22.06: Inorganic Chemical Maximum Contaminant Levels, Monitoring Requirements and Analytical Methods

(1) Monitoring: A supplier of water shall collect samples of water as specified in 310 CMR 22.06(4) and provide for analysis of such samples for inorganic chemical contaminants listed in 310 CMR 22.06(2) consistent with the requirements set forth in 310 CMR 22.06(5) through (~~8~~9) and methods set forth in 310 CMR 22.06(~~15~~16).

All analytical results shall be rounded to the same number of significant figures as the applicable MCL or SMCL.

(2) Inorganic Maximum Contaminant Levels (MCLs): The maximum contaminant levels for inorganic contaminants specified in 310 CMR 22.06(2)(b) through (g) and (k) through (~~p~~q) apply to community water systems and non-transient non-community water systems. The maximum contaminant level specified in 310 CMR 22.06(2)(a) only applies to community water systems. The Maximum Contaminant Levels specified in 310 CMR 22.06(2)(h), (i) and (j) apply to community, non-transient non-community, and transient non-community water systems. The Maximum Contaminant Level for arsenic is 0.05 milligrams per liter for community water systems and non-transient non-community water systems until January 23, 2006.

MAXIMUM CONTAMINANT LEVELS FOR INORGANIC CHEMICALS

Contaminant	MCL (mg/l)
(a) Fluoride (C)	4.0
(b) Asbestos (C, NTNC)	7 Million Fibers/liter (longer than 10 µm)
(c) Arsenic (C,NTNC)	0.010
(d) Barium (C,NTNC)	2
(e) Cadmium (C,NTNC)	0.005
(f) Chromium (C,NTNC)	0.1
(g) Mercury (C,NTNC)	0.002
(h) Nitrate (C,NTNC,TNC)	10 (as Nitrogen)
(i) Nitrite (C,NTNC,TNC)	1 (as Nitrogen)
(j) Total Nitrate & Nitrite (C,NTNC,TNC)	10 (as Nitrogen)
(k) Selenium (C,NTNC)	0.05
(l) Antimony (C,NTNC)	0.006
(m) Beryllium (C,NTNC)	0.004
(n) Cyanide (C,NTNC)	0.2
(~~n~~o) Nickel (C,NTNC)	Reserved (Under review)
(p) Thallium (C,NTNC)	0.002
(q) Perchlorate (C,NTNC)	0.0020[1]

C = Community Systems; NTNC = Non-transient non-community systems; TNC = Transient non-community

[1] The Department will review and revise as necessary the perchlorate MCL within 6 years of its promulgation, taking into account new data on health effects, sources and occurrence, treatment techniques and associated issues, analytical feasibility and any other relevant information.

(3) Inorganic Chemicals (IOC): Sampling and Analytical Requirements: Community water systems and non-transient non-community water systems shall conduct monitoring to determine compliance with the maximum contaminant levels specified in 310 CMR 22.06(2) in accordance with 310 CMR 22.06. Transient, non-community water systems shall conduct monitoring to determine compliance with the MCL's for nitrate, nitrite and total nitrate in 310 CMR 22.06(2)(h), (i), (j) (as appropriate) in accordance with 310 CMR 22.06.

(4) Sampling Protocol: Monitoring shall be as follows:

(a) Ground Water Sampling Points: Groundwater systems shall take one sample at every entry point to the distribution system which is representative of each well after treatment (hereafter called a sampling point) beginning in the compliance period starting January 1, 1993. The system shall take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

(b) Surface Water Sampling Points: Surface water systems (Note: For purposes of 310 CMR 22.06(4)(b), surface water systems include systems with a combination of surface and ground sources.) shall take a minimum of one sample at every entry point to

the distribution system after any application of treatment or in the distribution system at a point which is representative of each source after treatment (hereafter called a sampling point) beginning in the compliance period beginning January 1, 1993. The system shall take each sample at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

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

(d) Composite Sampling: The total number of samples which must be analyzed may be reduced by compositing samples. Composite samples from a maximum of five sampling points are allowed provided that the detection limit of the method used for analysis is less than one-fifth of the MCL and none of the samples to be composited are representative of multiple sources. Compositing of samples must be approved by the Department and must be done in the laboratory. Compositing of source with previous detects is not allowed, unless otherwise authorized by the Department

1. If the concentration in the composite sample is greater than or equal to one-fifth of the MCL of any inorganic chemical, then a follow-up sample must be analyzed within 14 days from each sampling point included in the composite. These samples must be analyzed for the contaminants that exceeded one-fifth of the MCL in the composite sample. Detection limits for each analytical method and MCL are the following:

DETECTION LIMITS FOR INORGANIC CONTAMINANTS

Contaminant	MCL(mg/l)	Methodology	Detection Limit (mg/l)
Antimony	0.006	Atomic Absorption; furnace	0.003
			0.0008[5]
		ICP-Mass Spectrometry	0.0004
		Hydride-Atomic absorption	0.001
Arsenic	0.010[6]	Atomic Absorption; Furnace	0.001
		Atomic Absorption; Platform-Stabilized Temperature	0.0005[7]
		Atomic Absorption; Gaseous Hydride	0.001
		ICP- Mass Spectrometry	0.0014[8]
Asbestos	7 MFL[21]	Transmission Electron Microscopy	0.2 MFL
Barium	2	Atomic Absorption; furnace technique	0.002
		Atomic Absorption; direct aspiration	0.1
		Inductively Coupled Plasma	0.002
			(0.001)
Beryllium	0.004	Atomic Absorption; furnace	0.0002
		Atomic Absorption; platform	0.00002[5]
		Inductively Coupled Plasma[32]	0.0003
		ICP-Mass Spectrometry	0.0003
Cadmium	0.005	Atomic Absorption; furnace technique	0.0001
		Inductively Coupled Plasma[1]	0.001
Chromium	0.1	Atomic Absorption; furnace technique	0.001
		Inductively Coupled Plasma	0.007
			(0.001)[1]
Cyanide	0.2	Distillation, Spectrophotometric [3]	0.02
		Distillation, Automated, Spectrophotometric[3]	0.005
		Distillation, Selective Electrode [3]	0.02~~5~~
		Distillation, Amenable, Spectrophotometric [4]	0.0~~00~~2
		UV, Distillation, Spectrophotometric	0.0005
		Distillation, Spectrophotometric	0.0006
Mercury	0.002	Manual Cold Vapor Technique	0.0002
		Automated Cold Vapor Technique	0.0002
Nickel	Reserved		
Nitrate	10 (as N)	Manual Cadmium Reduction	0.01
		Automated Hydrazine Reduction	0.01
		Automated Cadmium Reduction	0.05
		Ion Selective Electrode	1
		Ion Chromatography	0.01
Nitrite	1 (as N)	Spectrophotometric	0.01
		Automated Cadmium Reduction	0.05

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		Manual Cadmium Reduction	0.01
		Ion Chromatography	0.004
Perchlorate	0.0020	Ion Chromatography[9]	0.0010[10]
		LC/MS or LC/MS/MS	0.0010
		IC/MS or IC/MS/MS	0.0010
Selenium	0.05	Atomic Absorption; furnace	0.002
		Atomic Absorption: gaseous hydride	0.002
Sodium		See 310 CMR 22.06A	
Thallium	0.002	Atomic Absorption; furnace	0.001
		Atomic Absorption; platform	0.0007[5]
		ICP-Mass Spectrometry	0.0003

[1] MFL = million fibers per liter >10 µm.
[2] Using a 2X preconcentration step as noted in Method 200.7. Lower MDLs may be achieved when using a 4X preconcentration.
[3] Screening methods for total cyanides.
[4] Measures "free" cyanides.
[5] Lower MDLs are reported using stabilized temperature graphite furnace atomic absorption.
[6] The MCL for arsenic is effective January 23, 2006. Until then, the MCL is 0.05 mg/l.
[7] The MDL reported for EPA method 200.9 (Atomic Absorption; Platform---Stabilized Temperature) was determined using a 2x concentration step during sample digestion. The MDL determined for samples analyzed using direct analyses (i.e., no sample digestion) will be higher. Using multiple deposition, EPA 200.9 is capable of obtaining MDL of 0.0001 mg/l.
[8] Using selective ion monitoring, EPA Method 200.8 (ICP-MS) is capable of obtaining a MDL of 0.0001 mg/l.
[9] Analysis must be conducted using EPA Method 314.0, revision 1.0, November 1999 as modified to achieve the stated detection limit or EPA Method 314.1.
[10] Minimum Reporting Level (MRL). EPA Method 314.0 is capable of obtaining a MDL of less than 0.0010 mg/l.

2. If the population served by the system is >3,300 persons, then compositing may only be permitted at sampling points within a single system. In systems serving ≤3,300 persons, compositing among different systems may be allowed with the approval of the Department, provided the five-sample limit is maintained.

3. If duplicates of the original sample taken form each sampling point used in the composite are available, the system may use these instead of resampling. The duplicates must be analyzed and the results reported to the Department within 14 days after completion of the composite analyses or before the holding time for the control sample is exceeded, whichever is sooner.

(e) Frequency Requirements for IOC Monitoring: The frequency of monitoring for asbestos shall be in accordance with 310 CMR 22.06(5); the frequency of monitoring for antimony, arsenic, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium and thallium shall be in accordance with 310 CMR 22.06(6); the frequency of monitoring for nitrate shall be in accordance with 310 CMR 22.06(7); ~~and~~ the frequency of monitoring for nitrite shall be in accordance with 310 CMR 22.06(8)~~.~~, and the frequency of monitoring for perchlorate shall be in accordance with 310 CMR 22.06(9).

(f) Consecutive System Monitoring: Public water systems that obtain water from another public water system are exempt from conducting compliance monitoring for the purchased portion of the system for the inorganic chemicals under 310 CMR 22.06, provided that the system from which the water is obtained has conducted the analyses required under 310 CMR 22.06, unless otherwise specified by the Department. These systems are not exempt from 310 CMR 22.06(5) asbestos sampling.

(5) Asbestos Sampling Frequency: The frequency of monitoring conducted to determine compliance with the maximum contaminant level for asbestos specified in 310 CMR 22.06(2) shall be conducted as follows:

(a) Initial Sampling Frequency: Each community and non-transient, non-community water system is required to monitor for asbestos during the first three-year compliance period of each nine-year compliance cycle beginning in the compliance period starting January 1, 1993 as specified in 310 CMR 22.06(5)(e), (f) and (g).

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(b) Sampling During Waiver: If the system believes it is not vulnerable to either asbestos contamination in its source water or due to corrosion of asbestos-cement pipe, or both, it may apply to the Department for a waiver of the monitoring requirement in 310 CMR 22.06(5)(a). If the Department grants the waiver, the system will be required to monitor pursuant to 310 CMR 22.06(5)(d).

(c) Basis of an Asbestos Waiver: The granting of a waiver will be based on a consideration of the following factors:

1. Potential asbestos contamination of the water source, and
2. The use of asbestos-cement pipe for finished water distribution and the corrosive nature of the water.

(d) Effect of an Asbestos Waiver: A waiver remains in effect until the completion of the three-year compliance period. Systems not receiving a waiver must monitor in accordance with the provisions of 310 CMR 22.06(5)(a).

(e) Distribution System Sampling Criteria for Asbestos: A system vulnerable to asbestos contamination due solely to corrosion of asbestos-cement pipe shall take at a minimum one sample at a tap approved by the Department. This tap location must be served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur. Additional sample locations (taps) may be required if in the Department's opinion the use of asbestos-cement is extensive and contamination is likely to occur in several areas of the system.

(f) Source Water Sampling Criteria for Asbestos: A system vulnerable to asbestos contamination due solely to source water shall monitor in accordance with the provision of 310 CMR 22.06(2) and 22.06(4)

(g) Combined Asbestos Vulnerability: A system vulnerable to asbestos contamination due both to its source water supply and corrosion of asbestos-cement pipe shall monitor ~~is~~ in accordance with 310 CMR 22.06(5)(e) and (f).

(h) Exceeding the Asbestos MCL: A system which exceeds the maximum contaminant levels as defined by 310 CMR 22.06(2) shall report to the Department within seven days and shall monitor quarterly beginning in the following quarter.

(i) Average Exceeding MCL: When the average of four analyses made pursuant to 310 CMR 22.06(5)(h), rounded to the same number of significant figures as the maximum contaminant level for the substance in question, exceeds the maximum contaminant level, the supplier of water shall report to the Department pursuant to 310 CMR 22.15 and give public notice to the public pursuant to 310 CMR 22.16. Monitoring after public notification shall be at a frequency designated by the Department and shall continue until the maximum contaminant level has not been exceeded in two successive samples or until a monitoring schedule as condition to variance, exemption or enforcement action shall become effective.

(j) Asbestos Reliably & Consistently Below the MCL: The quarterly monitoring requirement may be decreased to the frequency specified in 310 CMR 22.06(5)(a) provided the Department has determined that the system is reliably and consistently below the maximum contaminant level and a groundwater system has taken a minimum of two quarterly samples and a surface (or combined surface/ground) water system has taken a minimum of four quarterly samples.

(k) Grandfathered Asbestos Data: If monitoring data collected after January 1, 1990 are generally consistent with the requirements of 310 CMR 22.06(5), the data may be used with the Department's approval, to satisfy the monitoring requirement for the initial compliance period beginning January 1, 1993.

(6) Sampling Frequency for IOCs: The frequency of monitoring conducted to determine compliance with the maximum contaminant levels in 310 CMR 22.06(2) for antimony, arsenic, beryllium, barium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium and thallium shall be as follows:

(a) IOCs Sampling Frequency: Groundwater systems shall take one sample at each sampling point once every three years. Surface water systems (or combined surface/ground) shall take one sample annually at each sampling point.

(b) IOCs Sampling Waiver: The system may apply to the Department for a waiver from the monitoring frequencies specified in 310 CMR 22.06(6)(a).

(c) IOC Sampling During a Waiver: A condition of the waiver shall require that a system shall take a minimum of one sample while the waiver is effective. The term

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during which the waiver is effective shall not exceed one compliance cycle (i.e., nine years).

