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TITLE 327 WATER POLLUTION CONTROL BOARD

Proposed Rule LSA Document #04-13

DIGEST

Amends drinking water rules at 327 IAC 8-2, 327 IAC 8-2.1, and 327 IAC 8-2.6 concerning radionuclides, long term 1 enhanced surface water treatment, arsenic, minor corrections to interim enhanced surface water treatment, disinfectants and disinfection byproducts, lead and copper, public notification, and analytical methods for public drinking water systems. Effective 30 days after filing with the secretary of state.

HISTORY

First Notice of Comment Period: #04-13(WPCB), February 1, 2004, Indiana Register (27 IR 1656).

Second Notice of Comment Period and Notice of First Hearing: #04-13(WPCB), September 1, 2004, Indiana Register (27 IR 4149).

Change in Notice of Public Hearing: #04-13 (WPCB), November 1, 2004, Indiana Register (28 IR 620).

Date of First Hearing: November 23, 2004.

PUBLIC COMMENTS UNDER IC 13-14-9-4.5

IC 13-14-9-4.5 states that a board may not adopt a rule under IC 13-14-9 that is substantively different from the draft rule published under IC 13-14-9-4 until the board has conducted a third comment period that is at least twenty-one (21) days long. Because this proposed (preliminarily adopted) rule is not substantively different from the draft rule published on September 1, 2004, at 27 IR 4149, the Indiana Department of Environmental Management (IDEM) is not requesting comment on this proposed rule.

SUMMARY/RESPONSE TO COMMENTS FROM THE SECOND COMMENT PERIOD

IDEM requested public comment from September 1, 2004, through September 30, 2004, on IDEM's draft rule language. No comments were received during the second comment period.

SUMMARY/RESPONSE TO COMMENTS RECEIVED AT THE FIRST PUBLIC HEARING

On November 23, 2004, the water pollution control board conducted the first public hearing/board meeting concerning amendments to drinking water rules at 327 IAC 8-2, 327 IAC 8-2.1, and 327 IAC 8-2.6 regarding radionuclides, long term 1 enhanced surface water treatment, arsenic, minor corrections to interim enhanced surface water treatment, disinfectants and disinfection byproducts, lead and copper, public notification, and analytical methods for public drinking water systems. No comments were made at the first hearing.

327 IAC 8-2-1	327 IAC 8-2-45
327 IAC 8-2-4	327 IAC 8-2-46
327 IAC 8-2-4.1	327 IAC 8-2.1-3
327 IAC 8-2-4.2	327 IAC 8-2.1-4
327 IAC 8-2-5.1	327 IAC 8-2.1-6
327 IAC 8-2-5.2	327 IAC 8-2.1-8
327 IAC 8-2-5.5	327 IAC 8-2.1-9
327 IAC 8-2-8.5	327 IAC 8-2.1-14
327 IAC 8-2-8.7	327 IAC 8-2.1-16
327 IAC 8-2-9	327 IAC 8-2.1-17
327 IAC 8-2-10.1	327 IAC 8-2.6-1
327 IAC 8-2-10.2	327 IAC 8-2.6-2
327 IAC 8-2-10.3	327 IAC 8-2.6-2.1
327 IAC 8-2-13	327 IAC 8-2.6-3
327 IAC 8-2-34	327 IAC 8-2.6-4
327 IAC 8-2-34.1	327 IAC 8-2.6-5

SECTION 1. 327 IAC 8-2-1 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-1 Definitions

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-11-2; IC 13-18

Sec. 1. In addition to the definitions contained in IC 13-11-2 and 327 IAC 1, the following definitions apply throughout this rule, 327 IAC 8-2.1, 327 IAC 8-2.5, and 327 IAC 8-2.6:

- (1) "Act" means the Safe Drinking Water Act (42 U.S.C. 300f et seq.).
- (2) "Action level" means the concentration of lead or copper in water specified in section 36(c) of this rule ~~which that~~ determines, in some cases, the treatment requirements contained in sections 36 through 47 of this rule that a water system is required to complete.
- (3) "Adjustment program" means the addition of fluoride to drinking water by a public water system for the prevention of dental cavities.
- (4) "Administrator" means the administrator of the U.S. EPA.
- (5) "Best available technology" or "BAT" means best technology, treatment techniques, or other means ~~which that~~ the commissioner finds are available, after examination for efficacy under field conditions, and not solely under laboratory conditions, and after taking cost into consideration. For the purpose of setting ~~maximum contaminant levels~~ **MCLs** for synthetic organic chemicals, any BAT must be at least as effective as granular activated carbon.
- (6) "Coagulation" means a process using coagulant chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into flocs.
- (7) "Commissioner" means the commissioner of the Indiana department of environmental management or the designated agent of the commissioner.
- (8) "Community water system" or "CWS" means a public water system ~~which that~~ serves at least fifteen (15) service connections used by year-round residents or regularly serves at least twenty-five (25) year-round residents.
- (9) "Compliance cycle" means the nine (9) year calendar year cycle during which public water systems must monitor. Each compliance cycle consists of three (3) three-year compliance periods. The first calendar year cycle begins January 1, 1993, and ends December 31, 2001; the second begins January 1, 2002, and ends December 31, 2010; the third begins January 1, 2011, and ends December 31, 2019.
- (10) "Compliance period" means a three (3) year calendar year period within a compliance cycle. Each compliance cycle has three (3) three-year compliance periods. Within the first compliance cycle, the first compliance period runs from January 1, 1993, to December 31, 1995; the second from January 1, 1996, to December 31, 1998; the third from January 1, 1999, to December 31, 2001. Within the second compliance cycle, the first compliance period runs from January 1, 2002, to December 31, 2004; the second from January 1, 2005, to December 31, 2007; and the third from January 1, 2008, to December 31, 2010. Within the third compliance cycle, the first compliance period runs from January 1, 2011, to December 31, 2013; the second from January 1, 2014, to December 31, 2016; and the third from January 1, 2017, to December 31, 2019.
- (11) "Comprehensive performance evaluation" or "CPE" means a thorough review and analysis of a treatment plant's performance-based capabilities and associated administrative, operation, and maintenance practices. It is conducted to identify factors that may

be adversely impacting a plant's capability to achieve compliance and emphasizes approaches that can be implemented without significant capital improvements. For purposes of compliance with 327 IAC 8-2.6-1, the ~~comprehensive performance evaluation~~ **CPE** must consist of at least the following components:

- (A) Assessment of plant performance.
- (B) Evaluation of major unit processes.
- (C) Identification and prioritization of performance limiting factors.
- (D) Assessment of the applicability of comprehensive technical assistance.
- (E) Preparation of a CPE report.

(12) "Confluent growth" means a continuous bacterial growth covering the entire filtration area of a membrane filter, or a portion thereof, in which bacterial colonies are not discrete.

(13) "Contaminant" means any:

- (A) microorganisms;
- (B) chemicals;
- (C) waste;
- (D) physical substance;
- (E) radiological substance; or
- (F) any wastewater;

introduced or found in the drinking water.

(14) "Conventional filtration treatment" means a series of processes including:

- (A) coagulation;
- (B) flocculation;
- (C) sedimentation; and
- (D) filtration;

resulting in substantial particulate removal.

(15) "Corrosion inhibitor" means a substance capable of reducing the corrosivity of water toward metal plumbing materials, especially lead and copper, by forming a protective film on the interior surface of those materials.

(16) "CT" or "CTcalc" is the product of residual disinfectant concentration (C) in milligrams per liter determined before or at the first customer and the corresponding disinfectant contact time (T) in minutes, such as $C \times T$. If a public water system applies disinfectants at more than one (1) point prior to the first customer, ~~it~~ **the public water system** must determine the CT of each disinfectant sequence before or at the first customer to determine the total percent inactivation or total inactivation ratio. In determining the total inactivation ratio, the public water system must determine the residual disinfectant concentration of each disinfection sequence and corresponding contact time before any subsequent disinfection application point. $CT_{99.9}$ is the CT value required for ninety-nine and nine-tenths percent (99.9%) (3-log) inactivation of Giardia lamblia cysts. $CT_{99.9}$ for a variety of disinfectants and conditions appears in Tables 1.1-1.6, 2.1, and 3.1 of ~~paragraph 40 CFR 141.74(b)(3)~~¹.

$$\frac{CT_{calc}}{CT_{99.9}}$$

is the inactivation ratio. The sum of the inactivation ratios or total inactivation ratio shown as:

$$\sum \frac{(CT_{calc})}{(CT_{99.9})}$$

is calculated by adding together the inactivation ratio for each disinfection sequence. A total inactivation ratio equal to or greater than one (1.0) is assumed to provide a 3-log inactivation of Giardia lamblia cysts.

(17) "Diatomaceous earth filtration" means a process resulting in substantial particulate removal in which:

- (A) a precoat cake of diatomaceous earth filter media is deposited on a support membrane (septum); and
- (B) while the water is filtered by passing through the cake on the septum, additional filter media known as body feed is continuously added to the feed water to maintain the permeability of the filter cake.

(18) "Direct filtration" means a series of processes, including coagulation and filtration but excluding sedimentation resulting in substantial particulate removal.

(19) "Disinfectant" means any oxidant, including, but not limited to:

- (A) chlorine;
- (B) chlorine dioxide;
- (C) chloramines; and
- (D) ozone;

added to water in any part of the treatment or distribution process that is intended to kill or inactivate pathogenic microorganisms.

(20) “Disinfectant contact time” (T in CT calculations) means the time in minutes that it takes for water to move from the point of disinfectant application or the previous point of disinfectant residual measurement to a point before or at the point where residual disinfectant concentration (C) is measured. Where only one (1) C is measured, T is the time in minutes that it takes for water to move from the point of disinfectant application to a point before or at where C is measured. Where more than one (1) C is measured, T is:

(A) for the first measurement of C, the time in minutes that it takes for water to move from the first or only point of disinfectant application to a point before or at the point where the first C is measured; and

(B) for subsequent measurements of C, the time in minutes that it takes for water to move from the previous C measurement point to the C measurement point for which the particular T is being calculated.

Disinfectant contact time in pipelines must be calculated based on plug flow by dividing the internal volume of the pipe by the maximum hourly flow rate through that pipe. Disinfectant contact time within mixing basins and storage reservoirs must be determined by tracer studies or an equivalent demonstration.

(21) “Disinfection” means a process ~~which that~~ inactivates pathogenic organisms in water by chemical oxidants or equivalent agents.

(22) “Disinfection profile” means a summary of daily Giardia lamblia inactivation through a treatment plant. **The procedure for developing a disinfection profile is contained in 327 IAC 8-2.6-2 for systems serving at least ten thousand (10,000) individuals and 327 IAC 8-2.6-2.1 for systems serving fewer than ten thousand (10,000) individuals.**

(23) “Domestic or other nondistribution system plumbing problem” means a coliform contamination problem in a public water system with more than one (1) service connection that is limited to the specific service connection from which the coliform-positive sample was taken.

(24) “Dose equivalent” means the product of the absorbed dose from ionizing radiation and such factors as account for differences in biological effectiveness due to the type of radiation and its distribution in the body as specified by the International Commission on Radiological Units and Measurements (ICRUM).

(25) “Drinking water violation” means violations of the ~~maximum contaminant level~~ MCL, treatment technique (TT), monitoring requirements, and testing procedures in this rule. 327 IAC 8-2.1-16 identifies the tier assignment for each specific violation or situation requiring a public notice.

(26) “Effective corrosion inhibitor residual” means a concentration sufficient to form a passivating film on the interior walls of a pipe for the purpose of sections 36 through 47 of this rule only.

(27) “Enhanced coagulation” means the addition of sufficient coagulant for improved removal of disinfection byproduct precursors by conventional filtration treatment.

(28) “Enhanced softening” means the improved removal of disinfection byproduct precursors by precipitative softening.

(29) “Filter profile” means a graphical representation of individual filter performance, based on continuous turbidity measurements or total particle counts versus time for an entire filter run, from startup to backwash inclusively, that includes an assessment of filter performance while another filter is being backwashed.

(30) “Filtration” means a process for removing particulate matter from water by passage through porous media.

(31) “First draw sample” means a one (1) liter sample of tap water collected in accordance with section 37 of this rule, that has been standing in the plumbing pipes at least six (6) hours and is collected without flushing the tap.

(32) “Flocculation” means a process to enhance agglomeration or collection of smaller floc particles into larger, more easily settleable particles through gentle stirring by hydraulic or mechanical means.

(33) “GAC10” means granular activated carbon filter beds with an empty-bed contact time of ten (10) minutes based on average daily flow and a carbon reactivation frequency of every one hundred eighty (180) days.

(34) “Gross alpha particle activity” means the total radioactivity due to alpha particle emission as inferred from measurements on a dry sample.

(35) “Gross beta particle activity” means the total radioactivity due to beta particle emission as inferred from measurements on a dry sample.

(36) “Ground water under the direct influence of surface water” means any water beneath the surface of the ground with:

(A) significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as Giardia lamblia or, for Subpart H systems serving at least ten thousand (10,000) individuals ~~only~~ **and beginning January 1, 2005, systems serving fewer than ten thousand (10,000) individuals**, Cryptosporidium; or

(B) significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH ~~which that~~ closely correlate to climatological or surface water conditions.

