirements specify sample containers, collection, dechlorination, preservation, storage, sample holding time, and extract storage and/or holding time that you must assure that the laboratory follow.

(ii) *Laboratory approval for Lists 1, List 2 and List 3.* To be approved to conduct UCMR testing, the laboratory must be certified under §141.28 for one or more compliance analyses; demonstrate for each analytical method it plans to use for UCMR testing that it can meet the Initial Demonstration of Capability (IDC) requirements detailed in the analytical methods specified in column 3 of Table 1, in paragraph (a)(3) of this section; and successfully participate in the UCMR Proficiency Testing (PT) Program administered by EPA for each analytical method it plans to use for UCMR testing. UCMR laboratory approval decisions will be granted on an individual method basis for the methods listed in column 3 of Table 1 in paragraph (a)(3) of this section for List 1, List 2, and List 3 contaminants. Laboratory approval is contingent upon the capability of the laboratory to post monitoring data to the EPA electronic data reporting system. To participate in the UCMR Laboratory Approval Program, the laboratory must complete and submit the necessary registration forms by April 4, 2007. Correspondence must be addressed to: UCMR 2 Laboratory Approval Coordinator, USEPA, Technical Support Center, 26 West Martin Luther King Drive (MS 140), Cincinnati, OH 45268; or e-mailed to

EPA at *UCMR_Sampling_Coordinator@epa.gov*.

(iii) *Minimum Reporting Level*. The MRL is the lowest analyte concentration for which future recovery is predicted to fall, with high confidence (at least 99%), between 50% and 150% recovery.

(A) Validation of laboratory performance. Your laboratory must be capable of quantifying each contaminant listed in Table 1, at or below the MRL specified in column 4 of Table 1, in paragraph (a)(3) of this section. You must ensure that the laboratory completes and has on file and available for your inspection, records of two distinct procedures. First, your laboratory must have conducted an IDC involving replicate analyses at or below the MRL as described in this paragraph. Second, for each day that UCMR analyses are conducted by your laboratory, a validation of its ability to quantify each contaminant, at or below the MRL specified in column 4 of Table 1, in paragraph (a)(3) of this section, following the procedure listed in paragraph (a)(5)(iii)(B) of this section, must be performed. The procedure for initial validation of laboratory performance at or below the MRL is as follows:

(*1*) All laboratories using EPA drinking water methods under UCMR must demonstrate that they are capable of meeting data quality objectives (DQOs) at or below the MRL listed in Table 1, column 4, in paragraph (a)(3) of this section.

(*2*) The MRL, or any concentration below the MRL, at which performance is being evaluated, must be contained within the range of calibration. The calibration curve regression model and the range of calibration levels that are used in these performance validation steps must be used in all routine sample analyses used to comply with this regulation. Only straight line or quadratic regression models are allowed. The use of either weighted or unweighted models is permitted. The use of cubic regression models is not permitted.

(*3*) Replicate analyses of at least seven (7) fortified samples in reagent water must be performed at or below the MRL for each analyte, and must be processed through the entire method procedure (*i.e.*, including extraction, where applicable, and with all preservatives).

(*4*) A prediction interval of results (PIR), which is based on the estimated arithmetic mean of analytical results and the estimated sample standard deviation of measurement results, must be determined by Equation 1:

$$\text{Equation 1} \qquad PIR = Mean \pm s \times t_{(df,\,1-\alpha/2)} \times \sqrt{1+\frac{1}{n}}$$

Where:

t is the Student's t value with df degrees of freedom and confidence level $(1-\alpha)$,

s is the sample standard deviation of n replicate samples fortified at the MRL,

n is the number of replicates.

(*5*) The values needed to calculate the PIR using Equation 1 are: Number of replicates (n); Student's t value with a two-sided 99% confidence level for n number of replicates; the average (mean) of at least seven replicates; and the sample standard deviation. Factor 1 is referred to as the Half Range PIR (HR_{PIR}).

$$HR_{PIR} = s \times t_{(df,\,1-\alpha/2)} \times \sqrt{1+\frac{1}{n}}$$

For a certain number of replicates and for a certain confidence level in Student's t, this factor

$$C = t_{(df,\,1-\alpha/2)} \times \sqrt{1+\frac{1}{n}}$$

is constant, and can be tabulated according to replicate number and confidence level for the Student's t. Table 3 in this paragraph lists the constant factor (C) for replicate sample numbers

7 through 10 with a confidence level of 99% for Student's *t*.