(d) Basis of an IOC Waiver & Grandfathered Data: A waiver may be granted by the Department provided the surface water systems have monitored annually for at least three years and groundwater systems have conducted a minimum of three rounds of monitoring. (Analytical monitoring results must have been representative of all sources at the time of sampling.) Both surface and groundwater systems shall demonstrate that all previous analytical results were less than the maximum contaminant level. Systems that use a new water source are not eligible for a waiver until three rounds of monitoring from the new source have been completed.

(e) Basis of the IOC Sampling Frequency During a Waiver: The granting of a waiver by the Department will be based on the following:

1. Reported concentrations from all previous monitoring;
2. The degree of variation in reported concentrations; and
3. Other factors which may affect contaminant concentrations such as changes in groundwater pumping rates, changes in the system's configuration, changes in the system's operating procedures, or changes in stream flows or characteristics.

(f) Effect of an IOC Waiver: A supplier of water must have received a written approval from the Department which shall set forth the basis for the determination. The determination may be initiated by the Department or upon an application by the public water system. The public water system shall specify the basis for its request. The Department may revise its determination of the appropriate monitoring frequency, if the system submits new monitoring data or when other data relevant to the system's appropriate monitoring frequency become available.

(g) Exceeding an IOC MCL: Systems which exceed a maximum contaminant levels as defined by 310 CMR 22.06(2) shall report to the Department within seven days and shall monitor quarterly beginning in the following quarter.

(h) Average Exceeding MCL: When the average of four analyses made pursuant to 310 CMR 22.06(6)(g), rounded to the same number of significant figures as the maximum contaminant level for the substance in question, exceeds the maximum contaminant level, the supplier of water shall report to the Department pursuant to 310 CMR 22.15 and give public notice to the public pursuant to 310 CMR 22.16. Monitoring after public notification shall be at a frequency designated by the Department and shall continue until the maximum contaminant level has not been exceeded in two successive samples or until a monitoring schedule as condition to variance, exemption or enforcement action shall become effective.

(i) IOCs Reliably & Consistently Below the MCL: If the system is reliably and consistently below the maximum contaminant level, the quarterly monitoring requirement may be decreased with the Department's approval to the frequencies specified in 310 CMR 22.06(6)(a). Systems requesting this decrease must have taken at a minimum two quarterly samples for a groundwater system and four quarterly samples for a surface water system.

(j) All new public water systems or systems that use a new source of water that begin operation after January 22, 2004 must demonstrate compliance with the MCL within a period of time as specified by the Department. The system must also comply with the initial sampling frequencies specified by the Department to ensure a system can demonstrate compliance with the MCL. Routine and increased monitoring frequencies shall be conducted in accordance with the requirements in 310 CMR 22.06(6).

(7) Sampling Frequency for Nitrate: All public water systems (community; non-transient, non-community; and transient, non-community systems) shall monitor to determine compliance with the maximum contaminant level for nitrate specified in 310 CMR 22.06(2).

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

(b) Transient Non-Community Nitrate Sampling Frequency: Each transient non-community water system shall monitor annually beginning January 1, 1993.

(c) Ground Water Repeat Nitrate Sampling Frequency: For all public water systems: the repeat monitoring frequency for ground water systems shall be quarterly for at least one year following any one sample in which the concentration is ≥50% the MCL. A

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groundwater system may reduce the sampling frequency to annually with the Department's approval, after four consecutive quarterly samples are reliably and consistently less than the MCL.

(d) Surface Water Repeat Nitrate Sampling Frequency: All public water systems with surface water sources may reduce the sampling frequency to annually with the Department's approval, if all analytical results from four consecutive quarters are <50% of the MCL. A surface water system shall return to quarterly monitoring if any one sample is ≥50% of the MCL.

(e) Scheduling Annual Nitrate Repeat Samples: After the initial round of quarterly sampling is completed, all public water systems which are monitoring quarterly because the concentration of any one sample was >50% of the MCL shall take subsequent annual samples during the quarter(s) which previously resulted in the highest analytical result.

(8) Sampling Frequency for Nitrite: All public water systems (community; non-transient, non-community; and transient, non-community systems) shall monitor to determine compliance with the maximum contaminant level for nitrite in 310 CMR 22.06(2).

(a) Initial Nitrite Sampling: All public water systems shall take one sample at each sampling point in the compliance period beginning January 1, 1993 and ending December 31, 1995.

(b) Under the Nitrite Trigger Level: After the initial sample, systems where an analytical result for nitrite is <50% of the MCL shall monitor at the frequency specified by the Department.

(c) Above the Nitrite Trigger Level: For community, non-transient, non-community, and transient non-community water systems, the repeat monitoring frequency for any water system shall be quarterly for at least one year following any one sample in which the concentration is ≥50% of the MCL. With the Department's approval, a system may reduce the sampling frequency to annually if the system is reliably and consistently less than the MCL.

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

(9) Sampling Frequency for Perchlorate

(a) Initial Monitoring: Community and Non-Transient, Non-Community systems shall complete initial monitoring for perchlorate as specified below:

1. Effective January 1, 2007, for systems served by groundwater, perchlorate shall be monitored twice, once during the month of April and once during the month of September.

2. Effective January 1, 2007, for systems served by surface water, perchlorate shall be monitored for four consecutive quarters.

(b) Grandfathered Perchlorate Data: If the perchlorate monitoring data collected by a public water system after January 1, 2004 is consistent with the requirements of 310 CMR 22.06(9), such data may be used with the Department's approval to satisfy the initial monitoring requirements specified in 310 CMR 22.06(9)(a).

(c) Exceeding the Perchlorate MCL: A public water system that exceeds the Maximum Contaminant Level (MCL) for perchlorate in 310 CMR 22.06(2) shall follow the reporting and confirmation procedures in 310 CMR 22.06(10)(c).

(d) Repeat Perchlorate Sampling Frequency: If, after completing the initial monitoring required in 310 CMR 22.06(9)(a), no perchlorate is detected, a public water system may thereafter reduce the sampling frequency to once per year.

(e) Exceeding the Perchlorate Trigger Level: The repeat monitoring frequency for any public water system shall be on a quarterly basis for at least one year following any one sample in which the concentration is ≥ 0.0010 mg/L (unqualified). With the Department's approval, a system may reduce the sampling frequency to once per year, provided the monitoring for perchlorate done by the system is reliably and consistently below the MCL.

(f) Eligibility for a Waiver: A public water system may apply for a waiver from the monitoring requirements for perchlorate specified in 310 CMR 22.06(9) in accordance with the IOC waiver provisions in 310 CMR 22.06(6)(b) through (f).

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(g) The Department may, on a case-by-case basis, require a public water system to monitor for perchlorate more frequently than otherwise provided in 310 CMR 22.06(9)(b) through (f).

(~~9~~10) Confirmation Sampling:

(a) Deadline for IOCs Confirmation Samples: Where the results of sampling for antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, selenium, or thallium indicate an exceedance of the maximum contaminant level, one additional sample shall be collected as soon as possible after the initial sample was taken (but not to exceed two weeks) at the same sampling point.

(b) Deadline for Nitrate & Nitrite Confirmation Samples: Where nitrate or nitrite sampling results indicate an exceedance of the maximum contaminant level, the system shall take a confirmation sample within 24 hours of the system's receipt of notification of the analytical results of the first sample and shall report to the Department within seven days. Systems unable to comply with the 24-hour sampling requirement must immediately notify the consumers served by the area served by the public water system in accordance with 310 CMR 22.16. Systems exercising this option must take and analyze a confirmation sample within two weeks of notification of the analytical results of the first sample.

(c) Deadline for Perchlorate Confirmation Samples: Whenever the perchlorate sampling results indicate an exceedance of the maximum contaminant level, the system shall take a confirmation sample in accordance with 310 CMR 22.06(10)(c)1 and 2 below within 24 hours of the system's receipt of written notification of the analytical results. For the purposes of 310 CMR 22.06(10)(c), written notification of the analytical results means notification by email, fax, or letter. The system shall report the initial sample result that exceeded the MCL to the Department within seven (7) days. Systems that are unable to take a confirmation sample within 24 hours of the system's receipt of written notification of the analytical results, shall immediately contact the Department for further direction. When taking a confirmation sample as required by 310 CMR 22.06(10)(c):

1. The system shall obtain an analysis and written notification turnaround time for the confirmation sample of no more than 3 days.
2. The system shall report the confirmation sample results to the Department within 3 days of the system's receipt of the written notification of the analytical results.

(~~c~~d) Compliance Calculations & Confirmation Samples: The results of the initial and confirmation sample shall be averaged. The resulting average shall be used to determine the system's compliance in accordance with 310 CMR 22.06(13~~12~~). Obvious sampling errors may be deleted with the approval of the Department.

(~~10~~11) Increased Sampling Frequency: The Department may require more frequent monitoring than specified in 310 CMR 22.06(5) through (~~8~~9) or may require confirmation samples for positive and negative results at its discretion.

(~~11~~12) PWS Request for Increased Sampling Frequency: Systems may apply to the Department to conduct more frequent monitoring than the minimum monitoring frequencies specified in 310 CMR 22.06.

(~~12~~13) Compliance Calculations: Compliance with the maximum contaminant levels set out in 310 CMR 22.06(2) shall be determined based on the analytical results obtained at each sampling point. If one sampling point is in violation of an MCL, the system is in violation of the MCL.

(a) Sampling Frequencies Greater than Annual: For systems monitoring more than once per year, compliance with the MCL, with the exception of nitrate~~, and~~ nitrite and perchlorate, is determined by a running annual average at each sampling point.

(b) Sampling Frequencies of Annual or Less: Each supplier of water monitoring annually or less frequently whose sample result exceeds an MCL, with the exception of nitrate~~, and~~ nitrite and perchlorate, must begin quarterly sampling. The system will not be considered in violation of the MCL until it has completed one year of quarterly sampling.

(c) If any sample result will cause the running annual average to exceed the MCL at any sampling point, the system is out of compliance with the MCL immediately.

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(d) If a supplier of water fails to collect the required number of samples, compliance (average concentration) will be based on the total number of samples collected.

(e) If a sample result is less than the detection limit, zero will be used to calculate the annual average.

(f) Compliance Calculations for Nitrate & Nitrite: Compliance with the maximum contaminant levels for nitrate and nitrite is determined based on one sample if the levels of these contaminants ~~is~~ are below the MCLs. If the level~~s~~ of nitrate or nitrite exceed the MCL~~s~~ in the initial sample, a confirmation sample is required in accordance with 310 CMR 22.06(~~9~~10)(b) and (~~c~~d), and compliance shall be determined based on the average of the initial and confirmation samples.

(g) Compliance Calculations for Perchlorate: Compliance with the maximum contaminant level for perchlorate is determined based on one sample if the level is below the MCL. If the level of perchlorate exceeds the MCL in the initial sample a confirmation sample is required in accordance with 310 CMR 22.06(10)(c) and (d), and compliance shall be determined based on the average of the initial and the confirmation sample. The Department may allow or require additional sampling.

(~~g~~h) Average Exceeding Nitrate, Nitrite and Perchlorate~~IOC~~ MCL: When the average of analyses made pursuant to 310 CMR 22.06(7), (8), (9), (10)(b) and (10)(c) rounded to the same number of significant figures as the maximum contaminant level for the substance in question, exceeds the maximum contaminant level, the supplier of water shall report to the Department pursuant to 310 CMR 22.15 and give public notice pursuant to 310 CMR 22.16. Monitoring after public notification shall be at a frequency designated by the Department ~~and shall continue until the maximum contaminant level has not been exceeded in two successive samples or until a monitoring schedule as a condition to a variance, exemption or enforcement action shall become effective.~~

(~~h~~i) Arsenic sampling results shall be reported to the nearest 0.001 mg/l.

(~~13~~14) Sampling Schedules: Each public water system shall monitor at the time designated by the Department during each compliance period.

(~~14~~15) Reporting MCL Violation: A system which exceeds the MCL listed in 310 CMR 22.06(2) and is out of compliance shall report the exceedance to the Department within seven days.

(~~15~~16) Analytical and Sampling Methods for Inorganics:

(a) Analytical Methods for IOCs: Analysis for the listed inorganic contaminants shall be conducted using the following methods:

INORGANIC CONTAMINANTS ANALYTICAL METHODS

		Reference (Method Number)			
Contaminant	Methodology[13]	EPA	ASTM[3]	SM[4]	Other
Antimony	Atomic Absorption: Furnace			3113B	
	Atomic Absorption: platform	[2]200.9			
	ICP-Mass Spectrometry	[2]200.8			
	Hydride-Atomic Absorption		D-3697-92		
Arsenic[14]	Atomic Absorption: Furnace		D2972-97C	3113B	
	Atomic Absorption; Hydride		D-2972-97B	3114B	
	Inductively Coupled Plasma[15]	[2]200.7		3120B[15]	
	ICP-Mass Spectrometry	[2]200.8			
	Atomic Absorption; Platform	[2]200.9			
Asbestos	Transmission Electron Microscopy	[9]100.1	--	--	
	Transmission Electron Microscopy	[10]100.2			
Barium	Atomic Absorption; Furnace		--	3113B	--
	Atomic Absorption; Direct		--	3111D	--
	Inductively Coupled Plasma	[2]200.7	--	3120B	--

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	ICP-Mass Spectrometry	[2]200.8			
Beryllium	Atomic Absorption; Furnace		D-3645-93B	3113B	
	Atomic Absorption; Platform	[2]200.9			
	Inductively Coupled Plasma	[2]200.7		3120B	
	ICP-Mass Spectrometry	[2]200.8			
Cadmium	Atomic absorption; Furnace		--	3113B	--
	Inductively-coupled Plasma	[2]200.7	--	--	--
	ICP-Mass Spectrometry	[2]200.8			
	Atomic Absorption; Platform	[2]200.9			

INORGANIC CONTAMINANTS ANALYTICAL METHODS (continued)