Direct influence must be determined for individual sources in accordance with criteria established by the commissioner. The commissioner’s determination of direct influence may be based on site-specific measurements of water quality ~~and/or~~ **or** documentation of well construction characteristics and geology with field evaluation **or both**.

(37) “Haloacetic acids (five)” or “HAA5” means the sum of the concentrations in milligrams per liter of the haloacetic acid compounds:

- (A) monochloroacetic acid;
- (B) dichloroacetic acid;
- (C) trichloroacetic acid;
- (D) monobromoacetic acid; and
- (E) dibromoacetic acid;

rounded to two (2) significant figures after addition.

(38) “Halogen” means one (1) of the chemical elements chlorine, bromine, or iodine.

(39) “Initial compliance period” means January 1993 to December 1995, for the contaminants listed in sections 4 (other than arsenic, barium, cadmium, fluoride, lead, mercury, selenium, and silver), 5, and 5.4(a) (other than benzene, vinyl chloride, carbon tetrachloride, 1,2-dichloroethane, trichloroethylene, 1,1-dichloroethylene, 1,1,1-trichloroethane, and para-dichlorobenzene) of this rule.

(40) “Large water system” means a water system that serves more than fifty thousand (50,000) people for the purpose of sections 36 through 47 of this rule only.

(41) “Lead service line” means a service line made of lead ~~which that~~ connects the water main to the building inlet and any lead pigtail, gooseneck, or other fitting ~~which that~~ is connected to such lead line.

(42) “Legionella” means a genus of bacteria, some species of which have caused a type of pneumonia called Legionnaires Disease.

(43) “Manmade beta particle and photon emitters” means all radionuclides emitting beta particle ~~and/or or~~ photons, **or both**, listed in “Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure”, NBS Handbook 69, as amended August 1973, U.S. Department of Commerce, except the daughter products of thorium-232, uranium-235, and uranium-238.

(44) “Maximum contaminant level” **or** “MCL” means the maximum permissible level of a contaminant in water ~~which that~~ is delivered to the free flowing outlet of the ultimate user of a public water system, except in the case of turbidity where the maximum permissible level is measured at the point of entry to the distribution system. Contaminants added to the water under circumstances controlled by the user, except those resulting from corrosion of piping and plumbing caused by water quality, are excluded from this definition.

(45) “Maximum contaminant level goal” **or** “MCLG” means the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur and ~~which that~~ includes an adequate margin of safety. ~~Maximum contaminant level goals MCLGs are nonenforceable health goals.~~

(46) “Maximum residual disinfectant level” or “MRDL” means a level of a disinfectant added for water treatment that may not be exceeded at the consumer’s tap without an unacceptable possibility of adverse health effects.

(47) “Maximum residual disinfectant level goal” or “MRDLG” means the maximum level of a disinfectant added for water treatment at which no known or anticipated adverse effect on the health of individuals would occur and ~~which that~~ allows an adequate margin of safety.

(48) “Maximum total trihalomethane potential” or “MTP” means the maximum concentration of ~~total trihalomethanes~~ **TTHM** produced in a given water containing a disinfectant residual after seven (7) days at a temperature of twenty-five (25) degrees Celsius or above.

(49) “Medium size water system” means a water system that serves greater than three thousand three hundred (3,300) and less than or equal to fifty thousand (50,000) persons for the purpose of sections 36 through 47 of this rule only.

(50) “Near the first service connection” means at one (1) of the twenty percent (20%) of all service connections in the entire system that are nearest the water supply treatment facility, as measured by water transport time within the distribution system.

(51) “Noncommunity water system” means a public water system ~~which that~~ has at least fifteen (15) service connections used by nonresidents or ~~which~~ regularly serves twenty-five (25) or more nonresident individuals daily for at least sixty (60) days per year.

(52) “Nontransient noncommunity water system” or “NTNCWS” means a public water system that is not a ~~community water system~~ **CWS** that regularly serves the same twenty-five (25) or more persons at least six (6) months per year.

(53) “Optimal corrosion control treatment” means the corrosion control treatment that minimizes the lead and copper concentrations at users’ taps while ensuring that the treatment does not cause the water system to violate any national primary drinking water regulations for the purpose of sections 36 through 47 of this rule only.

(54) “Performance evaluation sample” means a reference sample provided to a laboratory for the purpose of demonstrating that the laboratory can successfully analyze the sample within limits of performance specified by the administrator. The true value of the concentration of the reference material is unknown to the laboratory at the time of the analysis.

(55) “Picocuri” **or** “pCi” means the quantity of radioactive material producing two and twenty-two hundredths (2.22) nuclear transformations per minute.

(56) “Point of disinfectant application” is the point where the disinfectant is applied and water downstream of that point is not subject to recontamination by surface water run-off.

(57) “Point-of-entry treatment device” or “POE” is a treatment device applied to the drinking water entering a house or building for the purpose of reducing contaminants in drinking water distributed throughout the house or building.

(58) “Point-of-use treatment device” or “POU” is a treatment device to a single tap used for the purpose of reducing contaminants in drinking water at that one (1) tap.

(59) “Primacy agency” is the department of environmental management where the department exercise primary enforcement responsibility as granted by EPA.

(60) “Public water system” means a public water supply for the provision to the public of water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen (15) service connections or regularly serves at least twenty-five (25) individuals daily at least sixty (60) days out of the year. ~~“Public water system”~~ **The term** includes any:

(A) collection, treatment, storage, and distribution facilities under control of the operator of such system, and used primarily in connection with such system; and ~~any~~

(B) collection or pretreatment storage facilities not under such control that are used primarily in connection with such system. A public water system is either a ~~community water system CWS~~ or a noncommunity water system, as defined in subdivisions (8) and (51).

(61) “Rem” means the unit of dose equivalent from ionizing radiation to the total body or any internal organ or organ system. A millirem (mrem) is one-thousandth ($1/1,000$) of a rem.

(62) “Repeat compliance period” means any subsequent compliance period after the initial compliance period.

(63) “Residual disinfectant concentration” ~~or~~ “C in CT calculations” means the concentration of disinfectant measured in milligrams per liter in a representative sample of water.

(64) “Sanitary survey” means an on-site inspection of the water source, facilities, equipment, construction, and operation and maintenance of a public water system for the purpose of evaluating the adequacy of ~~such the~~ source, facilities, equipment, construction, and operation and maintenance for producing and distributing safe drinking water.

(65) “Sedimentation” means a process for removal of solids before filtration by gravity or separation.

(66) “Service line sample” means a one (1) liter sample of water collected in accordance with section 37(b)(3) of this rule that has been standing at least six (6) hours in a service line.

(67) “Single family structure” means a building constructed as a single family residence that is currently being used as either a residence or a place of business for the purpose of sections 36 through 47 of this rule only.

(68) “Slow sand filtration” means a process involving passage of raw water through a bed of sand at low velocity (generally less than four-tenths (0.4) meter per hour or forty-five (45) to one hundred fifty (150) gallons per day per square foot) resulting in substantial particulate removal by physical and biological mechanisms.

(69) “Small water system” means a water system that serves three thousand three hundred (3,300) persons or fewer for the purpose of sections 36 through 47 of this rule only.

(70) “Standard sample” means the aliquot of finished drinking water that is examined for the presence of coliform bacteria.

(71) “Subpart H system” means a public water system using surface water or ground water under the direct influence of surface water as a source that is subject to ~~the requirements of 327 IAC 8-2.6-1.~~ **327 IAC 8-2.6.**

(72) “Supplier of water” means any person who owns ~~and/or or~~ operates, ~~or both~~, a public water system.

(73) “Surface water” means all water occurring on the surface of the ground, including water in:

(A) a stream;

(B) natural and artificial lakes;

(C) ponds;

(D) swales;

(E) marshes; and

(F) diffused surface water.

(74) “SUVA” means specific ultraviolet absorption at two hundred fifty-four (254) nanometers, an indicator of the humic content of water. ~~It~~ **SUVA** is a calculated parameter obtained by dividing a sample’s ultraviolet absorption at a wavelength of two hundred fifty-four (254) nanometers (UV_{254}) (in m^{-1}) by its concentration of dissolved organic carbon (DOC) (in milligrams per liter).

(75) “System with a single service connection” means a public water system ~~which that~~ supplies drinking water to consumers via a single service line.

(76) “Too numerous to count” means that the total number of bacterial colonies exceeds two hundred (200) on a forty-seven (47) millimeter diameter membrane filter used for coliform detection.

(77) “Total organic carbon” or “TOC” means total organic carbon in milligrams per liter, measured using:

(A) heat;

- (B) oxygen;
- (C) ultraviolet irradiation;
- (D) chemical oxidants; or
- (E) combinations of these oxidants;

that convert organic carbon to carbon dioxide, rounded to two (2) significant figures.

(78) “Total trihalomethanes” or “TTHM” means the sum of the concentration in milligrams per liter of the trihalomethane compounds:

- (A) trichloromethane (chloroform);
- (B) dibromochloromethane;
- (C) bromodichloromethane; and
- (D) tribromomethane (bromoform);

rounded to two (2) significant figures.

(79) “Transient noncommunity water system” or “TWS” means a noncommunity water system that does not regularly serve at least twenty-five (25) of the same persons over six (6) months per year.

(80) “Trihalomethane” or “THM” means one (1) of the family of organic compounds, named as derivatives of methane, wherein three (3) of the four (4) hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure.

(81) “Uncovered finished water storage facility” means a tank, reservoir, or other facility open to the atmosphere that is used to store water that will undergo no further treatment except residual disinfection.

(82) “U.S. EPA” or “EPA” means the United States Environmental Protection Agency.

(83) “Virus” means a virus of fecal origin ~~which that~~ is infectious to humans by waterborne transmission.

(84) “Waterborne disease outbreak” means the significant occurrence of acute infectious illness epidemiologically associated with the ingestion of water from a public water system ~~which that~~ is deficient in treatment as determined by the commissioner.

¹Federal Register, Part II, 40 CFR 141, June 29, 1989, Volume 54, Number 124, pages 27532 through 27534. (*Water Pollution Control Board*; 327 IAC 8-2-1; filed Sep 24, 1987, 3:00 p.m.: 11 IR 705; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1003; errata filed Jan 9, 1991, 2:30 p.m.: 14 IR 1070; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258; filed Apr 12, 1993, 11:00 a.m.: 16 IR 2151; filed Aug 24, 1994, 8:15 a.m.: 18 IR 19; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 531; filed Oct 24, 1997, 4:30 p.m.: 21 IR 932; filed Mar 6, 2000, 7:56 a.m.: 23 IR 1623; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1075; filed May 1, 2003, 12:00 p.m.: 26 IR 2808)

SECTION 2. 327 IAC 8-2-4 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-4 Inorganic chemicals; maximum contaminant levels

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 4. (a) The following MCLs for inorganic chemicals apply to all ~~community water systems; nontransient noncommunity water systems; CWSs, NTNCWSs, and transient noncommunity systems~~ TWSs except as provided in subsection (b):

<u>Contaminant</u>	<u>Level in Milligrams Per Liter</u>
Nitrate	10 (as nitrogen)
Nitrite	1 (as nitrogen)
Nitrate and nitrite	10 (as nitrogen)

(b) The commissioner may allow nitrate levels up to, but not to exceed, twenty (20) milligrams per liter in a noncommunity water system if the supplier of water meets all of the following conditions:

- (1) Such water will not be available to children under six (6) months of age.
- (2) There will be continuous posting of the fact that nitrate levels exceed ten (10) milligrams per liter and the potential health effects of exposure.
- (3) Local and state public health authorities shall be notified annually of nitrate levels that exceed ten (10) milligrams per liter.
- (4) No adverse health effects shall result.
- (5) The commissioner may require additional notice to the public as provided by 327 IAC 8-2.1-14.

(c) The following MCL for fluoride applies to all ~~community water systems; CWSs:~~

<u>Contaminant</u>	<u>Level in Milligrams Per Liter</u>
Fluoride	4.0

(d) The following MCLs for inorganic chemicals apply to all ~~community water systems CWSs and nontransient noncommunity water systems:~~ **NTNCWSs:**

<u>Contaminant</u>	<u>Level in Milligrams Per Liter Except Asbestos</u>
Antimony	0.006
Arsenic	0.05 0.010 ¹
Asbestos	7 (MFL) ⁺²
Barium	2
Beryllium	0.004
Cadmium	0.005
Chromium	0.1
Cyanide (free)	0.2
Mercury	0.002
Selenium	0.05
Thallium	0.002

¹**Effective January 1, 2006. Until then, the arsenic MCL is 0.05 mg/l.**

⁺²MFL = million fibers per liter greater than ten (10) micrometers.

(e) For the inorganic chemicals listed in this section and nickel, the monitoring frequency is specified in section 4.1 of this rule and analytical methods are specified in section 4.2 of this rule.