(*6*) The HRPIR is calculated by Equation 2:

Equation 2 $$HR_{PIR} = s \times C$$

(*7*) The PIR is calculated by Equation 3:

Equation 3 $$PIR = Mean \pm HR_{PIR}$$

TABLE 3—THE CONSTANT FACTOR (C) TO BE MULTIPLIED BY THE STANDARD DEVIATION TO DETERMINE THE HALF RANGE INTERVAL OF THE PIR (STUDENT'S t 99% CONFIDENCE LEVEL) [A]

Replicates	Degrees of freedom	Constant factor (C) to be multiplied by the standard deviation
7	6	3.963
8	7	3.711
9	8	3.536
10	9	3.409

[a] The critical *t*-value for a two-sided 99% confidence interval is equivalent to the critical *t*-value for a one-sided 99.5% confidence interval, due to the symmetry of the *t*-distribution. PIR = Prediction Interval of Results.

(*8*) The lower and upper result limits of the PIR must be converted to percent recovery of the concentration being tested. To pass criteria at a certain level, the PIR lower recovery limits cannot be lower than the lower recovery limits of the QC interval (50%), and the PIR upper recovery limits cannot be greater than the upper recovery limits of the QC interval (150%). When either of the PIR recovery limits falls outside of either bound of the QC interval of recovery (higher than 150% or less than 50%), laboratory performance is not validated at the concentration evaluated. If the PIR limits are contained within both bounds of the QC interval, laboratory performance is validated for that analyte.

(B) Quality control requirements for validation of laboratory performance at or below the MRL.

(*1*) You must ensure that the calibration curve regression model and that the range of calibration levels that are used in these performance validation steps are used in future routine sample analysis. Only straight line or quadratic regression models are allowed. The use of either weighted or unweighted models is permitted. The use of cubic regression models is not permitted.

(*2*) You must ensure, once your laboratory has performed an IDC as specified in each analytical method (demonstrating that DQOs are met at or below an MRL), that a daily performance check is performed for each analyte and method. A single laboratory blank, fortified at or below the MRL for each analyte, must be processed through the entire method procedure. The measured concentration for each analyte must be converted to a percent recovery, and if the recovery is within 50%–150% (inclusive), the daily performance of the laboratory has been validated. The results for any analyte for which 50%–150% recovery cannot be demonstrated during the daily check are not valid. Laboratories may elect to re-run the daily performance check sample if the performance for any analyte or analytes cannot be validated. If performance is validated for these analytes, the laboratory performance is considered validated. Alternatively, the laboratory may re-calibrate and repeat the performance validation process for all analytes.

(iv) *Laboratory fortified sample matrix and laboratory fortified sample matrix duplicate.* You must ensure that your laboratory prepares and analyzes the Laboratory Fortified Sample Matrix (LFSM) sample for accuracy and Laboratory Fortified Sample Matrix Duplicate (LFSMD) samples for precision to determine method accuracy and precision for all contaminants in Table 1, in paragraph (a)(3) of this section. LFSM/LFSMD samples must be prepared using a sample collected and analyzed

in accordance with UCMR 2 requirements and analyzed at a frequency of 5% (or 1 LFSM/LFSMD set per every 20 samples) or with each sample batch, whichever is more frequent. In addition, the LFSM/LFSMD fortification concentrations must be alternated between a low-level fortification and mid-level fortification approximately 50% of the time. (For example: A set of 40 samples will require preparation and analysis of 2 LFSM/LFSMD sets. The first set must be fortified at either the low-level or mid-level, and the second set must be fortified with the other standard, either the low-level or mid-level, whichever was not used for the initial LFSM/LFSMD set.) The low-level LFSM/LFSMD fortification concentration must be within ±50% of the MRL for each contaminant (e.g., for an MRL of 1 µg/L the acceptable fortification levels must be between 0.5 µg/L and 1.5 µg/L). The mid-level LFSM/LFSMD fortification concentration must be within ±20% of the mid-level calibration standard for each contaminant, and should represent, where possible and where the laboratory has data from previously analyzed samples, an approximate average concentration observed in previous analyses of that analyte. There are no acceptance criteria specified for LFSM/LFSMD analyses. All LFSM/LFSMD data are to be reported.

(v) *Method defined quality control*. You must ensure that your laboratory performs Laboratory Fortified Blanks and Laboratory Performance Checks, as appropriate to the method's requirements, for those methods listed in Table 1, column 3, in paragraph (a)(3) of this section. Each method specifies acceptance criteria for these QC checks.

(vi) *Reporting*. You must ensure that your laboratory reports the analytical results and other data, with the required data listed in Table 1, in §141.35(e). You must require your laboratory to submit these data electronically to the State and EPA using EPA's electronic data reporting system, accessible at (*http://www.epa.gov/safewater/ucmr/ucmr2/reporting.html*), within 120 days from the sample collection date. You then have 60 days from when the laboratory posts the data to review, approve, and submit the data to the State and EPA, via EPA's electronic data reporting system. If you do not electronically approve and submit the laboratory data to EPA within 60 days of the laboratory's posting to EPA's electronic reporting system, the data will be considered approved and final for State and EPA review.