		Reference (Method Number)			
Contaminant	Methodology[13]	EPA	ASTM[3]	SM[4]	Other
Chromium	Atomic absorption; Furnace		--	3113B	--
	Inductively Coupled Plasma	[2]200.7	--	3120B	--
	ICP-Mass Spectrometry	[2]200.8			
	Atomic Absorption; Platform	[2]200.9			
Cyanide	Manual Distillation		D2036-98A	4500-CN-C	
	Manual Distillation followed by: Spectrophotometric, Amenable		D2036-96B	4500-CN-G	
	Manual Distillation followed by: Spectrophotometric, Manual		D2036-98A	4500-CN-E	I-3300-85[5]
	Semi-automated	[6]335.4			
	Selective Electrode			4500-CN-F	
Mercury	Manual cold vapor	[2]245.1	D3223-97	3112B	--
	Automated cold vapor	[1]245.2	--	--	--
	ICP-Mass Spectrometry	[2]200.8			
Nickel	Atomic Absorption: Furnace			3113B	
	Atomic Absorption: Platform	[2]200.9			
	Atomic Absorption Direct			3111B	
	Inductively Coupled Plasma	[2]200.7		3120B	
	ICP-Mass Spectrometry	[2]200.8			
Nitrate	Manual cadmium reduction		D3867-90B	4500-NO_3-E	--
	Automated cadmium reduction	[6]353.2	D3867-90A	4500-NO_3-F	--
	Ion selective electrode	--	--	4500-NO_3-D	601[7]
	Ion chromatography	[6]300.0	D4327-97	4110B	B-1011[8]
Nitrite	Spectrophotometric		--	4500-NO_2-B	
	Automated cadmium reduction	[6]353.2	D3867-90A	4500-NO_3-F	--
	Manual cadmium reduction		D3867-90B	4500-NO_3-E	--
	Ion chromatography	[6]300.0	D4327-97	4110B	B-1011[8]
Perchlorate	Ion chromatography	[16]314.0			
		[17]314.1			
	LC/MS or LC/MS/MS	[18]331.0			
	IC/MS or IC/MS/MS	[19]332.0			
Selenium	Hydride-Atomic absorption;		D3859-98A	3114B	
	Atomic Absorption: Furnace		D3859-98B	3113B	
	ICP-Mass Spectrometry	[2]200.8			
	Atomic Absorption; Platform	[2]200.9			
Thallium	Atomic absorption; Platform	[2]200.9			
	ICP-Mass Spectrometry	[2]200.8			

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The procedures shall be done in accordance with the documents listed below. The incorporation by reference of the following documents listed in footnotes 1-11 and 15 was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies of the documents may be obtained from the sources listed below. Information regarding obtaining these documents can be obtained from the Safe Drinking Water Hotline at 900-426-4791. Documents may be inspected at EPA's Drinking Water Docket, 401 M Street, SW., Washington, DC 20460 (Telephone 202-260-3027); or at the Office of Federal Register, 800 North Capital Street, NW., Suite 700, Washington, DC.

[1] - "Methods of Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983. Available at NTIS, PB84-128677.

[2] - "Methods for the Determination of Metals in Environmental Samples - Supplement I", EPA-600/R-94/111, May 1994. Available at NTIS, PB 95-125472.

[3] - Annual Book of ASTM Standards, 1994 , 1996, or 1999 Vols. 11.01 and 11.02, American Society for Testing and Materials. The previous versions of D1688-95A, D1688-95C (copper), D3559-95D (lead), D1293-95 (pH), D1125-95A, (conductivity) and D859-94 (silica) are also approved. These previous versions D1688-90A, C; D3559-90D, D1293-84, D1125-91A and D859-88, respectively are located in the Annual Book of ASTM Standards, 1994, Vols. 11.01. Copies may be obtained from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428.

[4] – 18th, 19th, and 20th edition of "Standard Methods for the Examination of Water and Wastewater", 18th (1982), 19th (1995), and 20th (1998) editions, American Public Health Association; either edition may be used. Copies may be obtained from the American Public Health Association, 1015 Fifteenth Street NW, Washington, DC 20005. The cited methods published in any of these three editions may be used, except that the versions of 3111B, 3111D, 3113B and 3114B in the 20th edition may not be used.

[5] - Method I-2601-90, "Methods for Analysis by the U.S. Geological Survey National Water Quality Laboratory – Determination of Inorganic and Organic Constituents in Water and Fluvial Sediments", Open File Report 93-125, 1993; For Methods I-1030-85; I-1601-85; I-1700-85; I-2598-85, I-2700-85; and I-3300-85 See "Techniques of Water Resources Investigation of the U.S. Geological Survey", Book 5, Chapter A-1, 3rd edition, 1989; Available from Information Services, U.S. Geological Survey, Federal Center, Box 25286, Denver, CO 80225-0425.

[6] - "Methods for the Determination of Inorganic Substances in Environmental Samples", EPA 600/R-93/100, August 1993. Available at NTIS, PB94-120821.

[7] – The procedure shall be done in accordance with Technical Bulletin 601 "Standard Method of Test for Nitrate in Drinking Water", July 1994, PN 221890-001, Analytical Technology, Inc. Copies may be obtained from ATI Orion, 529 Main Street, Boston, MA 02129.

[8] – Method B-1011, "Standard Method of Test for Nitrate in Drinking Water", July 1994, PN 221890-001, Analytical Technology, Inc. Copies may be obtained from ATI Orion, 529 Main Street, Boston, MA 02129.

[9] – Method 100.1, "Analytical Methods for Determination of Asbestos Fibers in Water", EPA/600/4-83/043, September 1983, Available at NTIS, PB83-206471.

[10] – 10 Method 100.2, "Determination of Asbestos Structures Over 10 µm in Length in Drinking Water," EPA/600/R-94/134, June 1994. Available at NTIS, PB94-201902.

[11] – Industrial Method No. 129-71W, "Fluoride in Water and Wastewater", December 1972, and Method No. 380-75WE, "Fluoride in Water and Wastewater", February 1976, Technicon Industrial Systems. Copies may be obtained from Bran & Luebbe, 1025 Busch Parkway, Buffalo Grove, IL 60089.

[12] – Unfiltered, no digestion or hydrolyoesis.

[13] – Because MDLs reported in EPA Methods 200.7 and 200.9 were determined using a 2X preconcentration step during sample digestion, MDLs determined when samples are analyzed by direct analysis (i.e. no sample digestion) will be higher. For direct analysis of cadmium and arsenic by Method 200.7, and arsenic by Method 3120B sample preconcentration using pneumatic nebulization may be required to achieve lower detection limits. Preconcentration may also be required for direct analysis of antimony, lead, and thallium by Method 200.9; antimony and lead by Method 3113B; and lead by Method D3559-90D unless multiple in-furnace depositions are made.

[14] – If ultrasonic nebulization is used in the determination of arsenic by Methods 200.7, 200.8, or SM 3120 B, the arsenic must be in the pentavalent state to provide uniform signal response. For methods 200.7 and 3120B, both samples and standards must be diluted in the same mixed acid matrix concentration of nitric and hydrochloric acid with the addition of 100 µL of 30% hydrogen peroxide per 100 ml of sodium hypochlorite. For direct analysis of arsenic with the Method 200.8 using ultrasonic nebulization, samples must contain 1 mg/L of sodium hypochlorite.

[15] – After January 23, 2006 analytical methods using the ICP-AES technology, may not be used because the detection limits for these methods are 0.008 mg/L or higher. This restriction means that the two ICP-AES methods (EPA Method 200.7 and SM 3120 B) approved for use for the MCL of 0.05 mg/L may not be used for compliance determinations for the revised MCL of 0.01 mg/L. However, prior to 2005 systems may have compliance samples analyzed with these less sensitive methods.

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[16] – Revision 1.0, November, 1999, "Determination of Perchlorate in Drinking Water Using Ion Chromatography" as modified to achieve performance requirements in 310 CMR 22.06 (4).
[17] - EPA Method 314.1: "Determination of Perchlorate in Drinking Water Using Inline Column Concentration/Matrix Elimination Ion Chromatography with Suppressed Conductivity Detection."
[18] – EPA Method 331.0: "Determination of Perchlorate in Drinking Water By Liquid Chromatography Electrospray Ionization Mass Spectrometry."
[19] - EPA Method 332.0: "Determination of Perchlorate in Drinking Water Using Ion Chromatography with Suppressed Conductivity and Electrospray Ionization Mass Spectrometry."

(b) Analytical Methods for Fluoride: Analyses for fluoride shall be conducted using the following methods:

	Reference (Method Number)			
Methodology	EPA	ASTM[1]	SM[2]	Other
Ion Chromatography	300.0[5]	D4327-97	4110B	--
Manual Distillation; Colorimetric SPADNS			4500F-B,D	--
Manual Electrode		D1179-93B	4500F-C	
Automated Alizarin fluorine blue - lanthanum, with distillation (complexone)			4500F-E	129-71W[3]
Automated ion selective electrode	--	--	--	380-75WE[4]

1 - Annual Book of ASTM Standards, part 31 Water. American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.
2 - "Standard Methods for the Examination of Water and Wastewater," 18th, 19th, and 20th edition, American Public Health Association, American Water Works Association, Water Pollution Control Federation, 1992, 1995, and 1998.
3 - "Fluoride in Water and Wastewater, Industrial Method # 129-71W." Technicon Industrial Systems, Tarrytown, New York, 10591. December 1972.
4 - "Fluoride in Water and Wastewater," Technicon Industrial Systems, Tarrytown, New York, 10591. February 1976.
5 - "Methods for the Determination of Inorganic Substances in Environmental Samples," EPA-600/R-93/100, August 1993. Available at NTIS, PB94-120821.

(c) Sample Collection Methods for IOCs: Sample collection for antimony, arsenic, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite, perchlorate, selenium and thallium under 310 CMR 22.06 shall be conducted using the sample preservation, container, and maximum holding time procedures specified in the table below:

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

[1] - For cyanide determinations samples must be adjusted with sodium hydroxide to pH 12 at the time of collection. When chilling is indicated the sample must be shipped and stored at 4°C or less. Acidification of nitrate or metals samples may be with a concentrated acid or a dilute (50% by volume) solution of the applicable concentrated acid.

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Acidification of samples for metals analyses is encouraged and allowed at the laboratory rather than at the time of sampling provided the shipping time and other instruction in Section 8.3 of EPA methods 200.78 or 200.8 or 200.9 are followed.

[2] - P = plastic, hard or soft; G = glass, hard or soft.

[3] - In all cases, samples should be analyzed as soon after collection as possible. Follow additional (if any) information on preservation, containers, or holding times that is specified in the method.

[4] - See method(s) for the information for preservation.

(~~16~~17) BATs for IOCs: The following are the best technology, treatment technique, or other means available for achieving compliance with the maximum contaminant level for inorganic contaminants identified in 310 CMR 22.06(2) except fluoride ~~and arsenic~~:

BAT FOR INORGANIC CONTAMINANTS LISTED IN 310 CMR 22.06(2)

CHEMICAL NAME	BAT(s)
Antimony	2,7
Arsenic	1,2,5,6,7,9,12[5]
Asbestos	2,3,8
Barium	5,6,7,9
Beryllium	1,2,5,6,7
Cadmium	2,5,6,7
Chromium	2,5,6[2],7
Cyanide	5,7,13
Mercury	2[1],4,6[1],7[1]
Nickel	5,6,7
Nitrate	5,7,9
Nitrite	5,7
Perchlorate	5
Selenium	1,2[3],6,7,9
Thallium	1,5

Key to BATs in Table
1 = Activated Alumina
2 = Coagulation/Filtration (Not BAT for Systems <500 service connections)
3 = Direct and Diatomite Filtration
4 = Granular Activated Carbon
5 = Ion Exchange
6 = Lime Softening (not BAT for systems <500 service connections)
7 = Reverse Osmosis
8 = Corrosion Control
9 = Electrodialysis
10 = Chlorine
11 = Ultraviolet
12 = Oxidation/Filtration
13 = Alkaline Chlorination

[1]BAT only if influent Hg concentrations ≤10 µg/l.
[2]BAT for Chromium III only
[3]BAT for Selenium IV only
[4]BAT for Arsenic V. Pre-oxidation may be required to convert Arsenic III to Arsenic V.
[5]To obtain high removals; iron to arsenic ratio must be at least 20.1.

(~~17~~18) The Administrator, pursuant to section 1412 of the Act, hereby identifies in the following table the affordable technology, treatment technique, or other means available to systems serving 10,000 persons or fewer for achieving compliance with the maximum contaminant level for arsenic:

SMALL SYSTEM COMPLIANCE TECHNOLOGIES (SSCTS) [1] FOR ARSENIC [2]

Small system compliance technology	Affordable for listed small system categories [3]

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Activated Alumina (centralized).....All size categories.
Activated Alumina (Point-of-Use) [4] .....All size categories.
Coagulation/Filtration [5].....501–3,300, 3,301–10,000.
Coagulation-assisted Microfiltration .....501–3,300, 3,301–10,000.
Electrodialysis reversal [6].....501–3,300, 3,301–10,000.
Enhanced coagulation/filtration.....All size categories
Enhanced lime softening (pH> 10.5).....All size categories.
Ion Exchange .....All size categories.
Lime Softening [5] .....501–3,300, 3,301–10,000.
Oxidation/Filtration [7] .....All size categories.
Reverse Osmosis (centralized) [6] .....501–3,300, 3,301–10,000.
Reverse Osmosis (Point-of-Use) [4] .....All size categories.

[1] Section 1412(b)(4)(E)(ii) of SDWA specifies that SSCTs must be affordable and technically feasible for small systems.
[2] SSCTs for Arsenic V. Pre-oxidation may be required to convert Arsenic III to Arsenic V.
[3] The Act (ibid.) specifies three categories of small systems: (i) those serving 25 or more, but fewer than 501,(ii) those serving more than 500, but fewer than 3,301, and (iii) those serving more than 3,300, but fewer than 10,001.
[4] When POU or POE devices are used for compliance, programs to ensure proper long-term operation, maintenance, and monitoring must be provided by the water system to ensure adequate performance.
[5] Unlikely to be installed solely for arsenic removal. May require pH adjustment to optimal range if high removals are needed.
[6] Technologies reject a large volume of water—may not be appropriate for areas where water quantity may be an issue.
[7] To obtain high removals, iron to arsenic ratio must be at least 20:1.