(f) The commissioner hereby identifies the following as the ~~best available technology,~~ **BAT**, treatment technique, or other means available for achieving compliance with the MCLs for inorganic contaminants identified in subsections (a), (c), and (d), except fluoride:

BAT for Inorganic Chemicals Listed in This Section

<u>Chemical Name</u>	<u>BATs</u>
Antimony	2,7
Arsenic⁴	1, 2, 5, 6, 7, 9, 12⁵
Asbestos	2,3,8
Barium	5,6,7,9
Beryllium	1,2,5,6,7
Cadmium	2,5,6,7
Chromium	2,5,6 ² ,7
Cyanide	5,7,10
Mercury	2 ¹ ,4,6 ¹ ,7 ¹
Nitrate	5,7,9
Nitrite	5,7
Selenium	1,2 ³ ,6,7,9
Thallium	1,5

¹BAT only if influent mercury concentrations less than ten (10) micrograms per liter.

²BAT for Chromium III only.

³BAT for Selenium IV only.

⁴**BATs for Arsenic V. Preoxidation may be required to convert Arsenic III to Arsenic V. Arsenic BATs apply beginning January 1, 2006.**

⁵**To obtain high removals, iron to arsenic ratio must be at least 20:1.**

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**

(g) The commissioner, 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 ten thousand (10,000) persons or fewer for achieving compliance with the MCL for arsenic that will be applicable beginning January 1, 2006:

Small System Compliance Technologies (SSCTs)¹ for Arsenic²

Small system compliance technology	Affordable for listed small system categories³
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

¹Section 1412(b)(4)(E)(ii) of the Act specifies that SSCTs must be affordable and technically feasible for small systems.

²SSCTs for Arsenic V. Preoxidation may be required to convert Arsenic III to Arsenic V.

³The Act (ibid.) specifies three (3) categories of small systems as follows:

- (A) Those serving twenty-five (25) or more, but fewer than five hundred one (501).
- (B) Those serving more than five hundred (500), but fewer than three thousand three hundred one (3,301).
- (C) Those serving more than three thousand three hundred (3,300), but fewer than ten thousand one (10,001).

⁴When 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.

⁵Unlikely to be installed solely for arsenic removal. May require pH adjustment to optimal range if high removals are needed.

⁶Technologies reject a large volume of water; may not be appropriate for areas where water quantity may be an issue.

⁷To obtain high removals, iron to arsenic ratio must be at least 20:1.

(Water Pollution Control Board; 327 IAC 8-2-4; filed Sep 24, 1987, 3:00 p.m.: 11 IR 706; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1006; filed Aug 24, 1994, 8:15 a.m.: 18 IR 22; filed Aug 25, 1997, 8:00 a.m.: 21 IR 34; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1079)

SECTION 3. 327 IAC 8-2-4.1 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-4.1 Collection of samples for inorganic chemical testing

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 4.1. (a) ~~Community water systems~~ CWSs shall conduct monitoring to determine compliance with the MCLs specified in section 4(a), 4(c), and 4(d) of this rule in accordance with this section. ~~Nontransient noncommunity water systems~~ NTNCWSs shall conduct monitoring to determine compliance with the MCLs specified in section 4(a) and 4(d) of this rule in accordance with this section. ~~Transient noncommunity water systems~~ TWSs shall conduct monitoring to determine compliance with the MCLs specified in section 4(a) of this rule in accordance with this section.

(b) When a contaminant listed in section 4 of this rule exceeds the MCL, the supplier of water shall report to the commissioner under section 13 of this rule and shall give notice to the public under 327 IAC 8-2.1-7 through 327 IAC 8-2.1-16. Monitoring after public

notification shall be at a frequency designated by the commissioner and shall continue until the MCL has not been exceeded in two (2) successive samples or until a monitoring schedule as a condition to an enforcement action shall become effective.

(c) Monitoring shall be conducted as follows:

(1) Ground water systems shall take a minimum of one (1) sample at every entry point to the distribution system ~~which that~~ 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.

(2) Surface water systems, including systems with a combination of surface and ground sources, shall take a minimum of one (1) sample at every entry point to the distribution system after any application of treatment or in the distribution system at a point ~~which that~~ 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.

(3) If a system draws water from more than one (1) 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, for example, when water is representative of all sources being used.

(4) The commissioner may reduce the total number of samples ~~which that~~ must be analyzed by allowing the use of compositing. Composite samples from a maximum of five (5) samples are allowed, provided that the detection limit of the method used for analysis is less than one-fifth ($1/5$) of the MCL. Compositing of samples must be completed in the laboratory as follows:

(A) When a composite sample is analyzed, if the concentration in the composite sample is greater than or equal to one-fifth ($1/5$) of the MCL of any inorganic chemical, then a follow-up sample must be analyzed within fourteen (14) days at each sampling point included in the composite. These samples must be analyzed for the contaminants ~~which that~~ exceeded one-fifth ($1/5$) of the MCL in the composite sample. Detection limits for each analytical method and MCLs for each inorganic contaminant are the following:

<u>Contaminant</u>	<u>MCL (mg/l)</u>	<u>Methodology</u>	<u>Detection Limit (mg/l)</u>
Antimony	0.006	Atomic absorption; furnace	0.003
		Atomic absorption; platform	0.0008 ⁵
		ICP-mass spectrometry	0.0004
		Hydride-atomic absorption	0.001
Arsenic	0.010⁶	Atomic absorption; furnace	0.001
		Atomic absorption; platform - stabilized temperature	0.0005⁷
		Atomic absorption; gaseous hydride	0.001
		ICP-mass spectrometry	0.0014⁸
Asbestos	7 MFL ¹	Transmission electron microscopy	0.01 MFL
Barium	2	Atomic absorption; furnace	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 ²	0.0003
		ICP-mass spectrometry	0.0003
Cadmium	0.005	Atomic absorption; furnace	0.0001
		Inductively coupled plasma	0.001
Chromium	0.1	Atomic absorption; furnace	0.001
		Inductively coupled plasma	0.007
			(0.001)
Cyanide	0.2	Distillation, spectrophotometric ³	0.02
		Distillation, automated spectrophotometric ³	0.005
		Distillation, selective electrode ³	0.05
		Distillation, amenable, spectrophotometric ⁴	0.02
Fluoride	4.0	Colorimetric SPADNS; with distillation	0.1
		Potentiometric ion selective electrode	0.1
		Automated alizarin fluoride blue; with distillation (complexone)	0.05
		Automated ion selective electrode	0.1

Mercury	0.002	Manual cold vapor technique	0.0002
		Automated cold vapor technique	0.0002
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
		Manual cadmium reduction	0.01
		Ion chromatography	0.004
Selenium	0.05	Atomic absorption; furnace	0.002
		Atomic absorption; gaseous hydride	0.002
Thallium	0.002	Atomic absorption; furnace	0.001
		Atomic absorption; platform	0.0007 ⁵
		ICP-mass spectrometry	0.0003

¹MFL = million fibers per liter greater than ten (10) micrometers.

²Using a 2× preconcentration step as noted in Method 200.7. Lower method detection limits may be achieved when using a 4× preconcentration.

³Screening method for total cyanides.

⁴Measures “free” cyanides.

⁵Lower method detection limits are reported using stabilized temperature graphite furnace atomic absorption.

⁶The value for arsenic is effective January 1, 2006. Until then, the MCL is 0.05 mg/l.

⁷The MDL reported for EPA Method 200.9 (Atomic Absorption; Platform - Stabilized Temperature) was determined using a 2× concentration step during sample digestion. The MDL determined for samples analyzed using direct analyses, that is, no sample digestion, will be higher. Using multiple depositions, EPA 200.9 is capable of obtaining MDL of 0.0001 mg/l.

⁸Using selective ion monitoring, EPA Method 200.8 (ICP-MS) is capable of obtaining a MDL of 0.0001 mg/l.

(B) If the population served by the system is greater than three thousand three hundred (3,300) persons, then compositing may only be permitted by the commissioner at sampling points within a single system. In systems serving ~~less~~ fewer than or equal to three thousand three hundred (3,300) persons, the commissioner may permit compositing among different systems provided the five (5) sample limit is maintained.

(C) If duplicates of the original sample taken from each sampling point used in the composite sample are available, the system may use these instead of resampling. The duplicate must be analyzed and the results reported to the commissioner within fourteen (14) days after completing analysis of the composite sample, provided the holding time of the sample is not exceeded.

(5) The frequency of monitoring for:

(A) asbestos shall be in accordance with subsection (d);

(B) antimony, **arsenic**, barium, beryllium, cadmium, chromium, cyanide, fluoride, nickel, mercury, selenium, and thallium shall be in accordance with subsection (e);

(C) nitrate shall be in accordance with subsection (f); **and**

(D) nitrite shall be in accordance with subsection (g). ~~and~~

(~~E~~) ~~arsenic shall be in accordance with subsection (f).~~

(d) The frequency of monitoring conducted to determine compliance with the MCL for asbestos specified in section 4(d) of this rule shall be conducted as follows:

(1) Each ~~community CWS and nontransient noncommunity water system~~ **NTNCWS** is required to monitor for asbestos during the first three (3) year compliance period of each nine (9) year compliance cycle beginning in the compliance period starting January 1, 1993.

(2) 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 commissioner for a waiver of the monitoring requirement in subdivision (1). If the commissioner grants the waiver, the system is not required to monitor.

(3) The commissioner may grant a waiver based upon a consideration of the following factors:

(A) Potential asbestos contamination of the water source.

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

(4) A waiver remains in effect for the initial monitoring of the first three (3) year compliance period. Systems not receiving a waiver must monitor in accordance with ~~the provisions of~~ subdivision (1).

- (5) A system vulnerable to asbestos contamination due solely to corrosion of asbestos-cement pipe shall take one (1) sample at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.
- (6) A system vulnerable to asbestos contamination due solely to source water shall monitor in accordance with ~~the provision of~~ subsection (c).
- (7) A system vulnerable to asbestos contamination due both to its source water supply and corrosion of asbestos-cement pipe shall take one (1) sample at a tap served by asbestos-cement pipe and under conditions where asbestos contamination is most likely to occur.
- (8) A system ~~which that~~ exceeds the MCLs as determined in section 4 of this rule shall monitor quarterly beginning in the next quarter after the violation occurred.
- (9) The commissioner may decrease the quarterly monitoring requirement to the frequency specified in subdivision (1) provided the commissioner has determined that the system is reliably and consistently below the MCL. In no case can the commissioner make this determination unless a ground water system takes a minimum of two (2) quarterly samples and a surface (or combined surface/ground) water system takes a minimum of four (4) quarterly samples.
- (10) If monitoring data collected after January 1, 1990, are generally consistent with ~~the requirements of~~ this subsection, then the commissioner may allow systems to use that data to satisfy the monitoring requirement for the initial compliance period beginning January 1, 1993.

(e) The frequency of monitoring conducted for nickel and to determine compliance with the MCLs in section 4 of this rule for antimony, **arsenic**, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, selenium, and thallium shall be as follows:

- (1) Ground water systems shall take one (1) sample at each sampling point during each compliance period. Surface water systems (or combined surface/ground) shall take one (1) sample annually at each sampling point.
- (2) The system may apply to the commissioner for a waiver from the monitoring frequencies specified in subdivision (1).
- (3) A condition of the waiver shall require that a system take a minimum of one (1) sample while the waiver is effective. The term during which the waiver is effective shall not exceed one (1) compliance cycle, which is nine (9) years.
- (4) The commissioner may grant a waiver provided surface water systems have monitored annually for at least three (3) years and ground water systems have conducted a minimum of three (3) rounds of monitoring. (At least one (1) sample shall have been taken since January 1, 1990.) Both surface and ground water systems shall demonstrate that all previous analytical results were less than the ~~maximum contaminant level~~ **MCL**. Systems that use a new water source are not eligible for a waiver until three (3) rounds of monitoring from the new source have been completed. The commissioner may grant a public water system a waiver for monitoring of cyanide, provided that the commissioner determines that the system is not vulnerable due to lack of any industrial source of cyanide.
- (5) In determining the appropriate reduced monitoring frequency, the commissioner shall consider the following:
- (A) Reported concentrations from all previous monitoring.
 - (B) The degree of variation in reported concentrations.
 - (C) Other factors ~~which that~~ may affect contaminant concentrations such as **changes in**:
 - (i) **changes in** ground water pumping rates;
 - (ii) **changes in** the system's configuration;
 - (iii) **changes in** the system's operating procedures; or
 - (iv) **changes in** stream flows or characteristics.
- (6) A decision by the commissioner to grant a waiver shall be made in writing and shall set forth the basis for the determination. The determination may be initiated by the commissioner or upon an application by the public water system. The public water system shall specify the basis for its request. The commissioner shall review and, where appropriate, revise the determination of the appropriate monitoring frequency when the system submits new monitoring data or when other data relevant to the system's appropriate monitoring frequency becomes available.
- (7) Systems ~~which that~~ exceed the MCLs as calculated in subsection (k) shall monitor quarterly beginning in the next quarter after the violation occurred.
- (8) The commissioner may decrease the quarterly monitoring requirement to the frequencies specified in subdivisions (1) and (2) provided it has determined that the system is reliably and consistently below the MCL. In no case can the commissioner make this determination unless a ground water system takes a minimum of two (2) quarterly samples and a surface water system takes a minimum of four (4) quarterly samples.
- (9) All new systems or systems that use a new source of water that begin operation after January 1, 2004, must demonstrate compliance with the MCL within a period of time specified by the commissioner. The system must also comply with the initial sampling frequencies specified by the commissioner to ensure a system can demonstrate compliance with the MCL. Routine and increased monitoring frequencies shall be conducted in accordance with this section.**