(6) *Violation of this rule*—(i) *Monitoring violations*. Any failure to monitor in accordance with §141.40(a)(3)–(5) is a monitoring violation.

(ii) *Reporting violations*. Any failure to report in accordance with §141.35 is a reporting violation.

(b) *Petitions and waivers by States*—(1) *Governors' petition for additional contaminants*. The Safe Drinking Water Act allows Governors of seven (7) or more States to petition the EPA Administrator to add one or more contaminants to the UCMR Contaminant List in paragraph (a)(3) of this section. The petition must clearly identify the reason(s) for adding the contaminant(s) to the monitoring list, including the potential risk to public health, particularly any information that might be available regarding disproportional risks to the health and safety of children, the expected occurrence documented by any available data, any analytical methods known or proposed to be used to test for the contaminant(s), and any other information that could assist the Administrator in determining which contaminants present the greatest public health concern and should, therefore, be included on the UCMR Contaminant List in paragraph (a)(3) of this section.

(2) *State-wide waivers*. A State can waive monitoring requirements only with EPA approval and under very limited conditions. Conditions and procedures for obtaining a waiver are as follows:

(i) *Application*. A State may apply to EPA for a State-wide waiver from the unregulated contaminant monitoring requirements for PWSs serving more than 10,000 people. To apply for such a waiver, the State must submit an application to EPA that includes the following information: The list of contaminants on the UCMR Contaminant List for which a waiver is requested, along with documentation for each

contaminant in the request demonstrating that the contaminants or their parent compounds do not occur naturally in the State, and certifying that during the past 15 years they have not been used, applied, stored, disposed of, released, or detected in the source waters or distribution systems in the State.

(ii) *Approval.* EPA will review State applications and notify the State whether it accepts or rejects the request. The State must receive written approval from EPA before issuing a State-wide waiver.

[72 FR 393, Jan. 4, 2007; 72 FR 3916, Jan. 26, 2007]

§ 141.41 Special monitoring for sodium.

(a) Suppliers of water for community public water systems shall collect and analyze one sample per plant at the entry point of the distribution system for the determination of sodium concentration levels; samples must be collected and analyzed annually for systems utilizing surface water sources in whole or in part, and at least every three years for systems utilizing solely ground water sources. The minimum number of samples required to be taken by the system shall be based on the number of treatment plants used by the system, except that multiple wells drawing raw water from a single aquifer may, with the State approval, be considered one treatment plant for determining the minimum number of samples. The supplier of water may be required by the State to collect and analyze water samples for sodium more frequently in locations where the sodium content is variable.

(b) The supplier of water shall report to EPA and/or the State the results of the analyses for sodium within the first 10 days of the month following the month in which the sample results were received or within the first 10 days following the end of the required monitoring period as stipulated by the State, whichever of these is first. If more than annual sampling is required the supplier shall report the average sodium concentration within 10 days of the month following the month in which the analytical results of the last sample used for the annual average was received. The supplier of water shall not be required to report the results to EPA where the State has adopted this regulation and results are reported to the State. The supplier shall report the results to EPA where the State has not adopted this regulation.

(c) The supplier of water shall notify appropriate local and State public health officials of the sodium levels by written notice by direct mail within three months. A copy of each notice required to be provided by this paragraph shall be sent to EPA and/or the State within 10 days of its issuance. The supplier of water is not required to notify appropriate local and State public health officials of the sodium levels where the State provides such notices in lieu of the supplier.

(d) Analyses for sodium shall be conducted as directed in § 141.23(k)(1).

[45 FR 57345, Aug. 27, 1980, as amended at 59 FR 62470, Dec. 5, 1994]

§ 141.42 Special monitoring for corrosivity characteristics.

(a)–(c) [Reserved]

(d) Community water supply systems shall identify whether the following construction materials are present in their distribution system and report to the State:

Lead from piping, solder, caulking, interior lining of distribution mains, alloys and home plumbing.
Copper from piping and alloys, service lines, and home plumbing.
Galvanized piping, service lines, and home plumbing.
Ferrous piping materials such as cast iron and steel.
Asbestos cement pipe.

In addition, States may require identification and reporting of other materials of construction present in distribution systems that may contribute contaminants to the drinking water, such as:

Vinyl lined asbestos cement pipe.
Coal tar lined pipes and tanks.

[45 FR 57346, Aug. 27, 1980; 47 FR 10999, Mar. 12, 1982, as amended at 59 FR 62470, Dec. 5, 1994]

§ 141.43 Prohibition on use of lead pipes, solder, and flux.

(a) *In general*—(1) *Prohibition.* Any pipe, solder, or flux, which is used after