22.16: Public Notification Requirements

(1) (a) Public Water Systems Required to Notify. Each supplier of water for a public water system (community water systems, non-transient non-community water systems, and transient non-community water systems) shall give notice for all violations of National Primary Drinking Water Regulations (NPDWR), Massachusetts Drinking Water Regulations and for other situations, as listed in table 1 or specified by the Department in writing. The term "violations" is used in 310 CMR 22.16 to include violations of the maximum contaminant level (MCL), maximum residual disinfection level (MRDL), treatment technique (TT), monitoring requirements, and testing procedures defined in 310 CMR 22.00 or specified by the Department in writing. Table 2 of 310 CMR 22.16 identifies the tier assignment for each specific violation or situation requiring a public notice.

310 CMR 22.16 - Table 1

Violation Categories and other Situations Requiring a Public Notice

1. Violations.
   a. Failure to comply with an applicable maximum contaminant level (MCL) or maximum residual disinfectant level (MRDL).
   b. Failure to comply with a prescribed treatment technique (TT).
   c. Failure to perform water quality monitoring, as required by 310 CMR 22.00.
   d. Failure to comply with testing procedures as prescribed by 310 CMR 22.00.
2. Variance and Exemptions under 310 CMR 22.13, 310 CMR 22.13A and 310 CMR 22.14
   a. Operation under a variance or an exemption.
   b. Failure to comply with the requirements of any schedule that has been set under a variance or an exemption.
3. Special Public Notices
   a. Occurrence of a waterborne disease outbreak or other waterborne emergency.
   b. Exceedance of the nitrate MCL by non-community water systems (NCWS), where granted permission by the Department under 310 CMR 22.13 and 310 CMR 22.13A.
   c. Exceedance of the secondary maximum contaminant level (SMCL) for fluoride.
   d. Availability of unregulated contaminant monitoring data.
   e. Other violations and situations determined by the Department to require a public notice under this section, not already listed in Table 1.

(b) Tier Classification. Public notice requirements are divided into three tiers, to take into account the seriousness of the violation or situation and of any potential adverse health effects that may be involved. The public notice requirements for each violation or situation listed in Table 1 of 310 CMR 22.16 are determined by the tier to which the violation is assigned. Table 2 of 310 CMR 22.16 provides the definition of each tier. 310 CMR 22.16: *Table 6* identifies the tier assignment for each specific violation or situation.

310 CMR 22.16 - Table 2

Definition of Public Notice Tiers

1. Tier 1 public notice--required for violations and situations with significant potential to have serious adverse effects on human health as a result of short-term exposure
2. Tier 2 public notice--required for all other violations and situations with potential to have serious adverse effects on human health.
3. Tier 3 public notice--required for all other violations and situations not included in Tier 1 and Tier 2.

(c) Persons to be Notified.
1. Each supplier of water shall provide public notice to persons served by the water system, in accordance with 310 CMR 22.16. Public water systems that sell or

otherwise provide drinking water to other public water systems (i.e., to consecutive systems) are required to give public notice to the owner/operator of the consecutive

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system; the consecutive system is responsible for providing public notice to the persons it serves.

2. If a public water system has a violation in a portion of the distribution system that is physically or hydraulically isolated from other parts of the distribution system, the Department may allow the system to limit distribution of the public notice to only persons served by that portion of the system which is out of compliance. Permission by the Department for limiting distribution of the notice shall be granted in writing.

3. A copy of the notice shall also be sent to the Department and the local Board of Health, in accordance with the requirements of 310 CMR 22.15(3)(b) and (3)(c).

(2) Tier 1 Public Notice.

(a) Violations or Situations Requiring Tier 1 Public Notice. Table 3 of 310 CMR 22.16 lists the violation categories and other situations requiring a Tier 1 public notice. Table 6 of 310 CMR 22.16 identifies the tier assignment for each specific violation or situation.

310 CMR 22.16 - Table 3

Violation Categories and Other Situations Requiring a Tier 1 Public Notice

1. Violation of the MCL for total coliforms when fecal coliform or *E. coli* are present in the water distribution system (as specified in 310 CMR 22.05(8)(b), or when the water system fails to test for fecal coliforms or E. coli when any repeat sample tests positive for coliform (as specified in 310 CMR 22.05).

2. Violation of the MCL for nitrate, nitrite, ~~or~~ total nitrate and nitrite or perchlorate, as defined in 310 CMR 22.06, or when the water system fails to take a confirmation sample within 24 hours of the system's receipt of the first sample showing an exceedance of the nitrate, ~~or~~ nitrite or perchlorate MCL, as specified in 310 CMR 22.06(~~9~~10);

3. Exceedance of the nitrate MCL by non-community water systems, where permitted to exceed the MCL by the Department under 310 CMR 22.13, or 310 CMR 22.13A;

4. Violation of the MRDL for chlorine dioxide, as defined in 310 CMR 22.07E, when one or more samples taken in the distribution system the day following an exceedance of the MRDL at the entrance of the distribution system exceed the MRDL, or when the water system does not take the required samples in the distribution system, as specified in 310 CMR 22.07E;

5 Violation of the turbidity MCL under 310 CMR 22.08 and 310 CMR 22.20A, where the Department determines after consultation that a Tier 1 notice is required or where consultation does not take place within 24 hours after the system learns of the violation;

6. Violation of 310 CMR 22.20A, the Surface Water Treatment Rule (SWTR), or 310 CMR 22.20D, the Interim Enhanced Surface Water Treatment rule (IESWTR), or 310 CMR 22.20F, the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR), treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit (as identified in Table 6), where the Department determines after consultation that a Tier 1 notice is required or where consultation does not take place within 24 hours after the system learns of the violation;

7. Occurrence of a waterborne disease outbreak, as defined in 310 CMR 22.01(1), or other waterborne emergency such as:

a. a failure or significant interruption in key water treatment processes,

b. a natural disaster that disrupts the water supply or distribution system,

c. a chemical spill, or

d. an unexpected loading of possible pathogens into the source water that significantly increases the potential for drinking water contamination;

8. Other violations or situations with significant potential to have serious adverse effects on human health as a result of short-term exposure, as determined by the Department either in its regulations or on a case-by-case basis.

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(b) Timeframe and Additional Requirements for Tier 1 Notification. Each suppler of water required to give Tier 1 notification shall:

1. Provide a public notice as soon as practical but no later than 24 hours after the suppler learns of the violation;

2. Initiate consultation with the Department as soon as practical, but no later than 24 hours after the supplier learns of the violation or situation, to determine additional public notice requirements; and

3. Comply with any additional public notification requirements (including any repeat notices or direction on the duration of the posted notices) that are established as a result of the consultation with the Department. Such requirements may include the timing, form, manner, frequency, and content of repeat notices (if any) and other actions designed to reach all persons served.

(c) Form and Manner of Public Notice. Each supplier of water shall provide the notice within 24 hours in a form and manner reasonably calculated to reach all persons served. The form and manner used by the supplier are to fit the specific situation, but shall be designed to reach residential, transient, and non-transient users of the water system and meet the minimum format requirements specified by the Department.

1. In order to reach all persons served, each supplier of water is required to use, at a minimum, one or more of the following forms of delivery:

a. Appropriate broadcast media (such as radio and television);

b. Posting of the notice in conspicuous locations throughout the area served by the water system;

c. Hand delivery of the notice to persons served by the water system; or

d. Another delivery method approved in writing by the Department.

2. Unless directed otherwise by the Department in writing, community water systems shall publish appropriate public notice within the local newspaper as a one day advertisement no later than 14 days after a Tier 1 violation. A copy of said notice shall be submitted to the Department no later than the time published.

(3) Tier 2 Public Notice:

(a) Violations or Situations Requiring Tier 2 Public Notice. Table 4 of 310 CMR 22.16 lists the violation categories and other situations requiring a Tier 2 public notice. Table 6 of 310 CMR 22.16 identifies the tier assignment for each specific violation or situation.

310 CMR 22.16 - Table 4

Violation Categories and Other Situations Requiring a Tier 2 Public Notice

1. All violations of the MCL, MRDL, and treatment technique requirements, except where a Tier 1 notice is required under 310 CMR 22.16(2)(a): *Table 3* or where the Department determines that a Tier 1 notice is required;

2. Violations of the monitoring and testing procedure requirements, where the Department determines that a Tier 2 rather than a Tier 3 public notice is required, taking into account potential health impacts and persistence of the violation; and

3. Failure to comply with the terms and conditions of any variance or exemption in place.

(b) Timeframe Required for Tier 2 Notification.

1. a. Each supplier of water shall provide the public notice as soon as practical, but no later than 30 days after the system learns of the violation.

b. If the public notice is posted, the notice shall remain in place for as long as the violation or situation persists, but in no case for less than seven days, even if the violation or situation is resolved.

c. The Department may, in appropriate circumstances, allow additional time for the initial notice of up to three months from the date the system learns of the violation. Extensions granted by the Department shall be in writing.

2. a. Each supplier of water shall repeat the notice every three months as long as the violation or situation persists, unless the Department determines in writing that appropriate circumstances warrant a different repeat notice frequency.

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b. In no circumstance may the repeat notice be given less frequently than once per year.

c. In no circumstance may the repeat notice for an MCL violation under 310 CMR 22.05, the Total Coliform Rule, or a treatment technique violation under 310 CMR 22.20A, the Surface Water Treatment Rule, or 310 CMR 22.20D, the Interim Enhanced Surface Water Treatment Rule, be reduced.

3. a. For the turbidity violations specified in Table 6 of 310 CMR 22.16, the supplier of water shall consult with the Department as soon as practical but no later than 24 hours after the public water system learns of the violation, to determine whether a Tier 1 public notice under 310 CMR 22.16(2)(a) Table 3 is required to protect public health.

b. When consultation does not take place within the 24-hour period, the water system shall distribute a Tier 1 notice of the violation within the next 24 hours (i.e., no later than 48 hours after the system learns of the violation), following the requirements under 310 CMR 22.16(2)(b) and (c).

c. Consultation with the Department is required for:

(i) Violation of the turbidity MCL under 310 CMR 22.08 and 310 CMR 22.20A; or

(ii) Violation of 310 CMR 22.20A, 310 CMR 22.20D, or 310 CMR 22.20F treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit.

(c) Form and Manner of Public Notice. Each supplier of water shall provide the initial public notice and any repeat notices in a form and manner that is reasonably calculated to reach persons served in the required time period. The form and manner of the public notice may vary based on the specific situation and type of water system, but it shall at a minimum meet the following requirements:

1. Unless directed otherwise by the Department in writing, community water systems shall provide notice by:

a. Mail or other direct delivery to each customer receiving a bill and to other service connections to which water is delivered by the public water system; and

b. Any other method reasonably calculated to reach other persons regularly served by the system, if they would not normally be reached by the notice required in 310 CMR 22.16(3)(c)1.a. Such persons may include those who do not pay water bills or do not have service connection addresses (e.g., house renters, apartment dwellers, university students, nursing home patients, prison inmates, etc.). Other methods may include: Publication in a local newspaper; delivery of multiple copies for distribution by customers that provide their drinking water to others (e.g., apartment building owners or large private employers); posting in public places served by the system or on the Internet; or delivery to community organizations.

2. Unless directed otherwise by the Department in writing, the owner/operator of a non-community water systems shall provide notice by:

a. Posting the notice in conspicuous locations throughout the distribution system frequented by persons served by the system, or by mail or direct delivery to each customer and service connection (where known); and

b. Any other method reasonably calculated to reach other persons served by the system if they would not normally be reached by the notice required in 310 CMR 22.16(3)(c)2.a. Such persons may include those served who may not see a posted notice because the posted notice is not in a location they routinely pass by. Other methods may include: Publication in a local newspaper or newsletter distributed to customers; use of E-mail to notify employees or students; or, delivery of multiple copies in central locations (*e.g.*, community centers).

(4) Tier 3 Public Notice:

(a) Violations or Situations Requiring Tier 3 Public Notice. 310 CMR 22.16: *Table 5* lists the violation categories and other situations requiring a Tier 3 public notice. 310 CMR 22.16: *Table 6* identifies the tier assignment for each specific violation or situation.

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310 CMR 22.16 - Table 5

Violation Categories and Other Situations Requiring a Tier 3 Public Notice

1. Monitoring violations under 310 CMR 22.00, except where a Tier 1 notice is required under 310 CMR 22.16(2) or where the Department determines that a Tier 2 notice is required;

2. Failure to comply with a testing procedure established in 310 CMR 22.00, except where a Tier 1 notice is required under 310 CMR 22.16(2) or where the Department determines that a Tier 2 notice is required;

3. Operation under a variance granted under 310 CMR 22.13, 310 CMR 22.13A or an exemption granted under 310 CMR 22.14;

4. Availability of unregulated contaminant monitoring results, as required under 310 CMR 22.07C; and

5. Exceedance of the fluoride secondary maximum contaminant level (SMCL), as required under 310 CMR 22.06C.

(b) Timeframe Required for Tier 3 Notification.

1. a. Unless otherwise determined by the Department, each supplier of water shall provide the public notice not later than one year after the public water system learns of the violation or situation or begins operating under a variance or exemption.

b. Following the initial notice, the supplier shall repeat the notice annually for as long as the violation, variance, exemption, or other situation persists.

c. If the public notice is posted, the notice shall remain in place for as long as the violation, variance, exemption, or other situation persists, but in no case less than seven days (even if the violation or situation is resolved).

2. If approved by the Department under 310 CMR 22.16(4)(b)1., instead of individual Tier 3 public notices, a supplier of water may use an annual report detailing all violations and situations that occurred during the previous twelve months, as long as the timing requirements of 310 CMR 22.16(4)(b)1. are met and the format is approved by the Department.

(c) Form and Manner of Public Notice. Each supplier of water who is required to give Tier 3 notice shall provide the initial public notice and any repeat notices in a form and manner that is reasonably calculated to reach persons served in the required time period. The form and manner of the public notice may vary based on the specific situation and type of water system, but it shall at a minimum meet the following requirements:

1. Unless directed otherwise by the Department in writing, ~~the owner/operator of a~~ community water systems shall provide notice by:

a. Mail or other direct delivery to each customer receiving a bill and to other service connections to which water is delivered by the public water system; and

b. Any other method reasonably calculated to reach other persons regularly served by the system, if they would not normally be reached by the notice required in 310 CMR 22.16(4)(c)1.a. Other persons may include those who do not pay water bills or do not have service connection addresses (*e.g.*, house renters, apartment dwellers, university students, nursing home patients, prison inmates, *etc*.). Other methods may include: Publication in a local newspaper; delivery of multiple copies for distribution by customers that provide their drinking water to others (*e.g.*, apartment building owners or large private employers); posting in public places served by the system or on the Internet; or delivery to community organizations.