(f) All public water systems (~~community, nontransient noncommunity, (CWSs, NTNCWSs, and transient noncommunity systems)~~ **TWSs**) shall monitor to determine compliance with the MCL for nitrate in section 4(a) of this rule under the following monitoring schedules:

- (1) ~~Community CWSs and nontransient noncommunity water systems~~ **NTNCWSs** served by ground water systems shall monitor annually beginning January 1, 1993; systems served by surface water shall monitor quarterly beginning January 1, 1993.
- (2) For ~~community CWSs and nontransient noncommunity water systems;~~ **NTNCWSs**, the repeat monitoring frequency for ground water systems shall be quarterly for at least one (1) year following any one (1) sample in which the concentration is greater than or equal to fifty percent (50%) of the MCL. The commissioner may allow a ground water system to reduce the sampling frequency to annually after four (4) consecutive quarterly samples are reliably and consistently less than the MCL.
- (3) For ~~community CWSs and nontransient noncommunity water systems;~~ **NTNCWSs**, the commissioner may allow a surface water system to reduce the sampling frequency to annually if all analytical results from four (4) consecutive quarters are less than fifty percent (50%) of the MCL. A surface water system shall return to quarterly monitoring if any one (1) sample is greater than or equal to fifty percent (50%) of the MCL.
- (4) Each ~~transient noncommunity water system~~ **TWS** shall monitor annually beginning January 1, 1993.
- (5) After the initial round of quarterly sampling is completed, each ~~community CWS and nontransient noncommunity system~~ **which NTNCWS** that is monitoring annually shall take subsequent samples during the quarter ~~which that~~ previously resulted in the highest analytical result.

(g) All public water systems (~~community, nontransient noncommunity, (CWSs, NTNCWSs, and transient noncommunity systems)~~ **TWSs**) shall monitor to determine compliance with the MCL for nitrite in section 4(a) of this rule under the following monitoring schedules:

- (1) All public water systems shall take one (1) sample at each sampling point in the compliance period beginning January 1, 1993, and ending December 31, 1995.
- (2) After the initial sample, systems where an analytical result for nitrite is less than fifty percent (50%) of the MCL shall monitor at the frequency specified by the commissioner.
- (3) For ~~community, nontransient noncommunity, CWSs, NTNCWSs, and transient noncommunity water systems;~~ **TWSs**, the repeat monitoring frequency for any water system shall be quarterly for at least one (1) year following any one (1) sample in which the concentration is greater than or equal to fifty percent (50%) of the MCL. The commissioner may allow a system to reduce the sampling frequency from quarterly to annually after determining the system is reliably and consistently less than the MCL.
- (4) Systems ~~which that~~ are monitoring annually shall take each subsequent sample during the quarter ~~which that~~ previously resulted in the highest analytical result.

(h) Confirmation sampling shall be as follows:

(1) Where the results of sampling for:

- (A) antimony;
- (B) **arsenic;**
- (C) asbestos;
- (D) barium;
- (E) beryllium;
- (F) cadmium;
- (G) chromium;
- (H) cyanide;
- (I) fluoride;
- (J) mercury;
- (K) selenium; or
- (L) thallium;

indicate the MCL has been exceeded, the commissioner may require that one (1) additional sample be collected as soon as possible after the initial sample was taken (but not to exceed two (2) weeks) at the same sampling point.

(2) Where nitrate or nitrite sampling results indicate the MCL has been exceeded, the system shall take a confirmation sample within twenty-four (24) hours of the system's receipt of notification of the analytical results of the first sample. Systems unable to comply with the twenty-four (24) hour sampling requirement must immediately notify the consumers served by the public water system in accordance with 327 IAC 8-2.1-7 through 327 IAC 8-2.1-16. Systems exercising this option must take and analyze a confirmation sample within two (2) weeks of notification of the analytical results of the first sample.

(3) If a commissioner-required confirmation sample is taken for any contaminant, 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 subsection (k). The commissioner has the discretion to delete results of obvious sampling errors.

(i) The commissioner may require:

(1) more frequent monitoring than specified in subsections (d) through (g); or ~~may require~~

(2) confirmation samples;

for positive and negative results.

(j) Systems may apply to the commissioner to conduct more frequent monitoring than the minimum monitoring frequencies specified in this section.

(k) Compliance with section 4 of this rule shall be determined based on the analytical results obtained at each sampling point in the following manner:

(1) For systems ~~which that~~ are conducting monitoring at a frequency greater than annual, compliance with the MCLs for:

(A) antimony;

(B) **arsenic;**

(C) asbestos;

(D) barium;

(E) beryllium;

(F) cadmium;

(G) chromium;

(H) cyanide;

(I) fluoride;

(J) mercury;

(K) selenium; or

(L) thallium;

is determined by a running annual average at each sampling point. If the average at any sampling point is greater than the MCL, then the system is out of compliance. If any one (1) sample would cause the annual average to be exceeded, then the system is out of compliance immediately. Any sample below the method detection limit shall be calculated at zero (0) for the purpose of determining the annual average. **If a system fails to collect the required number of samples, compliance (average concentration) will be based on the total number of samples collected.**

(2) For systems ~~which that~~ are monitoring annually, or less frequently, the system is out of compliance with the MCLs for:

(A) antimony;

(B) **arsenic;**

(C) asbestos;

(D) barium;

(E) beryllium;

(F) cadmium;

(G) chromium;

(H) cyanide;

(I) fluoride;

(J) mercury;

(K) selenium; or

(L) thallium;

if the level of a contaminant at any sampling point is greater than the MCL. If a confirmation sample is required by the commissioner, the determination of compliance will be based on the **annual** average of the ~~two (2)~~ **initial MCL exceedance and any commissioner-required confirmation** samples. **If a system fails to collect the required number of samples, compliance (average concentration) will be based on the total number of samples collected.**

(3) Compliance with the MCLs for nitrate and nitrite is determined based on one (1) sample if the levels of these contaminants are below the MCLs. If the levels of nitrate or nitrite, or both, exceed the MCLs in the initial sample, a confirmation sample is required in accordance with subsection (h)(2), and compliance shall be determined based upon the average of the initial and confirmation samples.

(4) If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the commissioner may allow the system to give public notice to only the area served by that portion of the system ~~which that~~ is

out of compliance.

(5) Beginning January 1, 2006, arsenic sampling results will be reported to the nearest one-thousandth (0.001) mg/l.

(4) The frequency of monitoring conducted to determine compliance with the MCL for arsenic shall be as follows:

(1) Analyses for all community water systems utilizing surface water sources shall be sampled annually.

(2) Analyses for all community water systems utilizing only ground water sources shall be repeated at three (3) year intervals.

(3) The commissioner has the authority to determine compliance or initiate enforcement action based on analytical results.

(4) If the result of an analysis conducted as required in this section indicates that the results exceed the MCL as determined in section 4 of this rule, the supplier of water shall report to the state within seven (7) days and initiate three (3) additional analyses at the same sampling point within one (1) month.

(5) When the average of four (4) analyses made pursuant to this section, rounded to the same number of significant figures as the MCL for the arsenic, exceeds the MCL, the supplier of water shall notify the commissioner and give notice to the public under section 16 of this rule. Monitoring after public notification shall be at a frequency set by the commissioner and shall continue until the MCL has not been exceeded in two (2) consecutive samples or until a monitoring schedule as a condition to an enforcement action shall become effective.

~~(m)~~ (l) Each public water system shall monitor at the time designated by the commissioner during each compliance period.

~~(n)~~ (m) Sample collection for:

(1) antimony;

(2) arsenic;

(3) asbestos;

(4) barium;

(5) beryllium;

(6) cadmium;

(7) chromium;

(8) cyanide;

(9) fluoride;

(10) mercury;

(11) nickel;

(12) nitrate;

(13) nitrite;

(14) selenium; and

(15) thallium;

under this section shall be conducted using the sample preservation, container, and maximum holding time procedures specified in the following table:

<u>Contaminant</u>	<u>Preservative</u> ³	<u>Container</u> ¹	<u>Time</u> ²
Antimony	HNO ₃	P or G	6 months
Arsenic	HNO₃	P or G	6 months
Asbestos	4°C	P or G	48 hours ⁴
Barium	HNO ₃	P or G	6 months
Beryllium	HNO ₃	P or G	6 months
Cadmium	HNO ₃	P or G	6 months
Chromium	HNO ₃	P or G	6 months
Cyanide	4°C, NaOH	P or G	14 days
Fluoride	none	P or G	1 month
Mercury	HNO ₃	P or G	28 days
Nickel	HNO ₃	P or G	6 months
Nitrate	4°C	P or G	48 hours ⁵
Nitrate-nitrite ⁶	H ₂ SO ₄	P or G	28 days
Nitrite	4°C	P or G	48 hours
Selenium	HNO ₃	P or G	6 months

Thallium

HNO₃

P or G

6 months

¹P = Plastic, hard or soft; G = glass.

²In 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 method.

³When indicated, samples must be acidified at the time of collection to pH < 2 with concentrated acid or adjusted with sodium hydroxide to pH > 12. When chilling is indicated the sample must be shipped and stored at four (4) degrees Celsius or less.

⁴Instructions for containers, preservation procedures, and holding times as specified in Method 100.2 must be adhered to for all compliance analyses including those conducted with Method 100.1.

⁵If the sample is chlorinated, the holding time for an unacidified sample kept at four (4) degrees Celsius is extended to fourteen (14) days.

⁶Nitrate-nitrite refers to a measurement of total nitrate.

(Water Pollution Control Board; 327 IAC 8-2-4.1; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1007; filed Aug 24, 1994, 8:15 a.m.: 18 IR 23; filed Aug 25, 1997, 8:00 a.m.: 21 IR 34; errata filed Dec 10, 1997, 3:45 p.m.: 21 IR 1347; filed Jul 23, 2001, 1:02 p.m.: 24 IR 3946; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1080)

SECTION 4. 327 IAC 8-2-4.2 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-4.2 Analytical methods for inorganic chemical testing

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-11-2; IC 13-14-8; IC 13-18-1; IC 13-18-2

Sec. 4.2. (a) Analyses conducted to determine compliance with section 4 of this rule shall be made in accordance with one (1) of the following methods* for each contaminant:

(1) Antimony as follows:

(A) Atomic absorption¹; furnace, Method 3113B*.

(B) Atomic absorption; platform, Method 200.9*.

(C) ICP-mass spectrometry, Method 200.8*.

(D) Hydride-atomic absorption, Method D-3697-92*.

(2) Arsenic* as follows:

(A) Atomic absorption; furnace, Method ~~D-2972-93C~~* **D 2972-97C*** or Method 3113B*.

(B) Hydride-atomic adsorption, Method ~~D-2972-93B~~* **D 2972-97B*** or Method 3114B*.

(C) Atomic absorption, platform¹, Method 200.9²*.

(D) Inductively coupled plasma technique¹*, Method 200.7^{2, 3}* or Method 3120B³*.

(E) ICP-mass spectrometry, Method 200.8²*.

(3) Asbestos, transmission electron microscopy, Method 100.1* or Method 100.2*.

(4) Barium as follows:

(A) Atomic absorption; furnace, Method 3113B*.

(B) Atomic absorption; direct, Method 3111D*.

(C) Inductively coupled plasma, Method 200.7* or Method 3120B*.

(D) ICP-mass spectrometry, Method 200.8*.

(5) Beryllium as follows:

(A) Atomic absorption; furnace, Method ~~D-3645-93B~~* **D 3645-97B** or Method 3113B.

(B) Atomic absorption; platform, Method 200.9*.

(C) Inductively coupled plasma, Method 200.7* or Method 3120B*.

(D) ICP-mass spectrometry, Method 200.8.

(6) Cadmium as follows:

(A) Atomic absorption; furnace, Method 3113B*.

(B) Inductively coupled plasma¹, Method 200.7*.

(C) ICP-mass spectrometry, Method 200.8*.

(D) Atomic absorption; platform, Method 200.9*.

(7) Chromium as follows:

(A) Atomic absorption; furnace, Method 3113B*.

(B) Inductively coupled plasma, Method 200.7* or Method 3120B*.

(C) ICP-mass spectrometry, Method 200.8*.

- (D) Atomic absorption; platform, Method 200.9*.
- (8) Cyanide as follows:
- (A) Manual distillation followed by:
- (i) Spectrophotometric; amenable, Method ~~D-2036-91B~~* **D 2036-98B*** or Method 4500-CN-G*.
 - (ii) Spectrophotometric; manual, Method ~~D-2036-91A~~* **D 2036-98A***, Method 4500-CN-E*, or Method I-3300-85*.
 - (iii) Spectrophotometric; semiautomated, Method 335.4*.
 - (iv) Method 4500-CN-C*.
 - (v) Method ~~D-2036-91A~~* **D 2036-98A***.
- (B) Selective electrode, Method 4500-CN-F*.
- (C) UV/Distillation/Spectrophotometric; Method Kelada 01.**
- (D) Distillation/Spectrophotometric; Method QuikChem 10-204-00-1-X.**
- (9) Fluoride as follows:
- (A) Ion chromatography, Method 300.0*, Method ~~D-4327-91~~*, **D 4327-97***, or Method 4110B*.
 - (B) Manual distillation; color. SPADNS, Method 4500F-B, D*.
 - (C) Manual electrode, Method D1179-93B* or Method 4500F-C*.
 - (D) Automated electrode, Method 380-75WE*.
 - (E) Automated alizarin, Method 4500F-E* or Method 129-71W*.
- (10) Mercury as follows:
- (A) Manual cold vapor, Method 245.1, Method ~~D3223-91~~*, **D 3223-97***, or Method 3112B*.
 - (B) Automated cold vapor, Method 245.2*.
 - (C) ICP-mass spectrometry, Method 200.8*.
- (11) Nickel as follows:
- (A) Atomic absorption; furnace, Method 3113B*.
 - (B) Atomic absorption; platform, Method 200.9.
 - (C) Atomic absorption; direct, Method 3111B*.
 - (D) Inductively coupled plasma, Method 200.7*, Method 3120B*.
 - (E) ICP-mass spectrometry, Method 200.8*.
- (12) Nitrate as follows:
- (A) Manual cadmium reduction, Method D3867-90B* or Method 4500-NO₃-E*.
 - (B) Automated cadmium reduction, Method 353.2*, Method D3867-90A*, or Method 4500-NO₃-F*.
 - (C) Ion selective electrode, Method 4500-NO₃-D* or Method 601*.
 - (D) Ion chromatography, Method 300.0*, Method ~~D4327-91~~*, **D 4327-97***, Method 4110B*, or Method B-1011*.
- (13) Nitrite as follows:
- (A) Ion chromatography, Method 300.0*, Method ~~D4327-91~~*, **D 4327-97***, Method 4110B*, or Method B-1011*.
 - (B) Automated cadmium reduction, Method 353.2*, Method D3867-90A*, or Method 4500-NO₃-F*.
 - (C) Manual cadmium reduction, Method D3867-90B* or Method 4500-NO₃-E*.
 - (D) Spectrophotometric, Method 4500-NO₂-B*.
- (14) Selenium as follows:
- (A) Hydride-atomic absorption, Method ~~D3859-93A~~* **D 3859-98A*** or Method 3114B*.
 - (B) ICP-mass spectrophotometry, Method 200.8*.
 - (C) Atomic absorption; platform, Method 200.9*.
 - (D) Atomic absorption; furnace, Method ~~D3859-93B~~* **D 3859-98B*** or Method 3113B*.
- (15) Thallium as follows:
- (A) Atomic absorption; platform¹, Method 200.9*.
 - (B) ICP-mass spectrometry, Method 200.8*.

¹Because MDLs reported in EPA Methods 200.7 and 200.9 were determined using a 2× preconcentration step during sample digestion, MDLs determined when samples are analyzed by direct analysis, that is, no sample digestion, will be higher. For direct analysis of cadmium and arsenic by Method 200.7 and arsenic by Method 3120 B, sample preconcentration using pneumatic nebulization may be required to achieve lower detection limits. Preconcentration may also be required for direct analysis of antimony and thallium by Method 200.9 and antimony by Method 3113 B unless multiple in-furnace depositions are made.

²If ultrasonic nebulization is used in the determination of arsenic by Method 200.7, 200.8, or 3120 B, the arsenic must be in the pentavalent state to provide uniform signal response. For Methods 200.7 and 3120 B, both samples and standards must be diluted in the same mixed acid matrix concentration of nitric and hydrochloric acid with the addition of one hundred (100) µL of thirty percent (30%) hydrogen peroxide per one hundred (100) ml of solution. For direct analysis of arsenic with

Method 200.8 using ultrasonic nebulization, samples and standards must contain one (1) mg/l of sodium hypochlorite.

³After January 1, 2006, analytical methods using the ICP-AES technology when analyzing for arsenic may not be used because the detection limits for these methods are eight-thousandths (0.008) mg/l or higher. This restriction means that the two (2) ICP-AES methods (Methods 200.7 and 3120 B) approved for use for the MCL of five-hundredths (0.05) mg/l may not be used for compliance determinations for the revised MCL of ten-thousandths (0.010) mg/l. However, prior to 2005, a system may have compliance samples analyzed with these less sensitive methods.

(b) Analysis under this section shall only be conducted by laboratories that have been certified by EPA or the commissioner. Laboratories may conduct sample analyses under provisional certification until January 1, 1996. To receive certification to conduct analyses for antimony, **arsenic**, asbestos, barium, beryllium, cadmium, chromium, cyanide, fluoride, mercury, nickel, nitrate, nitrite, selenium, and thallium, the laboratory must do the following:

(1) Successfully analyze performance evaluation (PE) samples provided by EPA, the commissioner, or by a third party with approval of the EPA or the commissioner, at least once a year.

(2) For each contaminant that has been included in the PE sample and for each method for which the laboratory desires certification achieve quantitative results on the analyses that are within the following acceptance limits:

<u>Contaminant</u>	<u>Acceptance Limit</u>
Antimony	±30% at ≥0.006 mg/l
Arsenic ¹	2 standard deviations based on study statistics ± 30% at ≥ 0.003 mg/l
Asbestos	2 standard deviations based on study statistics
Barium	±15% at ≥0.15 mg/l
Beryllium	±15% at ≥0.001 mg/l
Cadmium	±20% at ≥0.002 mg/l
Chromium	±15% at ≥0.01 mg/l
Cyanide	±25% at ≥0.1 mg/l
Fluoride	±10% at ≥1 to 10 mg/l
Mercury	±30% at ≥0.0005 mg/l
Nickel	±15% at ≥0.01 mg/l
Nitrate	±10% at ≥0.4 mg/l
Nitrite	±15% at ≥0.4 mg/l
Selenium	±20% at ≥0.01 mg/l
Thallium	±30% at ≥0.002 mg/l

¹Acceptance limit effective January 1, 2006. Until then, limit should be two (2) standard deviations based on study statistics.

*Methods referenced in this section may be obtained as follows:

(1) Method 245.2, "Methods for Chemical Analysis of Water and Wastes", EPA-600/4-79-020, March 1983, available at NTIS, PB84-128677.

(2) Methods 200.8, 200.9, 200.7, and 245.1 may be found in "Methods for the Determination of Metals in Environmental Samples—Supplement I", EPA-600/94-111, May 1994, available from NTIS, PB95-125472, 800-553-6847.

(3) Methods D-3697-92, ~~D-2972-93C, D-2972-93B, D-3645-93B, D-2036-91B, D-2036-91A, D-4327-91, D-1179-93B, D-3223-91, D-3867-90A, D-3867-90B, D-3859-93A, and D-3859-93B~~, may be found in "Annual Book of ASTM Standards", 1994 and 1996, Vols. 11.01 and 11.02, American Society for Testing and Materials, available from the American Society for Testing and Materials, ~~1916 Race Street, Philadelphia, 19103~~ **100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428**. Any year containing the cited version of the method may be used.

(4) ~~Methods D 2972-97C, D 2972-97B, D 3645-97B, D 2036-98A, D 2036-98B, D 4327-97, D 3223-97, D 3859-98A, and D 3859-98B~~ may be found in the "Annual Book of ASTM Standards, 1999, Vols. 11.01 and 11.02, American Society for Testing and Materials, available from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428. Any year containing the cited version of the method may be used.

~~(4) (5) Methods 3113B, 3120B, 3114B, 3111D, 4500-CN⁺C, 4500-CN⁺G, 4500-CN⁺E, 4500-CN⁺F, 4110B, 4500F⁺B, D, 4500F⁺C, 4500F⁺E, 3112B, and 3111B, 4500-NO₃⁻F, 4500-NO₃⁻D, 4500-NO₃⁻E, and 4500-NO₂⁻B~~ may be found in "18th Edition of Standard Methods for the Examination of Water and Wastewater", 1992, or "19th Edition of Standard Methods for the Examination of Water and Wastewater", 1995, American Public Health Association, available from the American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005. Either edition may be used.

(6) ~~Methods 3120B, 4500-CN⁺C, 4500-CN⁺G, 4500-CN⁺E, 4500-CN⁺F, 4110B, 4500F⁺B, D, 4500F⁺C, 4500F⁺E, 3112B, 4500-~~

NO₃-F, 4500-NO₃-D, 4500-NO₃-E, and 4500-NO₂-B may be found in “18th Edition of Standard Methods for the Examination of Water and Wastewater”, 1992, “19th Edition of Standard Methods for the Examination of Water and Wastewater”, 1995, or “20th Edition of Standard Methods for the Examination of Water and Wastewater”, 1998, American Public Health Association, available from the American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005. The cited methods published in any of the three (3) editions may be used.

~~(5)~~ (7) Method I-3300-85 may be found in 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, Colorado 80225-0425.

~~(6)~~ (8) Methods 335.4, 300.0, and 353.2 may be found in “Methods for the Determination of Inorganic Substances in Environmental Samples”, EPA-600/R-93-100, August 1993, available from NTIS, PB94-120821.

~~(7)~~ (9) Method 601 may be found in Technical Bulletin 601 “Standard Method of Test for Nitrate in Drinking Water”, July 1994, PN 221890-001, Analytical Technology, Inc., available from ATI Orion, 529 Main Street, Boston, Massachusetts 02129.

~~(8)~~ (10) Method B-1011 may be found in “Waters Test Method for Determination of Nitrate/Nitrite in Water Using Single Column Ion Chromatography”, August 1987, available from Waters Corporation, 34 Maple Street, Milford, Massachusetts 01757.

~~(9)~~ (11) Method 100.1 may be found in “Analytical Methods for Determination of Asbestos Fibers in Water”, EPA-600/4-83-043, EPA, September 1983, available from NTIS, PB83-260471.

~~(10)~~ (12) Method 100.2 may be found in “Determination of Asbestos Structure Over 10-µm in Length in Drinking Water”, EPA-600/R-94-134, June 1994, available from NTIS, PB94-201902.

~~(11)~~ (13) Method 129-71W may be found in “Fluoride in Water and Wastewater”, December 1972, Technicon Industrial Systems, available from Bran & Luebbe, 1025 Busch Parkway, Buffalo Grove, Illinois 60089.

~~(12)~~ (14) Method 380-75WE may be found in “Fluoride in Water and Wastewater”, February 1976, Technicon Industrial Systems, available from Bran & Luebbe, 1025 Busch Parkway, Buffalo Grove, Illinois 60089.

(15) Method Kelada 01 may be found in “Kelada Automated Test Methods for Total Cyanide, Acid Dissolvable Cyanide, and Thiocyanate”, Rev. 1.2, August 2001, EPA 821-B-01-099, available from the National Technical Information Service (NTIS), PB 2001-108275, 5285 Port Royal Road, Springfield, Virginia 22161, 800-553-6847.

(16) Method QuikChem 10-204-00-1-X may be found in “Digestion and distillation of total cyanide in drinking and wastewaters using MICRO DIST and determination of cyanide by flow injection analysis”, Rev. 2.1, November 30, 2000, available from Lachat Industries, 6645 West Mill Road, Milwaukee, Wisconsin 53218, 414-358-4200.

These methods are also available for copying at the Indiana Department of Environmental Management, Office of Water Quality, 100 North Senate Avenue, Room 1255, Indianapolis, Indiana 46206. (*Water Pollution Control Board; 327 IAC 8-2-4.2; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1008; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258; filed Aug 24, 1994, 8:15 a.m.: 18 IR 29; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 531; filed Aug 25, 1997, 8:00 a.m.: 21 IR 40; filed Jul 23, 2001, 1:02 p.m.: 24 IR 3951*)

SECTION 5. 327 IAC 8-2-5.1 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-5.1 Collection of samples for organic chemical testing other than volatile organic compounds and total trihalomethanes

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 5.1. To determine compliance with section 5(a) of this rule, collection of samples for organic chemical testing, other than volatile organic compounds and ~~total trihalomethanes~~, **TTHM**, shall be made as follows:

(1) Ground water systems shall take a minimum of one (1) sample at every entry point to the distribution system ~~which~~ **that** is representative of each well after treatment (hereafter called a sampling point). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

(2) Surface water systems, including those systems with a combination of surface and ground sources, shall take a minimum of one (1) sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment (hereafter called a sampling point). Each sample must be taken at the same sampling point unless conditions make another sampling point more representative of each source or treatment plant.

(3) If the system draws water from more than one (1) 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, such as when water representative of all sources is being used.

(4) The monitoring frequency is as follows:

(A) Each ~~community CWS and nontransient noncommunity water system~~ **NTNCWS** shall take four (4) consecutive quarterly samples for each contaminant listed in section 5(a) of this rule during each compliance period beginning with the initial

compliance period.