2. Unless directed otherwise by the Department in writing, the owner/operator of a non-community water system~~s~~ shall provide notice by:

a. Posting the notice in conspicuous locations throughout the distribution system frequented by persons served by the system, or by mail or direct delivery to each customer and service connection (where known); and

b. Any other method reasonably calculated to reach other persons served by the system if they would not normally be reached by the notice required in 310 CMR 22.16(4)(c)2.a. Other persons may include those served who may not see a posted

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notice because the posted notice is not in a location they routinely pass by. Other methods may include: Publication in a local newspaper or newsletter distributed to customers; use of E-mail to notify employees or students; or, delivery of multiple copies in central locations (e.g., community centers).

(d) If approved by the Department, the supplier of water may use the Consumer Confidence Report (CCR) required under 310 CMR 22.16A as a vehicle for the initial Tier 3 public notice and all required repeat notices, as long as:

1. The CCR is provided to persons served no later than 12 months after the system learns of the violation or situation as required under 310 CMR 22.16(4)(b);
2. The Tier 3 notice contained in the CCR follows the content requirements under 310 CMR 22.16(5); and
3. The CCR is distributed following the delivery requirements under 310 CMR 22.16(4)(c)1.

(5) Public Notice Content.

(a) When a supplier of water violates 310 CMR 22.00 or has a situation requiring public notification, each public notice shall include the following elements:

1. Public water system name, public water system identification number (PWSID#)
2. A description of the violation or situation, including the contaminant(s) of concern, and (as applicable) the contaminant level(s);
3. When the violation or situation occurred;
4. Any potential adverse health effects from the violation or situation, including the standard language under 310 CMR 22.16(5)(d)1 or (d)2, whichever is applicable.
5. The population at risk, including subpopulations particularly vulnerable if exposed to the contaminant in their drinking water;
6. Whether alternative water supplies should be used;
7. What actions consumers should take, including when they should seek medical help, if known;
8. What the system is doing to correct the violation or situation;
9. When the water system expects to return to compliance or resolve the situation;
10. The name, business address, and phone number of the water system owner, operator, or designee of the public water system as a source of additional information concerning the notice; and
11. A statement to encourage the notice recipient to distribute the public notice to other persons served, using the standard language under 310 CMR 22.16(5)(d)3., where applicable.

(b) Public Notice Requirements for Systems Operating under a Variance or Exemption.

1. If a supplier of water has been granted a variance or an exemption, the public notice shall contain:
   a. An explanation of the reasons for the variance or exemption;
   b. The date on which the variance or exemption was issued;
   c. 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
   d. A notice of any opportunity for public input in the review of the variance or exemption.
2. If a supplier of water violates the conditions of a variance or exemption, the public notice shall contain the eleven elements listed in 310 CMR 22.16(5)(a).

(c) Public Notice Presentation.

1. Each public notice required by 310 CMR 22.16(5):
   a. Shall be displayed in a conspicuous way when printed or posted;
   b. Shall not contain overly technical language or very small print;
   c. Shall not be formatted in a way that defeats the purpose of the notice;
   d. Shall not contain language which nullifies the purpose of the notice.
2. Multilingual requirements:
   a. For a supplier of water serving a large proportion of non-English speaking consumers, as determined in 310 CMR 22.16A, the public notice shall contain information in the appropriate language(s) regarding the importance of the notice or contain a telephone number or address where persons served may contact the

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water system to obtain a translated copy of the notice or to request assistance in the appropriate language.

b. In cases where the Department has not determined what constitutes a large proportion of non-English speaking consumers, the supplier of water shall include in the public notice the same information as in 310 CMR 22.16(5)(c)2.a., where appropriate to reach a large proportion of non-English speaking persons served by the water system.

(d) Standard Language:

1. Standard health effects language for MCL or MRDL violations, treatment technique violations, and violations of the condition of a variance or exemption. Each supplier of water shall include in each public notice the health effects language specified in Table 7 of 310 CMR 22.16 corresponding to each MCL, MRDL, and treatment technique violation listed in Table 6 of 310 CMR 22.16, and for each violation of a condition of a variance or exemption.

2. Standard language for monitoring and testing procedure violations. Each supplier of water shall include the following language in their notice, including the language necessary to fill in the blanks, for all monitoring testing procedure violations listed in Table 6 of 310 CMR 22.16:

"We are required to monitor your drinking water for specific contaminants on a regular basis. Results of regular monitoring are an indicator of whether or not your drinking water meets health standards. During [compliance period], we "did not monitor or test" or "did not complete all monitoring or testing" for [contaminant(s)], and therefore cannot be sure of the quality of your drinking water during that time".

3.~~2.~~ Standard language to encourage the distribution of the public notice to all persons served. Each supplier of water shall include in their notice the following language (where applicable):

"Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail".

(6) Notice to New Billing Units or New Customers.

(a) The owner/operator of a community water systems shall give a copy of the most recent public notice for any continuing violation, the existence of a variance or exemption, or other ongoing situations requiring a public notice to all new billing units or new customers prior to or at the time service begins.

(b) The owner/operator of a non-community water systems shall continuously post the public notice in conspicuous locations as specified by the Department in order to inform new consumers of any continuing violation, variance or exemption, or other situation requiring a public notice for as long as the violation, variance, exemption, or other situation persists.

(7) Special Notice of the Availability of Unregulated Contaminant Monitoring Results.

(a) The owner or operator of a community water system or non-transient non-community water system required to monitor under 310 CMR 22.07C or the federal Unregulated Contaminant Monitoring Rule shall notify persons served by the system of the availability of the results of such sampling no later than 12 months after the monitoring results are known.

(b) The form and manner of the public notice shall follow the requirements for a Tier 3 public notice prescribed in 310 CMR 22.16(4)(c), 310 CMR 22.16(4)(d)1 and 310 CMR 22.16(4)(d)3. The notice shall also identify a person and provide the telephone number to contact for information on the monitoring results.

(8) Special Notice for Exceedance of the SMCL for Fluoride.

(a) ~~The owner/operator of a c~~Community water systems that exceed the fluoride secondary maximum contaminant level (SMCL) of two mg/l as specified in 310 CMR 22.06C (determined by the last single sample taken in accordance with 310 CMR 22.06(6)(h), but do not exceed the maximum contaminant level (MCL) of four mg/l for

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fluoride (as specified in 310 CMR 22.06(4)1., shall provide the public notice in 310 CMR 22.16(8)(c) to persons served. Public notice shall be provided as soon as practical but no later than 12 months from the day the supplier of water learns of the exceedance. A copy of the notice shall also be sent to all new billing units and new customers at the time service begins and to the Massachusetts Department of Public Health. The supplier of water shall repeat the notice at least annually for as long as the SMCL is exceeded. If the public notice is posted, the notice shall remain in place for as long as the SMCL is exceeded, but in no case less than seven days (even if the exceedance is eliminated). On a case-by-case basis, the Department may require an initial notice sooner than 12 months and repeat notices more frequently than annually.

(b) The form and manner of the public notice (including repeat notices) shall follow the requirements for a Tier 3 public notice in 310 CMR 22.16(4)(d)3.

(c) The notice shall contain the following language, including the language necessary to fill in the blanks:

> "This is an alert about your drinking water and a cosmetic dental problem that might affect children under nine years of age. At low levels, fluoride can help prevent cavities, but children drinking water containing more than two milligrams per liter (mg/l) of fluoride may develop cosmetic discoloration of their permanent teeth (dental fluorosis). The drinking water provided by your community water system [name] has a fluoride concentration of [insert value] mg/l.
>
> Dental fluorosis, in its moderate or severe forms, may result in a brown staining and/or pitting of the permanent teeth. This problem occurs only in developing teeth, before they erupt from the gums. Children under nine should be provided with alternative sources of drinking water or water that has been treated to remove the fluoride to avoid the possibility of staining and pitting of their permanent teeth. You may also want to contact your dentist about proper use by young children of fluoride-containing products. Older children and adults may safely drink the water.
>
> Drinking water containing more than four mg/L of fluoride (the U.S. Environmental Protection Agency's drinking water standard) can increase your risk of developing bone disease. Your drinking water does not contain more than four mg/l of fluoride, but we're required to notify you when we discover that the fluoride levels in your drinking water exceed two mg/l because of this cosmetic dental problem.
>
> For more information, please call [name of water system contact] of [name of community water system] at [phone number]. Some home water treatment units are also available to remove fluoride from drinking water. To learn more about available home water treatment units, you may call NSF International at 1-877-8-NSF-HELP."

(9) Special Notice for Nitrate Exceedance above MCL by Non-community Water Systems, Where Granted Permission by the Department.

(a) The owner or operator of a non-community water system granted permission by the Department under 310 CMR 22.13, and 310 CMR 22.13A to exceed the nitrate MCL shall provide notice to persons served according to the requirements for a Tier 1 notice under 310 CMR 22.16(2)(b) and (c).

(b) Form and Manner of the Special Notice: The owner/operator of a non-community water systems granted permission by the Department to exceed the nitrate MCL under 310 CMR 22.06 shall provide continuous posting of the fact that nitrate levels exceed ten mg/l and the potential health effects of exposure, according to the requirements for Tier 1 notice delivery under 310 CMR 22.16(2)(c) and the content requirements under 310 CMR 22.16(5).

(10) Notice by Department in Behalf of the Supplier of Water.

(a) The Department may give the notice required by 310 CMR 22.16 on behalf of the owner and operator of the public water system if the Department complies with the requirements of 310 CMR 22.16.

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(b) The owner or operator of the public water system remains legally responsible for ensuring that the requirements of 310 CMR 22.16 are met.

(11) Public Notification by the Department for any Public Water System Subject to 310 CMR 22.00.

(a) The Department may require a supplier of water or any person subject to 310 CMR 22.00 to provide public notice for any violation of 310 CMR 22.00, the content of which shall either satisfy the requirements of 310 CMR 22.16(5), and/or be approved by the Department, prior to publication. The supplier of water remains legally responsible for ensuring that the requirements of 310 CMR 22.16 are met.

(b) The Department reserves the right to give notice to the public when not required by 310 CMR 22.16 in the event of a significant health problem. The supplier of water shall be responsible for all fees incurred by the Department as a result such notice.

310 CMR 22.16 - Table 6
Violations and Other Situations Requiring Public Notice [1]

Contaminant	MCL/MRDL/TT violations [2]		Monitoring & testing procedure violations	
	Tier of public notice required	Citation	Tier of public notice required	Citation
I. **Violations of National Primary Drinking Water Regulations[3] and 310 CMR 22.00**				
A. **Microbiological Contaminants**				
1. Total coliform	2	310 CMR 22.05	3	310 CMR 22.05
2. Fecal coliform/E. coli	1	310 CMR 22.05	[4] 1, 3	310 CMR 22.05
3. Turbidity MCL	2	310 CMR 22.08 310 CMR 22.20A 310 CMR 22.20D	3	310 CMR 22.08 310 CMR 22.20A 310 CMR 22.20D
4. Turbidity MCL (average of 2 days' samples ≥ 5 NTU)	[5] 2, 1	310 CMR 22.08 310 CMR 22.20A	3	310 CMR 22.08 310 CMR 22.20A
5. Turbidity (for TT violations resulting from a single exceedance of maximum allowable turbidity level)	[6] 2, 1	310 CMR 22.08 310 CMR 22.20A 310 CMR 22.20D 310 CMR 22.20F	3	310 CMR 22.08 310 CMR 22.20A 310CMR 22.20D 310 CMR 22.20F
6. Surface Water Treatment Rule violations, other than violations resulting from single exceedance of max. allowable turbidity level (TT).	2	310 CMR 22.20A	3	310 CMR 22.20A
7. Interim Enhanced Surface Water Treatment Rule violations, other than violations resulting from single exceedance of max. turbidity level (TT).	2	[7]310 CMR 22.20D	3	310 CMR 22.20D
8. Filter Backwash Recycling Rule	2	310 CMR 22.20E	3	310 CMR 22.20E
9. Long Term 1 Enhanced Surface Water Treatment Rule	2	310 CMR 22.20F	3	310 CMR 22.20F
B. **Inorganic Chemicals (IOCs)**				
1. Antimony	2	310 CMR 22.06	3	310 CMR 22.06
2. Arsenic	2	[8]310 CMR 22.06	3	[9]310 CMR 22.06
3. Asbestos (fibers > 10 ~~m~~μm)	2	310 CMR 22.06	3	310 CMR 22.06
4. Barium	2	310 CMR 22.06	3	310 CMR 22.06