(B) Systems serving more than three thousand three hundred (3,300) persons ~~which that~~ do not detect a contaminant in the initial compliance period may reduce the sampling frequency to a minimum of two (2) quarterly samples in one (1) year during each repeat compliance period.

(C) Systems serving less than or equal to three thousand three hundred (3,300) persons ~~which that~~ do not detect a contaminant in the initial compliance period may reduce the sampling frequency to a minimum of one (1) sample during each repeat compliance period.

(5) Each ~~community CWS and nontransient noncommunity water system~~ **NTNCWS** may apply to the commissioner for a waiver from the requirement of subdivision (4). A system must reapply for a waiver for each compliance period.

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

(A) Previous analytical results.

(B) The proximity of the system to a potential point or nonpoint source of contamination. (Point sources include spills and leaks of chemicals at or near a water treatment facility or at manufacturing, distribution, or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities. Nonpoint sources include the use of pesticides to control insect and weed pests on agricultural areas, forest lands, home and gardens, and other land application uses).

(C) The environmental persistence and transport of the pesticide or polychlorinated biphenyls (PCBs).

(D) How well the water source is protected against contamination due to such factors as:

(i) depth of the well;

(ii) the type of soil; and

(iii) the integrity of the well casing.

(E) Elevated nitrate levels at the water supply source.

(F) Use of PCBs in equipment used in the production, storage, or distribution of water, including, but not limited to, PCBs used in pumps or transformers.

(7) If an organic contaminant listed in section 5(a) of this rule is detected as defined by subdivision (16), in any sample, then the monitoring requirements are as follows:

(A) Each system must monitor quarterly at each sampling point ~~which that~~ resulted in a detection.

(B) The commissioner may decrease the quarterly monitoring requirement specified in clause (A) provided it has determined that the system is reliably and consistently below the MCL. In no case shall the commissioner make this determination unless a ground water system takes a minimum of two (2) quarterly samples and a surface water system takes a minimum of four (4) quarterly samples.

(C) After the commissioner determines the system is reliably and consistently below the MCL, the commissioner may allow the system to monitor annually. Systems ~~which that~~ monitor annually must monitor during the quarter that previously yielded the highest analytical result.

(D) Systems ~~which that~~ have three (3) consecutive annual samples with no detection of contaminant may apply to the commissioner for a waiver as specified in subdivision (6).

(E) If monitoring results in detection of one (1) or more of certain related contaminants:

(i) aldicarb;

(ii) aldicarb sulfoxide;

(iii) aldicarb sulfone;

(iv) heptachlor; and

(v) heptachlor epoxide;

then subsequent monitoring shall include analyses for all related contaminants.

(8) Systems ~~which that~~ violate the requirements of section 5(a) of this rule as determined by subdivision (11) must monitor quarterly. After a minimum of four (4) quarterly samples shows the system is in compliance and the commissioner determines the system is reliably and consistently below the MCL, as specified in subdivision (11), the system shall monitor at the frequency specified in subdivision (7)(C).

(9) The commissioner may require a confirmation sample for positive or negative results. If a confirmation sample is required by the commissioner, the result must be averaged with the first sampling result and the average used for the compliance determination as specified in subdivision (11). The commissioner has the discretion to delete results of obvious sampling errors from this calculation.

(10) The commissioner may reduce the total number of samples a system must analyze by allowing the use of compositing. Composite samples from a maximum of five (5) sampling points are allowed, provided that the detection limit of the method used for analysis is less than one-fifth ($\frac{1}{5}$) of the MCL. Compositing of samples must be done in the laboratory and analyzed within fourteen (14) days of sample collection in accordance with the following:

(A) When a composite sample is analyzed, if the concentration in the composite sample detects one (1) or more contaminants listed in section 5(a) of this rule, then a follow-up sample must be analyzed within fourteen (14) days from each sampling point included in the composite and analyzed for that contaminant.

(B) If duplicates of the original sample taken from each sampling point used in the composite samples are available, the system may use these instead of resampling. The duplicates must be analyzed and the results reported to the commissioner within fourteen (14) days after completion of the composite analysis or before the holding time for the initial sample is exceeded, whichever is sooner.

(C) If the population served by the system is greater than three thousand three hundred (3,300) persons, then compositing may only be permitted by the commissioner at sampling points within a single system. In systems serving less than or equal to three thousand three hundred (3,300) persons, the commissioner may permit compositing among different systems provided the five (5) sample limit is maintained.

(11) Compliance with section 5(a) of this rule shall be determined **such that, if one (1) sampling point is in violation of an MCL, the system is in violation of the MCL and** based on the analytical results obtained at each sampling point in the following manner:

(A) For systems ~~which that~~ are conducting monitoring at a frequency greater than annual, compliance is determined by a running annual average of all samples taken at each sampling point. ~~If the annual average of any sampling point is greater than the MCL, then the system is out of compliance. If the initial sample or a subsequent sample would cause the annual average to be exceeded, then the system is out of compliance immediately. Any samples below the detection limit shall be calculated as zero (0) for purposes of determining the annual average.~~

(B) ~~If Systems~~ monitoring is ~~conducted~~ annually, or less frequently, **whose sample results exceed the regulatory detection level as specified in subdivision (16) must begin quarterly sampling. The system will not be considered in violation of the MCL until it has completed one (1) 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 if the level of a contaminant at any sampling point is greater than with the MCL immediately.**

(D) ~~If a confirmation sample is system fails to collect the required by the commissioner, the determination number of samples, compliance will be based on the average total number of two (2) samples collected.~~

(E) **If a sample result is less than the detection limit, zero (0) will be used to calculate the annual average.**

(12) If monitoring data collected after January 1, 1990, are generally consistent with ~~the requirements~~ of this section and section 5.2 of this rule, then the commissioner may allow systems to use that data to satisfy the monitoring requirement for the initial compliance period.

(13) The commissioner may increase the required monitoring frequency, where necessary, to detect variations within the system such as fluctuations in concentration due to seasonal use and changes in water source.

(14) The commissioner has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by the commissioner's sanctioned representatives or agencies, or both.

(15) Each public water system shall monitor at the time designated by the commissioner within each compliance period.

(16) Method detection levels for contaminants listed in section 5(a) of this rule are as follows:

<u>Contaminant</u>	<u>Detection Limit (mg/l)</u>
Alachlor	0.0002
Atrazine	0.0001
Benzo[a]pyrene	0.00002
Carbofuran	0.0009
Chlordane	0.0002
Dalapon	0.001
1,2-dibromo-3-chloropropane (DBCP)	0.00002
Di(2-ethylhexyl)adipate	0.0006
Di(2-ethylhexyl)phthalate	0.0006
Dinoseb	0.0002
Diquat	0.0004
2,4-D	0.0001

Endothall	0.009
Endrin	0.00001
Ethylene dibromide (EDB)	0.00001
Glyphosate	0.006
Heptachlor	0.00004
Heptachlor epoxide	0.00002
Hexachlorobenzene	0.0001
Hexachlorocyclopentadiene	0.0001
Lindane	0.00002
Methoxychlor	0.0001
Oxamyl	0.002
Picloram	0.0001
Polychlorinated biphenyls (PCBs) (as decachlorobiphenyl)	0.0001
Pentachlorophenol	0.00004
Simazine	0.00007
Toxaphene	0.001
2,3,7,8-TCDD (dioxin)	0.000000005
2,4,5-TP (silvex)	0.0002

(17) All new systems or systems that use a new source of water that begin operation after January 1, 2004, must demonstrate compliance with the MCL within a period of time specified by the commissioner. The system must also comply with the initial sampling frequencies specified by the commissioner to ensure a system can demonstrate compliance with the MCL. Routine and increased monitoring frequencies shall be conducted in accordance with the requirements in this section.

(Water Pollution Control Board; 327 IAC 8-2-5.1; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1010; filed Aug 24, 1994, 8:15 a.m.: 18 IR 33; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 531; filed Aug 25, 1997, 8:00 a.m.: 21 IR 44; filed Apr 21, 1999, 3:22 p.m.: 22 IR 2862; errata filed Apr 28, 1999, 6:36 p.m.: 22 IR 2883; filed Jul 23, 2001, 1:02 p.m.: 24 IR 3953; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1084)

SECTION 6. 327 IAC 8-2-5.2 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-5.2 Analytical methods for organic chemical testing other than volatile organic compounds and total trihalomethanes

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 5.2. (a) Analysis for the contaminants listed in section 5(a) of this rule shall be conducted using the following EPA methods or their ~~equivalent~~ **equivalents** as approved by EPA established as follows:

- (1) Dioxin, as described in Method 1613*.
- (2) 2,4-D³ (as acid, salts, and esters), as described in Method 515.2, Rev 1.1*, Method 555, **Rev 1.0***, Method 515.1, **Rev 4.0***, Method 515.3*, or Method D5317-93*.
- (3) 2,4,5-TP³ (silvex), as described in Method 515.2, Rev 1.1*, Method 555, **Rev 1.0***, Method 515.1, **Rev 4.0***, Method 515.3*, or Method D5317-93*.
- (4) Alachlor¹, as described in Method 505, Rev 2.1*, Method 507, Rev 2.1*, Method 525.2, Rev 2.0*, Method 508.1, Rev 2.0*, or Method 551.1, Rev 1.0*.
- (5) Atrazine¹, as described in Method 505, Rev 2.1*, Method 507, Rev 2.1*, Method ~~525.1~~, **525.2**, **Rev 2.0***, Method 508.1, Rev 2.0*, or Method 551.1, Rev 1.0*.
- (6) Benzo(a)pyrene, as described in Method 525.2, Rev 2.0*, Method 550*, or Method 550.1*.
- (7) Carbofuran, as described in Method 531.1, Rev 3.1*, or Method 6610*.
- (8) Chlordane, as described in Method 505, Rev 2.1*, Method 508, Rev 3.1*, Method 525.2, Rev 2.0*, or Method 508.1, Rev 2.0*.
- (9) Dalapon, as described in Method 552.1, Rev 1.0*, Method 515.1, **Rev 4.0***, Method 552.2, Rev 1.0*, or Method 515.3, **Rev 1.0***.
- (10) Di(2-ethylhexyl)adipate, as described in Method 506, Rev 1.1* or Method 525.2, Rev 2.0*.

- (11) Di(2-ethylhexyl)phthalate, as described in Method 506, Rev 1.1* or Method 525.2, Rev 2.0*.
- (12) Dibromochloropropane (DBCP), as described in Method 504.1, Rev 1.1* or Method 551.1, Rev 1.0*.
- (13) Dinoseb³, as described in Method 515.2, Rev 1.1*, Method 555, **Rev 1.0***, Method 515.1, **Rev 4.0***, or Method 515.3, **Rev 1.0***.
- (14) Diquat, as described in Method 549.2, **Rev 1.0***.
- (15) Endothall, as described in Method 548.1, **Rev 1.0***.
- (16) Endrin, as described in Method 505, Rev 2.1*, Method 508, Rev 3.1*, Method 525.2, Rev 2.0*, Method 508.1, Rev 2.0*, or Method 551.1, Rev 1.0*.
- (17) Ethylene dibromide (EDB), as described in Method 504.1, Rev 1.1* or Method 551.1, Rev 1.0*.
- (18) Glyphosate, as described in Method 547* or Method 6651*.
- (19) Heptachlor, as described in Method 505, Rev 2.1*, Method 508, Rev 3.1*, Method 525.2, Rev 2.0*, Method 508.1, Rev 2.0*, or Method 551.1, Rev 1.0*.
- (20) Heptachlor epoxide, as described in Method 505, Rev 2.1*, Method 508, Rev 3.1*, Method 525.2, Rev 2.0*, Method 508.1, Rev 2.0*, or Method 551.1, Rev 1.0*.
- (21) Hexachlorobenzene, as described in Method 505, Rev 2.1*, Method 508, Rev 3.1*, Method 525.2, Rev 2.0*, Method 508.1, Rev 2.0*, or Method 551.1, Rev 1.0*.
- (22) Hexachlorocyclopentadiene, as described in Method 505, Rev 2.1*, Method 508, Rev 3.1*, Method 525.2, Rev 2.0*, Method 508.1, Rev 2.0*, or Method 551.1, Rev 1.0*.
- (23) Lindane, as described in Method 505, Rev 2.1*, Method 508, Rev 3.1*, Method ~~525.1*~~, **525.2, Rev 2.08**, Method 508.1, Rev 2.0*, or Method 551.1, Rev 1.0*.
- (24) Methoxychlor, as described in Method 505, Rev 2.1*, Method 508, Rev 3.1*, Method ~~525.1*~~, **525.2, Rev 2.0***, Method 508.1, Rev 2.0*, or Method 551.1, Rev 1.0*.
- (25) Oxydemeton-methyl, as described in Method 531.1, Rev 3.1* or Method 6610*.
- (26) PCBs¹:
- (A) as decachlorobiphenyl, as described in Method 508A, **Rev 1.0***, or
- (B) as arochlors, as described in Method 505, Rev 2.1*, Method 508, Rev 3.1*, Method 525.2, Rev 2.0*, or Method 508.1, Rev 2.0*.
- (27) Pentachlorophenol, as described in Method 515.2, Rev 1.1*, Method 525.2, Rev 2.0*, Method 555, **Rev 1.0***, Method 515.1, **Rev 4.0***, Method 515.3, **Rev 1.0***, or Method D5317-93*.
- (28) Picloram³, as described in Method 515.2, Rev 1.1*, Method 555, **Rev 1.0***, Method 515.1, **Rev 4.0***, Method 515.3, **Rev 1.0***, or Method D5317-93*.
- (29) Simazine¹, as described in Method 505, Rev 2.1*, Method 507, Rev 2.1*, Method 525.2, Rev 2.0*, Method 508.1, Rev 2.0*, or Method 551.1, Rev 1.0*.
- (30) Toxaphene, as described in Method 505, Rev 2.1*, Method 508, Rev 3.1*, Method 525.2, Rev 2.0*, or Method 508.1, Rev 2.0*.