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5. Beryllium	2	310 CMR 22.06	3	310 CMR 22.06
6. Cadmium	2	310 CMR 22.06	3	310 CMR 22.06
7. Chromium (total)	2	310 CMR 22.06	3	310 CMR 22.06
8. Cyanide	2	310 CMR 22.06	3	310 CMR 22.06
9. Fluoride	2	310 CMR 22.06	3	310 CMR 22.06
10. Mercury (inorganic)	2	310 CMR 22.06	3	310 CMR 22.06
11. Nitrate	1	310 CMR 22.06	[10] 1, 3	310 CMR 22.06
12. Nitrite	1	310 CMR 22.06	[10] 1, 3	310 CMR 22.06
13. Total Nitrate and Nitrite	1	310 CMR 22.06	3	310 CMR 22.06
14. Perchlorate~~Selenium~~	~~2~~1	310 CMR 22.06	~~3~~[10] 1,3	310 CMR 22.06
15. ~~Thallium~~Selenium	2	310 CMR 22.06	3	310 CMR 22.06
16. Thallium	2	310 CMR 22.06	3	310 CMR 22.06
C. **Lead and Copper Rule (Action Level for lead is 0.015 mg/L, for copper is 1.3 mg/L)**				
1. Lead and Copper Rule (TT	2	310 CMR 22.06B	3	310 CMR 22.06B
D. **Synthetic Organic Chemicals (SOCs)**				
1. 2,4-D	2	310 CMR 22.07A	3	310 CMR 22.07A
2. 2,4,5-TP (Silvex)	2	310 CMR 22.07A	3	310 CMR 22.07A
3. Alachlor	2	310 CMR 22.07A	3	310 CMR 22.07A
4. Atrazine	2	310 CMR 22.07A	3	310 CMR 22.07A
5. Benzo(a)pyrene (PAHs)	2	310 CMR 22.07A	3	310 CMR 22.07A
6. Carbofuran	2	310 CMR 22.07A	3	310 CMR 22.07A
7. Chlordane	2	310 CMR 22.07A	3	310 CMR 22.07A
8. Dalapon	2	310 CMR 22.07A	3	310 CMR 22.07A
9. Di-(2-ethylhexyl) adipate	2	310 CMR -22.07A	3	310 CMR 22.07A
10. Di-(2-ethylhexyl) phthalate	2	310 CMR 22.07A	3	310 CMR 22.07A
11. Dibromochloropropane	2	310 CMR 22.07A	3	310 CMR 22.07A
12. Dinoseb	2	310 CMR 22.07A	3	310 CMR 22.07A
13. Dioxin (2,3,7,8-TCDD)	2	310 CMR 22.07A	3	310 CMR 22.07A
14. Diquat	2	310 CMR 22.07A	3	310 CMR 22.07A
15. Endothall	2	310 CMR 22.07A	3	310 CMR 22.07A
16. Endrin	2	310 CMR 22.07A	3	310 CMR 22.07A
17. Ethylene dibromide	2	310 CMR 22.07A	3	310 CMR 22.07A
18. Glyphosate	2	310 CMR 22.07A	3	310 CMR 22.07A
19. Heptachlor	2	310 CMR 22.07A	3	310 CMR 22.07A
20. Heptachlor epoxide	2	310 CMR 22.07A	3	310 CMR 22.07A
21. Hexachlorobenzene	2	310 CMR 22.07A	3	310 CMR 22.07A
22. Hexachlorocyclo-pentadiene	2	310 CMR 22.07A	3	310 CMR 22.07A
23. Lindane	2	310 CMR 22.07A	3	310 CMR 22.07A
24. Methoxychlor	2	310 CMR 22.07A	3	310 CMR 22.07A
25. Oxamyl (Vydate)	2	310 CMR 22.07A	3	310 CMR 22.07A
26. Pentachlorophenol	2	310 CMR 22.07A	3	310 CMR 22.07A
27. Picloram	2	310 CMR 22.07A	3	310 CMR 22.07A
28. Polychlorinated biphenyls (PCBs)	2	310 CMR 22.07A	3	310 CMR 22.07A
29. Simazine	2	310 CMR 22.07A	3	310 CMR 22.07A
30. Toxaphene	2	310 CMR 22.07A	3	310 CMR 22.07A
E. **Volatile Organic Chemicals (VOCs)**				
1. Benzene	2	310 CMR 22.07B	3	310 CMR 22.07B
2. Carbon tetrachloride	2	310 CMR 22.07B	3	310 CMR 22.07B
3. Chlorobenzene (monochlorobenzene)	2	310 CMR 22.07B	3	310 CMR 22.07B
4. o-Dichlorobenzene	2	310 CMR 22.07B	3	310 CMR 22.07B
5. p-Dichlorobenzene	2	310 CMR 22.07B	3	310 CMR 22.07B

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6. 1,2-Dichloroethane	2	310 CMR 22.07B	3	310 CMR 22.07B
7. 1,1-Dichloroethylene	2	310 CMR 22.07B	3	310 CMR 22.07B
8. cis-1,2-Dichloroethylene	2	310 CMR 22.07B	3	310 CMR 22.07B
9. trans-1,2-Dichloroethylene	2	310 CMR 22.07B	3	310 CMR 22.07B
10. Dichloromethane	2	310 CMR 22.07B	3	310 CMR 22.07B
11. 1,2-Dichloropropane	2	310 CMR 22.07B	3	310 CMR 22.07B
12. Ethylbenzene	2	310 CMR 22.07B	3	310 CMR 22.07B
13. Styrene	2	310 CMR 22.07B	3	310 CMR 22.07B
14. Tetrachloroethylene	2	310 CMR 22.07B	3	310 CMR 22.07B
15. Toluene	2	310 CMR 22.07B	3	310 CMR 22.07B
16. 1,2,4-Trichlorobenzene	2	310 CMR 22.07B	3	310 CMR 22.07B
17. 1,1,1-Trichloroethane	2	310 CMR 22.07B	3	310 CMR 22.07B
18. 1,1,2-Trichloroethane	2	310 CMR 22.07B	3	310 CMR 22.07B
19. Trichloroethylene	2	310 CMR 22.07B	3	310 CMR 22.07B
20. Vinyl chloride	2	310 CMR 22.07B	3	310 CMR 22.07B
21. Xylenes (total)	2	310 CMR 22.07B	3	310 CMR 22.07B
F. **Radioactive Contaminants**				
1. Beta/photon emitters	2 2	310 CMR 22.09 310 CMR 22.09A	3 3	310 CMR 22.09 310 CMR 22.09A
2. Alpha emitters	2 2	310 CMR 22.09 310 CMR 22.09A	3 3	310 CMR 22.09 310 CMR 22.09A
3. Combined radium (226 & 228)	2 2	310 CMR 22.09 310 CMR 22.09A	3 3	310 CMR 22.09 310 CMR 22.09A
4. Uranium	2 2	[11]310 CMR 22.09 [11]310 CMR 22.09A	3 3	[12]310 CMR 22.09 [12]310 CMR 22.09A
G. **Disinfection Byproducts (DBPs),Byproduct Precursors, Disinfectant Residuals. Where disinfection used in the treatment of drinking water, disinfectants combine with organic and inorganic matter present in water to form chemicals called disinfection byproducts (DBPs). EPA sets standards for controlling the levels of disinfectants and DBPs in drinking water, including trihalomethanes (THMs) and haloacetic acid (HAAs)**.[13]				
1. Total trihalomethanes (TTHMs)	2	310 CMR 22.07[14] 310 CMR 22.07E	3	310 CMR 22.07 310 CMR 22.07E
2. Haloacetic Acids (HAA5)	2	310 CMR 22.07E	3	310 CMR 22.07E
3. Bromate	2	310 CMR 22.07E	3	310 CMR 22.07E
4. Chlorite	2	310 CMR 22.07E	3	310 CMR 22.07E
5. Chlorine (MRDL)	2	310 CMR 22.07E	3	310 CMR 22.07E
6. Chloramines (MRDL)	2	310 CMR 22.07E	3	310 CMR 22.07E
7. Chlorine dioxide (MRDL) where any two consecutive daily samples at entrance to distribution system only are above MRDL	2	310 CMR 22.07E	2 [15], 3	310 CMR 22.07E
8. Chlorine dioxide (MRDL), where sample(s) in distribution system the next day are also above MRDL	[16] 1	310 CMR 22.07E	1	310 CMR 22.07E
9. Control of DBP precursors TOC (TT)	2	310 CMR 22.07E	3	310 CMR 22.07E
10. Bench marking and disinfection profiling	N/A	N/A	3	310 CMR 22.07F
11. Development of monitoring plan	N/A	N/A	3	310 CMR 22.07E
H. **Other Treatment Techniques**				
1. Acrylamide (TT)	2	310 CMR 22.04(10)	N/A	310 CMR 22.04(10)
2. Epichlorohydrin (TT)	2	310 CMR 22.04(10)	N/A	310 CMR

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				22.04(10)
II. **Unregulated Contaminant Monitoring**: [17]				
A. Unregulated contaminants	N/A	N/A	3	310 CMR 22.07C
B. Nickel	N/A	N/A	3	310 CMR 22.06
III. **Public Notification for Variances and Exemptions**:				
A. Operation under a variance or exemption	3	[18]310 CMR 22.13 310 CMR 22.14	N/A	N/A
B. Violation of conditions of a variance or exemption	2	[19]310 CMR 22.13 310 CMR 22.14	N/A	N/A
IV. **Other Situations Requiring Public Notification**:				
A. Fluoride secondary maximum contaminant level (SMCL) exceedance	3	310 CMR 22.06C	N/A	N/A
B. Exceedance of nitrate MCL for non-community systems, as allowed by the Department.	1	310 CMR 22.13 310 CMR 22.13A	N/A	N/A
C. Availability of unregulated contaminant monitoring data	3	310 CMR 22.07C	N/A	N/A
D. Waterborne disease outbreak	1	N/A	N/A	N/A
E. Other waterborne emergency [20].	1	N/A	N/A	N/A
F. Other situations as determined by the Department	[21] 1, 2, 3	N/A	N/A	N/A
G. Sodium	N/A	N/A	3	310 CMR 22.06A

Table 6 - Endnotes

1. Violations and other situations not listed in this table (*e.g.* reporting violations and failure to prepare Consumer Confidence Reports), do not require notice, unless otherwise determined by the Department. The Department may, at its option, also require a more stringent public notice tier (*e.g.*, Tier 1 instead of Tier 2 or Tier 2 instead of Tier 3) for specific violations and situations listed in this Table, as authorized under 310 CMR 22.16(2)(a) and 310 CMR 22.16(3)(a).
2. MCL-Maximum contaminant level, MRDL-Maximum residual disinfectant level, TT-Treatment technique.
3. The term Violations of 310 CMR 22.00 is used here to include violations of MCL, MRDL, treatment technique, monitoring, and testing procedure requirements.
4. Failure to test for fecal coliform or E. coli is a Tier 1 violation if testing is not done after any repeat sample tests positive for coliform. All other total coliform monitoring and testing procedure violations are Tier 3.
5. Systems that violate the turbidity MCL of 5 NTU based on an average of measurements over two consecutive days shall consult with the Department within 24 hours after learning of the violation. Based on this consultation, the Department may subsequently decide to elevate the violation to Tier 1. If a system is unable to make contact with the Department in the 24-hour period, the violation is automatically elevated to Tier 1.
6. Systems with treatment technique violations involving a single exceedance of a maximum turbidity limit under 310 CMR 22.20A, the Surface Water Treatment Rule (SWTR), 310 CMR 22.20D, the Interim Enhanced Surface Water Treatment Rule (IESWTR), or 310 CMR 22.20F, the Long Term 1 Enhanced Surface Water Treatment Rule, are required to consult with the Department within 24 hours after learning of the violation. Based on this consultation, the Department may subsequently decide to elevate the violation to Tier 1. If a system is unable to make contact with the Department in the 24-hour period, the violation is automatically elevated to Tier 1.
7. Most of the requirements of the Interim Enhanced Surface Water Treatment Rule 310 CMR 22.20D become effective January 1, 2002 for surface water sources systems (surface water systems and ground water systems under the direct influence of surface water) serving at least 10,000 persons. However, 310 CMR 22.20D has some requirements that become effective as early as April 16, 1999. The Surface Water Treatment Rule, 310 CMR 22.20A, remains in effect for some systems serving at least 10,000 persons even after 2002; the Interim Enhanced Surface Water Treatment Rule, 310 CMR 22.20D, adds additional requirements and does not in many cases supersede the SWTR.
8. The arsenic MCL citations are effective January 23, 2006. Until then, the citations are 310 CMR 22.06.
9. The arsenic Tier 3 violation citations are effective January 23, 2006. Until then, the citations are 310 CMR 22.06.

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10. Failure to take a confirmation sample within 24 hours for nitrate, ~~or~~ nitrite or perchlorate after an initial sample exceeds the MCL is a Tier 1 violation. Other monitoring violations for nitrate, nitrite or perchlorate are Tier 3.
11. The uranium MCL Tier 2 violation citations are effective December 8, 2003 for all community water systems.
12. The uranium MCL Tier 3 violation citations are effective December 8, 2000 for all community water systems.
13. Community and non-transient non-community s~~S~~urface water sources systems (surface water systems and ground water systems under the direct influence of surface water) serving at least 10,000 persons ~~(community and non-transient non-community systems)~~ shall comply with the new DBP MCLs, disinfectant MRDLs, and related monitoring requirements beginning January 1, 2002. All other community and non-transient non-community systems shall meet the MCLs and MRDLs beginning January 1, 2004. Transient non-community s~~S~~urface water sources systems (surface water systems and ground water systems under the direct influence of surface water) serving at least 10,000 persons ~~transient non-community systems serving 10,000 or more persons and~~ using chlorine dioxide as a disinfectant or oxidant shall comply with the chlorine dioxide MRDL beginning January 1, 2002. Transient non-community s~~S~~urface water sources systems (surface water systems and ground water systems under the direct influence of surface water) serving fewer than ~~at least~~ 10,000 persons ~~transient non-community systems serving fewer than 10,000 persons~~ and transient non-community systems using only ground water not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant shall comply with the chlorine dioxide MRDL beginning January 1, 2004.
14. 310 CMR 22.07 will no longer apply after January 1, 2004.
15. Failure to monitor for chlorine dioxide at the entrance to the distribution system the day after exceeding the MRDL at the entrance to the distribution system is a Tier 2 violation.
16. If any daily sample taken at the entrance to the distribution system exceeds the MRDL for chlorine dioxide and one or more samples taken in the distribution system the next day exceed the MRDL, Tier 1 notification is required. Failure to take the required samples in the distribution system after the MRDL is exceeded at the entry point also triggers Tier 1 notification.
17. Some water systems shall monitor for certain unregulated contaminants listed in 310 CMR 22.07C.
18. This citation refers to 310 CMR 22.13 and 310 CMR 22.14 and requires that "a schedule prescribed .. for a public water system granted a variance [or exemption] shall require compliance by the system . ."
19. In addition, 310 CMR 22.13A specifies the items and schedule milestones that shall be included in a variance for small systems.
20. Other waterborne emergencies require a Tier 1 public notice under 310 CMR 22.16 (2)(a)7. for situations that do not meet the definition of a waterborne disease outbreak given in 310 CMR 22.02(1) but that still have the potential to have serious adverse effects on health as a result of short-term exposure. These could include outbreaks not related to treatment deficiencies, as well as situations that have the potential to cause outbreaks, such as failures or significant interruption in water treatment processes, natural disasters that disrupt the water supply or distribution system, chemical spills, or unexpected loading of possible pathogens into the source water.
21. The Department may place other situations in any tier they believe appropriate, based on threat to public health.