¹Substitution of the detector specified in Method 505, Rev 2.1, Method 507, Rev 2.1, Method 508, Rev 3.1, or Method 508.1, Rev 3.0 for the purpose of achieving lower detection limits is allowed as follows. Either an electron capture or nitrogen phosphorus detector may be used provided all regulatory requirements and quality control criteria are met.

²PCBs are qualitatively identified as Arochlors and measured for compliance purposes as decachlorobiphenyl. Users of Method 505, Rev 2.1 may have more difficulty in achieving the required detection limits than users of Method 508.1, Rev 2.0, Method 525.2, Rev 2.0 or Method 508, Rev 3.1.

³Accurate determination of the chlorinated esters requires hydrolysis of the sample as described in Method 515.1, Method 515.2, Rev 1.1, Method 515.3, Method 555, and Method D5317-93.

(b) Analysis for PCBs shall be conducted as follows using the methods in subsection (a):

- (1) Each system ~~which that~~ monitors for PCBs shall analyze each sample using either Method 505, Rev 2.1*, Method 508, Rev 3.1*, Method 508.1, Rev 2.0*, or Method 525.2, Rev 2.0*. Users of Method 505, Rev 2.1 may have more difficulty in achieving the required Arochlor detection limits than users of Method 508.1, Rev 2.0, Method 525.2, Rev 2.0 or Method 508, Rev 3.1.
- (2) If PCBs (as one (1) of seven (7) arochlors) are detected, as designated as follows, in any sample analyzed using Method 505, Rev 2.1* or Method 508, Rev 3.1*, the system shall reanalyze the sample using Method 508A* to quantitate PCBs (as decachlorobiphenyl):

<u>Arochlor</u>	<u>Detection Limit (mg/l)</u>
1016	0.00008
1221	0.02

1232	0.0005
1242	0.0003
1248	0.0001
1254	0.0001
1260	0.0002

(3) Compliance with the PCB ~~maximum contaminant level~~ **MCL** shall be determined based upon the quantitative results of analyses using Method 508A*.

(c) Analysis under this section shall only be conducted by laboratories that have received certification by EPA or the commissioner and have met the following conditions:

(1) Successfully analyze performance evaluation (PE) samples provided by the EPA, the commissioner, or by a third party with the approval of the EPA or the commissioner, at least once per year by each method for which the laboratory desires certification.

(2) For each contaminant that has been included in the PE sample achieve quantitative results on the analyses that are within the following acceptance limits:

<u>Contaminant</u>	<u>Acceptance Limits (Percent)</u>
DBCP	±40
EDB	±40
Alachlor	±45
Atrazine	±45
Benzo(a)pyrene	2 standard deviations
Carbofuran	±45
Chlordane	±45
Dalapon	2 standard deviations
Di(2-ethylhexyl)adipate	2 standard deviations
Di(2-ethylhexyl)phthalate	2 standard deviations
Dinoseb	2 standard deviations
Diquat	2 standard deviations
Endothall	2 standard deviations
Endrin	±30
Glyphosate	2 standard deviations
Heptachlor	±45
Heptachlor epoxide	±45
Hexachlorobenzene	2 standard deviations
Hexachlorocyclopentadiene	2 standard deviations
Lindane	±45
Methoxychlor	±45
Oxamyl	2 standard deviations
PCBs (as decachlorobiphenyl)	0-200
Picloram	2 standard deviations
Simazine	2 standard deviations
Toxaphene	±45
Pentachlorophenol	±50
2,3,7,8-TCDD (dioxin)	2 standard deviations
2,4-D	±50
2,4,5-TP (silvex)	±50

*The methods referenced in this section may be obtained as follows:

(1) Method 508A, **Rev 1.0** and Method 515.1, **Rev 4.0** may be found in "Methods for the Determination of Organic Compounds in Drinking Water", EPA-600/4-88-039, December 1988, revised July 1991, available from NTIS, PB91-231480, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, (800) 553-6847.

(2) Methods 547, 550, and 550.1 may be found in “Methods for the Determination of Organic Compounds in Drinking Water—Supplement I”, EPA-600-4-90-020, July 1990, available from NTIS, PB91-146027, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, (800) 553-6847.

(3) Methods 548.1, ~~549.1~~, **Rev 1.0**, 552.1, **Rev 1.0**, and 555, **Rev 1.0** may be found in “Methods for the Determination of Organic Compounds in Drinking Water—Supplement II”, EPA-600/R-92-129, August 1992, available from NTIS, PB92-207703, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, (800) 553-6847.

(4) Methods 504.1, Rev 1.1, 505, Rev 2.1, 506, Rev 1.1, 507, Rev 2.1, 508, Rev 3.1, 508.1, Rev 2.0, 515.2, Rev 1.1, 525.2, Rev 2.0, 531.1, Rev 3.1, 551.1, Rev 1.0, and 552.2, Rev 1.0 may be found in “Methods for the Determination of Organic Compounds in Drinking Water - Supplement III”, EPA-600/R-95-131, August 1995, available from NTIS, PB95-261616, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, (800) 553-6847.

(5) Method 1613 may be found in “Tetra-through Octa-Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS”, EPA 821-B-94-005, October 1994, available from NTIS, PB95-104774, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, (800) 553-6847.

(6) Method 6651 may be found in “18th Edition of Standard Methods for the Examination of Water and Wastewater”, ~~and~~ “19th Edition of Standard Methods for the Examination of Water and Wastewater”, ~~and~~ **“20th Edition of Standard Methods for the Examination of Water and Wastewater”**, 1992, ~~and~~ 1995, ~~and~~ **1998**, American Public Health Association, available from the American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005. ~~Either edition~~ **Any of these three (3) editions** may be used.

(7) Method 6610 may be found in “Supplement to the 18th Edition of Standard Methods for Water and Wastewater”, ~~or~~ “19th Edition of Standard Methods for the Examination of Water and Wastewater”, ~~or~~ **“20th Edition of Standard Methods for the Examination of Water and Wastewater”**, 1994, ~~and~~ 1995, ~~and~~ **1998**, American Public Health Association, available from the National Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005. ~~Either publication~~ **Any of these three (3) publications** may be used.

(8) Other required analytical test procedures germane to the conduct of these analyses are contained in “Technical Notes of Drinking Water Methods”, EPA/600/R-94-173, October 1994, available from NTIS, PB95-104766, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161, (800) 553-6847.

(9) EPA Methods 515.3, **Rev 1.0** and 549.2, ~~are available from U.S. EPA National Exposure Research Laboratory (NERL), 26 West Martin Luther King Drive, Cincinnati, Ohio 45268; the phone number is (513) 569-7586~~ **Rev 1.0 may be found in “Methods for the Determination of Organic and Inorganic Compounds in Drinking Water, Volume 1”, 2000, EPA 815-R-00-014, available from U.S. EPA/NSCEP, Post Office Box 42419, Cincinnati, Ohio 42419, (800) 490-9198.**

(10) ASTM Method D5317-93 may be found in the “Annual Book of ASTM Standards”, ~~1996~~, **1999**, Vol. 11.02, available from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428. Method D5317-93 may also be found in any other edition of the “Annual Book of ASTM Standards” published from 1993 until the effective date of this rule.

(11) **Method 531.2, “Measurement of N-methylcarbamoyloximes and N-methylcarbamates in Water by Direct Aqueous Inactivation HPLC with Postcolumn Derivatization”, Rev. 1.0, September 2001, EPA 815/B/01/002 can be assessed and downloaded directly on-line at www.epa.gov/safewater/methods/sorcal.html.**

These methods are available for copying at the Indiana Department of Environmental Management, Office of Water Quality, 100 North Senate Avenue, Room 1255, Indianapolis, Indiana 46206. (*Water Pollution Control Board; 327 IAC 8-2-5.2; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1011; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258; filed Aug 24, 1994, 8:15 a.m.: 18 IR 35; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 531; filed Aug 25, 1997, 8:00 a.m.: 21 IR 46; errata filed Dec 10, 1997, 3:45 p.m.: 21 IR 1347; filed Jul 23, 2001, 1:02 p.m.: 24 IR 3956*)

SECTION 7. 327 IAC 8-2-5.5 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-5.5 Collection of samples for volatile organic compound testing other than total trihalomethanes; community and nontransient noncommunity water systems

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 5.5. (a) ~~Community water systems CWSs and nontransient noncommunity water systems NTNCWSs~~ shall collect samples for volatile organic compound testing in order to determine compliance with section 5.4 of this rule, beginning with the initial compliance period, as follows:

(1) Ground water systems shall take a minimum of one (1) sample at every entry point to the distribution system ~~which that~~ is representative of each well after treatment (hereafter called a sampling point). Each sample must be taken at the same sampling

point, unless conditions make another sampling point more representative of each source or treatment plant, or within the distribution system.

(2) Surface water systems (or combined surface/ground) shall take a minimum of one (1) sample at points in the distribution system that are representative of each source or at each entry point to the distribution system after treatment (hereafter called a sampling point). Each sample must be taken at the same sampling point, unless conditions make another sampling point more representative of each source or treatment plant, or within the distribution system.

(3) If the system draws water from more than one (1) source and sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions such as when water representative of all sources is being used.

(4) Each ~~community CWS and nontransient noncommunity water system~~ NTNCWS shall take four (4) consecutive quarterly samples for each contaminant listed in section 5.4 of this rule, except vinyl chloride, during each compliance period, beginning in the initial compliance period.

(5) If the initial monitoring for contaminants listed in section 5.4 of this rule, as allowed by ~~subsection (b)~~, **subdivision (16)**, has been completed by December 31, 1992, and the system did not detect any contaminant listed in section 5.4 of this rule, then each ground and surface water system shall take one (1) sample annually beginning with the initial compliance period.

(6) After a minimum of three (3) years of annual sampling, the commissioner may allow ground water systems with no previous detection of any contaminant listed in section 5.4 of this rule to take one (1) sample during each compliance period.

(7) Each community and nontransient noncommunity ground water system ~~which that~~ does not detect a contaminant listed in section 5.4 of this rule may apply to the commissioner for a waiver from the requirements of subdivisions (5) and (6) after completing the initial monitoring. As used in this section, "detection" means greater than or equal to five ten-thousandths (0.0005) milligram per liter. A waiver shall be effective for no more than six (6) years (two (2) compliance periods). The commissioner may also issue waivers to small systems for the initial round of monitoring for 1,2,4-trichlorobenzene.

(8) The commissioner may grant a waiver after evaluating the following factors:

(A) Knowledge of previous use (including transport, storage, or disposal) of the contaminant within the watershed or zone of influence of the system. If a determination by the commissioner reveals no previous use of the contaminant within the watershed or zone of influence, a waiver may be granted.

(B) If previous use of the contaminant is unknown or if the contaminant has been used previously, then the following factors shall be used to determine whether a waiver is granted:

(i) Previous analytical results.

(ii) The proximity of the system to a potential point or nonpoint source of contamination. Point sources include spills and leaks of chemicals at or near a water treatment facility or at manufacturing, distribution, or storage facilities, or from hazardous and municipal waste landfills and other waste handling or treatment facilities.

(iii) The environmental persistence and transport of the contaminants.

(iv) The number of persons served by the public water system, and the proximity of a smaller system to a larger system.

(v) How well the water source is protected against contamination, such as whether it is a surface or ground water system. Ground water systems must consider factors such as the depth of the well, the type of soil, and wellhead protection. Surface water systems must consider watershed protection.

(9) As a condition of the waiver, a ground water system must take one (1) sample at each sampling point during the time the waiver is effective, for example, one (1) sample during two (2) compliance periods or six (6) years, and update its vulnerability assessment considering the factors listed in subdivision (8). Based on this vulnerability assessment, the commissioner must reconfirm that the system is nonvulnerable. If the commissioner does not make this reconfirmation within three (3) years of the initial determination, then the waiver is invalidated and the system is required to sample annually as specified in subdivision (5).