310 CMR 22.16 - Table 7
Standard Health Effects Language for Public Notification

Contaminant	MCLG[1] mg/l	MCL[2] mg/l	Standard health effects language for public notification
National Primary Drinking Water Regulations (NPDWR) and Massachusetts Drinking Water Regulations:			
A. Microbiological Contaminants:			
1a. Total coliform	Zero	See footnote[3]	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.
1b. Fecal coliform/E. coli	Zero	Zero	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

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			for infants, young children, some of the elderly, and people with severely compromised immune systems.
2a. Turbidity (MCL)[4]	None	1 NTU[5] 5 NTU	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.
2b. Turbidity (SWTR TT)[6]	None	TT[7]	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.
2c. Turbidity (IESWTR TT) and LT1ESWTR TT)[8]	None	TT	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.
Surface Water Treatment Rule (SWTR), Interim Enhanced Surface Water Treatment Rule (IESWTR), Filter Backwash Recycling Rule (FBRR)~~)~~ and Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR) violations:			
3. Giardia lamblia (SWTR/IESWTR/LT1ESWTR).	Zero	TT[10]	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.
4. Viruses (SWTR/IESWTR/ LT1ESWTR).			
5. Heterotrophic plate count (HPC) bacteria[9] (SWTR/IESWTR/LT1ESWTR).			
6. Legionella (SWTR/IESWTR/LT1ESWTR).			
7. Cryptosporidium (IESWTR/LT1ESWTR/FBRR).			
B. Inorganics			
8. Antimony	0.006	0.006	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.
9. Arsenic[11]	None	0.05	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.
10. Asbestos (fibers > 10 µm)	7MFL[12]	7MFL	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.
11. Barium	2	2	Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.
12. Beryllium	0.004	0.004	Some people who drink water containing

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			beryllium well in excess of the MCL over many years could develop intestinal lesions
13. Cadmium	0.005	0.005	Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.
14. Chromium (total).	0.1	0.1	Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.
15. Cyanide	0.2	0.2	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.
16. Fluoride	4.0	4.0	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.
17. Mercury (inorganic)	0.002	0.002	Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage
18. Nitrate	10	10	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.
19. Nitrite	1	1	Infants below the age ~~younger than~~ of six months ~~old~~ who drink water containing nitrite in excess of the MCL could become seriously ill and, if un-treated, may die. Symptoms include shortness of breath and blue baby syndrome.
20. Total Nitrate and Nitrite	10	10	Infants below the age ~~younger than~~ of six months ~~old~~ who drink water containing nitrate and nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
21. Perchlorate	None	0.0020	Perchlorate interferes with the normal function of the thyroid gland and thus has the potential to affect growth and development and could cause brain damage and other adverse effects, particularly in fetuses and infants.
221. Selenium	0.05	0.05	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.
232. Thallium	0.0005	0.002	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.
C. Lead and Copper Rule:			
243. Lead	Zero	TT[13]	Infants and children who drink water containing lead in excess of the action level could exper-

22.16: continued

			ience 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.
254. Copper	1.3	TT[14]	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.
D. Synthetic Organic Chemicals (SOCs):			
265. 2,4-D	0.07	0.07	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
276. 2,4,5-TP (Silvex)	0.05	0.05	Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems.
278. Alachlor	Zero	0.002	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.
289. Atrazine	0.003	0.003	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
2930. Benzo(a)pyrene (PAHs).	Zero	0.0002	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.
310. Carbofuran	0.04	0.003	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.
321. Chlordane	Zero	0.002	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.
332. Dalapon	0.2	0.2	Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes.
343. Di (2-ethylhexyl) adipate	0.4	0.4	Some people who drink water containing di~~adipate.~~ (2-ethylhexyl) adipate well in excess of the MCL over many years could experience general toxic effects or reproductive difficulties
354. Di (2-ethylhexyl) phthalate	Zero	0.006	Some people who drink water containing di (2-ethylhexyl) phthalate 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.

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365. Dibromochloropropane(DBCP).	Zero	0.0002	Some people who drink water containing DBCP in excess of the MCL over many years could experience reproductive difficulties and may have an increased risk of getting cancer.
376. Dinoseb	0.007	0.007	Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.
387. Dioxin (2,3,7,8-TCDD).	Zero	$3x10^{-8}$	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.
398. Diquat	0.02	0.02	Some people who drink water containing diquat in excess of the MCL over many years could get cataracts
4039. Endothall	0.1	0.1	Some people who drink water containing endo-thall in excess of the MCL over many years could experience problems with their stomach or intestines
410. Endrin	0.002	0.002	Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems.
421. Ethylene dibromide	Zero	0.00002	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.
432. Glyphosate	0.7	0.7	Some people who drink water containing glyphosate in excess of the MCL over many years could experience problems with their kidneys or reproductive difficulties.
443. Heptachlor	Zero	0.0004	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.
454. Heptachlor epoxide	Zero	0.0002	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.
465. Hexachlorobenzene	Zero	0.001	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.
476. Hexachlorocyclopentadiene.	0.05	0.05	Some people who drink water containing hexachlorocyclopentadiene well in excess of the MCL over many years could experience problems with their kidneys or stomach
487. Lindane	0.0002	0.0002	Some people who drink water containing lindane in excess of the MCL over many years could experience problems with their kidneys or liver.
498. Methoxychlor	0.04	0.04	Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.
5049. Oxamyl (Vydate)	0.2	0.2	Some people who drink water containing oxamyl in excess of the MCL over many years could experience slight nervous system effects.

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510. Pentachlorophenol	Zero	0.001	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.
521. Picloram	0.5	0.5	Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver.
532. Polychlorinated biphenyls (PCBs).	Zero	0.0005	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 cancer.
534. Simazine	0.004	0.004	Some people who drink water containing simazine in excess of the MCL over many years could experience problems with their blood.
554. Toxaphene	Zero	0.003	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.
E. Volatile Organic Chemicals (VOCs):			
565. Benzene	Zero	0.005	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 cancer.
576. Carbon tetrachloride	Zero	0.005	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.
587. Chlorobenzene (monochloro- benzene).	0.1	0.1	Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.
598. o-Dichlorobenzene	0.6	0.6	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
6059. p-Dichlorobenzene	0.005	0.005	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.
610. 1,2-Dichloroethane	Zero	0.005	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.
621. 1,1-Dichloroethylene	0.007	0.007	Some people who drink water containing 1,1-dichloroethylene in excess of the MCL over many years could experience problems with their liver.
632. cis-1,2- Dichloroethylene.	0.07	0.07	Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.

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643. trans-1,2- Dichloroethylene.	0.1	0.1	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.
654. Dichloromethane	Zero	0.005	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.
665. 1,2-Dichloropropane	Zero	0.005	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.
676. Ethylbenzene	0.7	0.7	Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.
687. Styrene	0.1	0.1	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.
698. Tetrachloroethylene	Zero	0.005	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.
7069. Toluene	1	1	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.
710. 1,2,4-Trichlorobenzene	0.07	0.07	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.
721. 1,1,1-Trichloroethane	0.2	0.2	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.
732. 1,1,2-Trichloroethane	0.003	0.005	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.
743. Trichloroethylene	Zero	0.005	Some people who drink water containing tri-chloroethylene in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
754. Vinyl chloride	Zero	0.002	Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.
765. Xylenes (total)	10	10	Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.
F. Radioactive Contaminants:			
776. Beta/photon emitters	Zero	4 mrem/yr[15]	Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased

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			risk of getting cancer.
787 Alpha emitters	Zero	15 pCi/l [176]	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 the MCL over many years may have an increased risk of getting cancer.
789. Combined radium (226 & 228).	Zero	5 pCi/l	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.
7980. Uranium	Zero	30 mg/L [16]	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.
G. Disinfection Byproducts (DBPs),Byproduct Precursors, Disinfectant Residuals. Where disinfection used in the treatment of drinking water, disinfectants combine with organic and inorganic matter present in water to form chemicals called disinfection byproducts (DBPs). EPA sets standards for controlling the levels of disinfectants and DBPs in drinking water, including trihalomethanes (THMs) and haloacetic acid (HAAs).[187]			
801. Total trihalomethanes (TTHMs)	N/A	0.10 0.080[198 1920]	Some people who drink water containing (TTHMs) trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system, and may have an increased risk of getting cancer.
821. Haloacetic Acids (HAA)	N/A	0.060[210]	Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.
832. Bromate	Zero	0.010	Some people who drink water containing bromate in excess of the MCL over many years may have an increased risk of getting cancer.
843. Chlorite	0.08	1.0	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.
854. Chlorine	4 (MRDLG) [221]	4.0 (MRDL) [232]	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.
865. Chloramines	4 (MRDLG)	4.0 (MRDL)	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.
876a. Chlorine dioxide, where any 2 consecutive daily samples taken at the entrance to the distribution system are above the MRDL.	0.8 (MRDLG)	0.8 (MRDL)	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 MRDL. Some people may experience anemia. *Add for public notification only:* The chlorine

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			dioxide violations reported today are the result of exceedances at the treatment facility only, not within the distribution system which delivers water to consumers. Continued compliance with chlorine dioxide levels within the distribution system minimizes the potential risk of these violations to consumers.
876b. Chlorine dioxide, where one or more distribution system samples are above the MRDL.	0.8 (MRDCLG)	0.8 (MRDL)	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 MRDL. Some people may experience anemia. *Add for public notification only:* The chlorine dioxide violations reported today include exceedances of the EPA standard within the distribution system which delivers water to consumers. Violations of the chlorine dioxide standard within the distribution system may harm human health based on short-term exposures. Certain groups, including fetuses, infants, and young children, may be especially susceptible to nervous system effects from excessive chlorine dioxide exposure.
887. Control of DBP precursors (TOC)	None	TT	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.
H. Other Treatment Techniques:			
898. Acrylamide	Zero	TT	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.
8990. Epichlorohydrin	Zero	TT	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.

Table 7-Endnotes

1. MCLG-Maximum contaminant level goal
2. MCL-Maximum contaminant level
3. For water systems analyzing at least 40 samples per month, no more than 5.0% of the monthly samples may be positive for total coliforms. For systems analyzing fewer than 40 samples per month, no more than one sample per month may be positive for total coliforms.
4. There are various regulations that set turbidity standards for different types of systems, including 310 CMR 22.08, 310 CMR 22.20A, 310 CMR 22.20D, and 310 CMR 22.20F. The MCL for the monthly turbidity average is 1 NTU; the MCL for the 2-day average is 1 NTU for systems that are required to filter but have not yet installed filtration (310 CMR 22.08).
5. NTU-Nephelometric turbidity unit
6. There are various regulations that set turbidity standards for different types of systems, including 310 CMR 22.08, 310 CMR 22.20A, 310 CMR 22.20D, and 310 CMR 22.20F. Systems subject to the Surface Water

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Treatment Rule (both filtered and unfiltered) may not exceed 1 NTU. In addition, in filtered systems, 95% of samples each month shall not exceed 0.5 NTU in systems using conventional or direct filtration and shall not exceed 1 NTU in systems using slow sand or diatomaceous earth filtration or other filtration technologies approved by the Department.

7. TT-Treatment technique

8. There are various regulations that set turbidity standards for different types of ~~–~~systems, including 310 CMR 22.08, 310 CMR 22.20A, 310 CMR 22.20D, and 310 CMR 22.20F. For systems subject to 310 CMR 22.20D (systems serving at least 10,000 people, using surface water or ground water under the direct influence of surface water), that use conventional filtration or direct filtration, after January 1, 2002, the turbidity level of a system's combined filter effluent may not exceed 0.3 NTU in at least 95% of monthly measurements, and the turbidity level of a system's combined filter effluent shall not exceed 1 NTU at any time. Systems subject to 310 CMR 22.20D using technologies other than conventional, direct, slow sand, or diatomaceous earth filtration shall meet turbidity limits set by the Department. For systems subject 310 CMR 22.20F (systems serving fewer than 10,000 people, using surface water or ground water under the influence of surface water) that use conventional or direct filtration, after January 1, 2005 the turbidity level of a system's combined filter effluent may not exceed 0.3 NTU in at least 95% of monthly measurements, ant the turbidity level of a system's combined filter effluent must not exceed 1 NTU at any time. Systems subject to 310 CMR 22.20F using technologies other than conventional, direct, slow sand, or diatomaceous earth filtration must meet turbidity limits set by the Department.

9. The bacteria detected by heterotrophic plate count (HPC) are not necessarily harmful. HPC is simply an alternative method of determining disinfectant residual levels. The number of such bacteria is an indicator of whether there is enough disinfectant in the distribution system.

10. 310 CMR 22.20A, 310 CMR 22.20D, and 310 CMR 22.20F treatment technique violations that involve turbidity exceedances may use the health effects language for turbidity instead.

11. These arsenic values are effective January 23, 2006. Until then, the MCL is 0.05 mg/L and there is no MCLG.

12. Million~~s~~ fibers per liter.

13. Action Level = 0.015 mg/L

14. Action Level = 1.3 mg/L

15. Millirems per year~~s~~

16. The uranium MCL is effective December 8, 2003 for all community water systems

17. Picocuries per liter

18. Surface water systems and ground water systems under the direct influence of surface water are regulated under 310 CMR 22.20A. Community and non-transient non-community s~~S~~urface water sources systems (surface water systems and ground water systems under the direct influence of surface water) serving at least 10,000 persons ~~community and non-transient non-community systems~~ shall comply with DBP MCLs and disinfectant maximum residual disinfectant levels (MRDLs) beginning January 1, 2002. All other community and non-transient non-~~-~~community systems shall meet the MCLs and MRDLs beginning January 1, 2004. Transient non-community s~~S~~urface water sources systems (surface water systems and ground water systems under the direct influence of surface water) serving at least 10,000 or more persons ~~transient non-community systems~~ using chlorine dioxide as a disinfectant or oxidant shall comply with the chlorine dioxide MRDL beginning January 1, 2002. Transient non-community s~~S~~urface water sources systems (surface water systems and ground water systems under the direct influence of surface water) serving fewer than 10,000 persons ~~transient non-community systems serving fewer than 10,000 persons~~ and transient non-community systems using only ground water not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant shall comply with the chlorine dioxide MRDL beginning January 1, 2004.

1~~9~~8. The MCL of 0.10 mg/l for TTHMs is in effect until January 1, 2002 for community surface water systems (surface water systems and ground water systems under the direct influence of surface water) serving 10,000 or more. This MCL is in effect until December 31, 2003 for community water systems with a population of less than 10,000 using only ground water not under the direct influence of surface water. After these deadlines, the MCL will be 0.080 mg/l. On January 1, 2004, all systems serving less than 10,000 will have to comply with the new MCL as well.

20~~19~~. The MCL for total trihalomethanes is the sum of the concentrations of the individual trihalomethanes.

21~~0~~. The MCL for haloacetic acids is the sum of the concentrations of the individual haloacetic acids.

22~~1~~. MRDLG-Maximum residual disinfectant level goal.

23~~2~~. MRDL-Maximum residual disinfectant level.

22.16A: Consumer Confidence Reporting Requirements

(1) Each community water system in existence as of September 18, 1998, must deliver its first consumer confidence report to its customers by October 19, 1999, its second report by July 1, 2000, and subsequent reports by July 1 annually thereafter. The first report must contain data collected during, or prior to, calendar year 1998, as provided in 22.16A(4)(h). Each report thereafter must contain data collected prior to or during the previous calendar year as specified at 310 CMR 22.16A(4)(h).

(2) Each community water system established after January 1, 1999, must deliver its first consumer confidence report to its customers by July 1 of the year after its first full calendar year in operation and annually thereafter.

(3) A public water system that sells or provides water to another community water system shall deliver the applicable information required at 310 CMR 22.16A(4), to the buyer or receiving system:

(a) no later than April 19, 1999, by April 1, 2000, and by April 1 annually thereafter, or

(b) on a date mutually agreed upon by the seller and the purchaser, and specifically included in a written contract between the parties.

(4) Content of the Reports. Each community water system must provide to its customers an annual report that contains the information specified in 310 CMR 22.16A(4).

(a) 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 and the Department's source water identification number (if any) and location of the body (or bodies) of water.

(b) 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. In addition, the public water systems are encouraged to highlight in the report significant sources of contamination in the source water area if they have readily available information. Where a system has received a source water assessment from the Department, the report shall include a brief summary of the public water system's susceptibility to potential sources of contamination, using language provided by the Department.

(c) Each report must include the following definitions:

1. Maximum Contaminant Level Goal or MCLG. 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 or MCL. 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

(d) A report for a community water system operating under a variance or an exemption issued by the Department must include the following definition:

1. Variances and Exemptions. The Department or EPA permission not to meet an MCL or a treatment technique under certain conditions.

(e) A report that contains data on a contaminant for which the Department or EPA regulates using any of the following terms must include the applicable definitions:

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

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

3. Maximum residual disinfectant levels 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.

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(f) Information on Detected Contaminants. 310 CMR 22.16A(4) 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 or treatment technique (regulated contaminants);
2. Contaminants for which monitoring is required by 310 CMR 22.07C (unregulated contaminants); and
3. Disinfection by-products or microbial contaminants for which monitoring is required by 40 CFR 141.142 and 141.143, except as provided at 310 CMR 22.16A(5)(a), and which are detected in the finished water.

(g) 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.

(h) The data must be derived from data collected to comply with EPA and Department monitoring and analytical requirements during calendar year 1998 for the first report and subsequent calendar years thereafter except that:

1. 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 from the most recent testing done in accordance with the regulations. No data older than five years need be included.
2. Results of monitoring in compliance with 40 CFR 141.142 and 141.143 need only be included for five years from the date of last sample or until any of the detected contaminants becomes regulated and subject to routine monitoring requirements, whichever comes first.

(i) For detected regulated contaminants listed in 310 CMR 22.00 and in Appendix M of the Guidelines and Policies for Public Water Systems, 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 M of the Guidelines and Policies for Public Water Systems;
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, maximum residual disinfectant level, or specify the action level, applicable to that contaminant, and the report must include the definitions for treatment technique, maximum residual disinfectant level and/or action level, as appropriate, specified at 310 CMR 22.16A(4)(e);
4. For contaminants subject to an MCL, except turbidity and total coliforms, the highest contaminant level used to determine compliance with 310 CMR 22.00 and the range of detected levels, as follows:
   a. When compliance with the MCL is based on a single sample or the average of an initial and a confirmation sample: the highest detected level or average at any sampling point and the range of detected levels of all sampling points expressed in the same units as the MCL.
   b. When compliance with the MCL is determined annually or less frequently: the highest detected level at any sampling point and the range of detected levels expressed in the same units as the MCL.
   c. When compliance with the MCL is determined by calculating a running annual average of all samples taken at a sampling point: the highest average of any of the sampling points and the range of all sampling points expressed in the same units as the MCL.
   d. 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: the average and range of detection expressed in the same units as the MCL.
   e. When rounding of results to determine compliance with the MCL is allowed by the 310 CMR 22.00, rounding should be done prior to multiplying the results by the factor listed in Appendix M of the Guidelines and Policies for Public Water Systems.
5. For Turbidity.
   a. When it is reported pursuant to 310 CMR 22.08: the highest average monthly value.

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b. When it is reported pursuant to the requirements of 310 CMR 22.20A(2): the highest monthly value. The report shall include an explanation of the reasons for measuring turbidity.

c. When it is reported pursuant to 310 CMR 22.20A(4), 310 CMR 22.20D or 310 CMR 22.20F the highest single measurement and the lowest monthly percentage of samples meeting the turbidity limits specified in 310 CMR 22.20A(4), 310 CMR 22.20D or 310 CMR 22.20F for the filtration technology being used. The report shall include an explanation of the reasons for measuring turbidity.

6. For Lead and Copper. For each contaminant 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. The highest monthly number of positive samples for systems collecting fewer than 40 samples per month; or

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

8. For fecal coliform or *E.coli*: the total number of positive samples; and.

9. 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 M of the Guidelines and Policies for Public Water Systems, that is most applicable to the system.

(j) 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.

(k) 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 in Appendix M of the Guidelines and Policies for Public Water Systems.

(l) 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.

(5) Information on Cryptosporidium, Radon, and other Contaminants.

(a) If the system performed any monitoring for *Cryptosporidium*, including monitoring performed to satisfy the requirements of 40 CFR 141.143, 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.

(b) If the system 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.

(c) If the system performed additional monitoring which indicates the presence of other contaminants in the finished water, the public water system shall report any results which may indicate a health concern. The Department considers detects above a proposed MCL or health advisory level to indicate possible health concerns. For such contaminants, the Department recommends that the report include:

1. The results of the monitoring; and
2. An explanation of the significance of the results noting the existence of a health advisory or a proposed regulation.

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(6) In addition, to the requirements of 310 CMR 22.16A(4)(k), 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.

(a) Monitoring and reporting of compliance data;

(b) Filtration and disinfection: 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.

(c) Lead and copper control: For systems which fail to take one or more actions prescribed by 310 CMR 22.06B(1)(d)(1), 310 CMR 22.06B(3), 310 CMR 22.06B(4) or 310 CMR 22.06B(5), the report must include the applicable language of Appendix M of the Guidelines and Policies for Public Water Systems for lead, copper, or both.

(d) Treatment techniques for Acrylamide and Epichlorohydrin: For systems which violate the requirements of 310 CMR 22.04(10)~~7B~~, the report must include the relevant language from Appendix M of the Guidelines and Policies for Public Water Systems.

(e) Recordkeeping of compliance data.

(f) Special monitoring requirements prescribed by 310 CMR 22.07C and 310 CMR 22.06A; and

(g) Violation of the terms of a variance, an exemption, or an administrative or judicial order.

(7) Variances and Exemptions. If a system is operating under the terms of a variance or an exemption issued under 310 CMR 22.13, 310 CMR 22.13A or 310 CMR 22.14, the report must contain:

(a) An explanation of the reasons for the variance or exemption;

(b) The date on which the variance or exemption was issued;

(c) 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

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

(8) Additional Information.

(a) 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 paragraphs 310 CMR 22.16A(8)(a)1. through 3., or systems may use their own comparable language with Department approval. The report also must include the language of paragraph 310 CMR 22.16A(8)(a)4.

1. Sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and 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.

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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 Department and EPA prescribe regulations which limit the amount of certain contaminants in water provided by public water systems. FDA and the Massachusetts Department of Public Health ~~–~~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 your local water supplier.

(b) The report must include the PWSID#, address, telephone number of the owner, operator, or designee of the community water system as a source of additional information concerning the report.

(c) In communities with 10% or greater, or greater than 1000 people (whichever is lesser) of non-English speaking residents, the report must contain information in the appropriate language(s) regarding the importance of the report. In communities serving 25% or greater of non-English speaking residents, ~~-~~the report must contain a statement in the appropriate language(s) which includes 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.

(d) 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.

(e) 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.

(f) The public water system shall include any additional language as specified by the Department.

(9) Required Additional Health Information. 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).

(10) Beginning in the report due by July 1, 2002, a~~A~~ community water system which detects arsenic at levels above 0.00~~525~~ mg/L and up to and including 0.0010 mg/L~~, but below the MCL~~:

(a) ~~Shall include in its report a short informational statement about arsenic, using language such as: EPA is reviewing the drinking water standard for arsenic because of special concerns that it may not be stringent enough. Arsenic is a naturally occurring mineral known to cause cancer in humans at high concentrations.~~

~~(b) Ending in the report due by July 1, 2001, a system which detects arsenic at levels above 0.025 mg/L, but below the 0.05 mg/L, and beginning in the report due by July 1, 2002, a system that detects arsenic above 0.005 mg/L and up to and including 0.010 mg/L:~~

~~1.~~ Shall 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 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.

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(b)~~2~~. May write its own educational statement, but only in consultation with and approval of the Department.

(c) Beginning in the report due by July 1, 2002 and ending January 22, 2006, a community water system that detects arsenic above 0.010 mg/L and up to and including 0.05 mg/L shall include the arsenic health effects language prescribed by Appendix M of the Guidelines and Policies.

(11) A community water system which detects nitrate at levels above 5 mg/l, but below the MCL:

(a) 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.

(b) May write its own educational statement, but only in consultation with and approval of the Department.

(12) A community water system which detects lead above the action level in more than 5%, and up to and including 10%, of homes sampled:

(a). Must include a short informational statement about the special impact of lead on children using language such as: Infants and young children are typically more vulnerable to lead in drinking water than the general population. 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 two minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline (800-426-4791).

(b). May write its own educational statement, but only in consultation with and approval of the Department.

(13) Community water systems that detect TTHM above 0.080 mg/l, but below the MCL listed in 310 CMR 22.07 as an annual average, monitored and calculated under the provisions of 310 CMR 22.07, must include health effects language prescribed in Appendix M of the Guidelines and Policies for Public Water Systems.

(14) Report Delivery and Recordkeeping. ~~.~~Except as provided in 310 CMR 22.16A(20), each community water system must mail or otherwise directly deliver one copy of the Consumer Confidence Report to each customer.

(15) The community water system must make a good faith effort to reach consumers who do not get water bills, and are required to take a minimum of three of the following actions:

(a) Post report in the lobby of apartment complexes;
(b) Place an ad in a local newspaper stating where copies are available;
(c) Announce availability of the consumer confidence report on local radio stations;
(d) Post consumer confidence report in Town Hall;
(e) Place copies of the consumer confidence report in the local public library;
(f) Post a notice (in main lobby of apartment complexes) stating that the consumer confidence report is posted on a website, and give the website address;
(g) Publish the report in local newspaper(s);
(h) Deliver the report to community organizations;

(16) No later than the date the community water system is required to distribute the report to its customers, the system shall submit:

(a) two~~three~~ copies of the consumer confidence report and the related attachments to the Department, one~~two~~ of which will be submitted to the applicable Department regional office and one will be submitted to the Boston office; and

(b) a certification, using the Department's ~~–~~form in Appendix M of the Guidelines and Policies for Public Water Systems, that the report has been distributed to customers, and

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that the information is correct and consistent with the compliance monitoring data previously submitted to the Department.

(17) 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 its local Board of Health or any other agency identified by the Department.

(18) Each community water system must make its reports available to the public upon request.

(19) Each community water system serving 100,000 or more persons must post its most recent report to a publicly-accessible site on the Internet, including WEB site address.

(20) A community water system serving fewer than 10,000 persons has the option of mailing or directly delivering copies of the consumer confidence report to each customer, as provided in 310 CMR 22.16A(14)~~(a) and (b)~~, or, alternatively, such system must comply with the following notice requirements:.

(a) Publish the report in one or more local newspapers serving the area in which the system is located;

(b) Inform the customers that the reports will not be mailed. Notification shall be either in the newspapers in which the reports are published or by a statement in a bill or newsletter; and

(c) Make the reports available to the public upon request.

(21) A community water systems serving 500 or fewer persons may forego the requirements of 310 CMR 22.16A(20)(a) and (b), if the system provides a notice at least once per year to its customers by mail, door-to-door delivery or by posting in an appropriate location, that the report shall be available upon request.

(22) Any system subject to 310 CMR 22.16A, must retain copies of its Consumer Confidence Report for no less than three years.

(23) The Department will require non-community public water systems to comply with 310 CMR 22.16A to the extent provided in the Department's Drinking Water Guidelines and Policies, Appendix M.

(24) The Department, ~~–~~with EPA approval, may edit the requirements found in the Department's Drinking Water Guidelines and Policies Appendix M

(25) Consumer Confidence Report by the Department for Any Public Water System Subject to 310 CMR 22.16A. The Department may prepare and issue to the public a report as required by 310 CMR 22.16A on behalf of the public water system. The public water system remains legally responsible for ensuring that the requirements of 310 CMR 22.16A are met. The Department reserves the right to issue on behalf of the public water system the report to the public when not required by 310 CMR 22.16A in the event of a significant health problem. The public water system shall be responsible for all fees incurred by the Department as a result of issuing such report.

(26) A public water system receiving water from a source approved by the Department under an emergency agreement shall comply with 310 CMR 22.16A(4) for the emergency source unless otherwise approved in writing by the Department.