(10) Each community and nontransient noncommunity surface water system ~~which that~~ does not detect a contaminant listed in section 5.4 of this rule may apply to the commissioner for a waiver from ~~the requirements of~~ subdivision (5) after completing the initial monitoring. Composite samples from a maximum of five (5) sampling points are allowed provided that the detection limit of the method used for analysis is less than one-fifth ($1/5$) of the MCL. Systems meeting this criterion must be determined by the commissioner to be nonvulnerable based on a vulnerability assessment during each compliance period. Each system receiving a waiver shall sample at the frequency specified by the commissioner (if any).

(11) If a contaminant listed in section 5.4 of this rule, except vinyl chloride, is detected at a level exceeding five ten-thousandths (0.0005) milligram per liter in any sample, then the monitoring requirements will be as follows:

(A) The system must monitor quarterly at each sampling point ~~which that~~ resulted in a detection.

(B) The commissioner may decrease the quarterly monitoring requirement specified in clause (A) provided it has determined that the system is reliably and consistently below the MCL. In no case shall the commissioner make this determination unless a ground water system takes a minimum of two (2) quarterly samples and a surface water system takes a minimum of four (4) quarterly samples.

(C) If the commissioner determines that the system is reliably and consistently below the MCL, the commissioner may allow the system to monitor annually. Systems ~~which that~~ monitor annually must monitor during the quarter or quarters ~~which that~~ previously yielded the highest analytical result.

(D) Systems ~~which that~~ have three (3) consecutive annual samples with no detection of a contaminant may apply to the commissioner for a waiver as specified in subdivision (7).

(E) Ground systems ~~which that~~ have detected one (1) or more two-carbon organic compounds:

- (i) trichloroethylene;
- (ii) tetrachloroethylene;
- (iii) 1,2-dichloroethane;
- (iv) 1,1,1-trichloroethane;
- (v) cis-1,2-dichloroethylene;
- (vi) trans-1,2-dichloroethylene; or
- (vii) 1,1-dichloroethylene;

shall monitor quarterly for vinyl chloride. A vinyl chloride sample shall be taken at each sampling point at which one (1) or more of the two-carbon organic compounds was detected. If the results of the first analysis do not detect vinyl chloride, the commissioner may reduce the quarterly monitoring frequency of vinyl chloride monitoring to one (1) sample during each compliance period. Surface water systems are required to monitor for vinyl chloride as specified by the commissioner.

(12) Systems ~~which that~~ violate the requirements of section 5.4 of this rule, as determined by subdivision (15), must monitor quarterly. After a minimum of four (4) consecutive quarterly samples ~~which that~~ show the system is in compliance as specified in subdivision (15) if the commissioner determines that the system is reliably and consistently below the MCL, the system may monitor at the frequency and times specified in subdivision (11)(C).

(13) The commissioner may require a confirmation sample for positive or negative results. If a confirmation sample is required by the commissioner, the result must be averaged with the first sampling result and the average is used for the compliance determination as specified by subdivision (15). The commissioner has the discretion to delete results of obvious sampling errors from this calculation.

(14) The commissioner may reduce the total number of samples a system must analyze by allowing the use of compositing. Composite samples from a maximum of five (5) sampling points are allowed, provided that the detection limit of the method used for analysis is less than one-fifth ($\frac{1}{5}$) of the MCL. Compositing of samples must be done in the laboratory and analyzed within fourteen (14) days of sample collection as follows:

(A) If the concentration in the composite sample is greater than or equal to five ten-thousandths (0.0005) milligram per liter for any contaminant listed in section 5.4 of this rule, then a follow-up sample must be analyzed within fourteen (14) days from each sampling point included in the composite, and be analyzed for that contaminant.

(B) If duplicates of the original sample taken from each sampling point used in the composite sample are available, the system may use the duplicates instead of resampling. The duplicates must be analyzed and the results reported to the commissioner within fourteen (14) days after completing analysis of the composite sample, provided the holding time of the sample is not exceeded.

(C) Compositing may only be permitted by the commissioner at sampling points within a single system if the population served by the system is greater than three thousand three hundred (3,300) persons. In systems serving less than or equal to three thousand three hundred (3,300) persons, the commissioner may permit compositing among different systems provided the five (5) sample limit is maintained.

(D) Compositing of samples prior to gas chromatography (GC) analysis shall be as follows:

- (i) Add five (5) milliliters or equal larger amounts of each sample (up to five (5) samples are allowed) to a twenty-five (25) milliliter glass syringe. Special precautions must be made to maintain zero (0) headspace in the syringe.
- (ii) The samples must be cooled at four (4) degrees Celsius during this step to minimize volatilization losses.
- (iii) Mix well and draw out a five (5) milliliter aliquot for analysis.
- (iv) Follow sample introduction, purging, and desorption steps described in the method.
- (v) If less than five (5) samples are used for compositing, a proportionately smaller syringe may be used.

(E) Compositing of samples prior to gas chromatography/mass spectrometry (GS/MS) analysis shall be as follows:

- (i) Inject five (5) milliliters or larger amounts of each aqueous solution (up to five (5) samples are allowed) into a twenty-five (25) milliliter purging device using the sample introduction technique described in the method.
- (ii) The total volume of the sample in the purging device must be twenty-five (25) milliliters.
- (iii) Purge and desorb as described in the method.

(15) Compliance with section 5.4 of this rule shall be determined **such that, if one (1) sampling point is in violation of an MCL, the system is in violation of the MCL and** based on the analytical results obtained at each sampling point using the following criteria:

(A) For systems ~~which that~~ are conducting monitoring at a frequency greater than annually, compliance is determined by a running annual average of all samples taken at each sampling point. ~~If the annual average of any sampling point is greater than the MCL, then the system is out of compliance. If the initial sample or a subsequent sample would cause the annual average to be exceeded, then the system is out of compliance immediately.~~

(B) ~~If Systems~~ monitoring is ~~conducted~~ annually, or less frequently, ~~whose sample results exceed the MCL must begin quarterly sampling. The system will not be considered in violation of the MCL until it has completed one (1) 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 if the level of a contaminant at any sampling point is greater than with the MCL immediately.~~

(D) ~~If a confirmation sample is system fails to collect the required by the commissioner, the determination number of samples, compliance will be based on the average total number of two (2) samples collected.~~

(E) ~~If a sample result is less than the detection limit, zero (0) will be used to calculate the annual average.~~

~~(F)~~ (F) If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, the commissioner may allow the system to give public notice to only that area served by that portion of the system ~~which that~~ is out of compliance.

~~(b)~~ (16) The commissioner may allow the use of monitoring data collected after January 1, 1988, for purposes of initial monitoring compliance. If the data are generally consistent with the other requirements of this section, the commissioner may use these data (a single sample rather than four (4) quarterly samples) to satisfy the initial monitoring requirement of ~~subsection (a)(4) subdivision (4).~~ Systems ~~which that~~ use grandfathered samples and do not detect any contaminant listed in section 5.4 of this rule, except vinyl chloride, shall begin monitoring annually in accordance with ~~subsection (a)(5); subdivision (5),~~ beginning with the initial compliance period.

~~(c)~~ (17) The commissioner may increase required monitoring where necessary to detect variations within the system.

~~(d)~~ (18) To receive certification to conduct analyses for the contaminants in section 5.4 of this rule, excluding vinyl chloride, each certified laboratory must meet the following requirements:

~~(1)~~ (A) Successfully analyze performance evaluation (PE) samples provided by EPA, the commissioner, or by a third party with the approval of EPA or the commissioner, at least once a year by each method for which the laboratory desires certification.

~~(2)~~ (B) Achieve the quantitative acceptance limits under ~~subdivisions (3) and (4) clauses (C) and (D)~~ for at least eighty percent (80%) of the regulated organic chemicals in section 5.4 of this rule, excluding vinyl chloride.

~~(3)~~ (C) Achieve quantitative results on the analyses performed under ~~subdivision (1) clause (A)~~ that are within plus or minus twenty percent ($\pm 20\%$) of the actual amount of the substances in the PE sample when the actual amount is greater than or equal to ten-thousandths (**0.010**) milligrams per liter. ~~(≥ 0.010 mg/l).~~

~~(4)~~ (D) Achieve quantitative results on the analyses performed under ~~subdivision (1) clause (A)~~ that are within plus or minus forty percent ($\pm 40\%$) of the actual amount of the substances in the PE sample when the actual amount is less than ten-thousandths (**0.010**) milligrams per liter. ~~(≤ 0.010 mg/l).~~

~~(5)~~ (E) Achieve a method detection limit of five ten-thousandths (**0.0005**) milligram per liter, ~~(0.0005 mg/l),~~ according to the procedures in 40 CFR 136, Appendix B*.

~~(e)~~ (19) To receive certification to conduct analyses for vinyl chloride, the laboratory must meet the following requirements:

~~(1)~~ (A) Successfully analyze PE samples provided by EPA, the commissioner, or by a third party with the approval of EPA or the commissioner, at least once a year by each method for which the laboratory desires certification.

~~(2)~~ (B) Achieve quantitative results on the analyses performed under ~~subdivision (1) clause (A)~~ that are within plus or minus forty percent ($\pm 40\%$) of the actual amount of vinyl chloride in the PE sample.

~~(3)~~ (C) Achieve a method detection limit of five ten-thousandths (**0.0005**) milligram per liter, ~~(0.0005 mg/l),~~ according to the procedures in 40 CFR 136, Appendix B*.

~~(4)~~ (D) Obtain certification for the contaminants listed in section 5.4 of this rule.

~~(f)~~ (20) Each public water system shall monitor at the time designated by the commissioner within each compliance period.

~~(g)~~ (21) The commissioner may increase required monitoring where necessary to detect variations within the system.

~~(h)~~ (22) The commissioner has the authority to determine compliance or initiate enforcement based upon analytical results or other information.

(23) All new systems or systems that use a new source of water that begin operation after January 1, 2004, must demonstrate compliance with the MCL within a period of time specified by the commissioner. The system must also comply with the initial sampling frequencies specified by the commissioner to ensure a system can demonstrate compliance with the MCL. Routine and increased monitoring frequencies shall be conducted in accordance with the requirements in this section.

40 CFR 136, Appendix B is incorporated by reference. Copies of this regulation may be obtained from the Superintendent of

Documents, Government Printing Office, Washington, D.C., 20402, or from the Indiana Department of Environmental Management, Office of Water Quality, Indiana Government Center-North, 100 North Senate Avenue, Room N1255, Indianapolis, Indiana 46206. (*Water Pollution Control Board; 327 IAC 8-2-5.5; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1014; errata filed Jan 9, 1991, 2:30 p.m.: 14 IR 1070; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258; filed Aug 24, 1994, 8:15 a.m.: 18 IR 39; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 531; filed Oct 24, 1997, 4:30 p.m.: 21 IR 936; filed Jul 23, 2001, 1:02 p.m.: 24 IR 3960; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1089*)

SECTION 8. 327 IAC 8-2-8.5 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-8.5 Requirement for filtration and disinfection

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 8.5. (a) Effective June 29, 1993, a public water system that uses a surface water source must provide filtration in accordance with this section.

(b) A public water system that uses a ground water source under the direct influence of surface water shall provide filtration in accordance with this section beginning eighteen (18) months after the commissioner determines that it is under the direct influence of surface water from the date specified in section 8.2 of this rule.

(c) A public water system that uses a surface water source or a ground water source under the direct influence of surface water must provide treatment consisting of both disinfection, as specified in section 8.6 of this rule, and filtration treatment. Filtration treatment shall be done by one (1) of the following techniques, and the turbidity level of representative samples of a system's filtered water, regardless of filtration technique used, shall at no time exceed five (5) nephelometric turbidity units (NTU) in any given sample, measured as specified in section 8.7 of this rule:

(1) For systems using conventional filtration or direct filtration, the turbidity level of representative samples of a system's filtered water must be less than or equal to one-half (0.5) NTU in at least ninety-five percent (95%) of the total number of measurements taken each month, measured as specified in sections 8.7(4) and 8.8(b) of this rule, except that if the commissioner determines that the system is capable of achieving at least ninety-nine and nine-tenths percent (99.9%) removal ~~and/or~~ **or** inactivation, **or both**, of *Giardia lamblia* cysts at some turbidity level higher than one-half (0.5) NTU in at least ninety-five percent (95%) of the total number of measurements taken each month, the commissioner may substitute this higher turbidity limit for that system. However, in no case may the commissioner approve a turbidity limit that allows more than one (1) NTU in more than five percent (5%) of the samples taken each month, measured as specified in sections 8.7(4) and 8.8(b) of this rule. Upon the effective date of this rule, systems serving a population of:

(A) at least ten thousand (10,000) individuals; **and**

(B) **beginning January 1, 2005, fewer than ten thousand (10,000) individuals;**
shall meet the turbidity requirements in 327 IAC 8-2.6-3.

(2) For systems using slow sand filtration, the turbidity level of representative samples of a system's filtered water must be less than or equal to one (1) NTU in at least ninety-five percent (95%) of the measurements taken each month, measured as specified in sections 8.7(4) and 8.8(b) of this rule, except where the commissioner determines that there is no significant interference with disinfection at a higher turbidity level.

(3) For systems using diatomaceous earth filtration, the turbidity level of representative samples of a public water system's filtered water must be less than or equal to one (1) NTU in at least ninety-five percent (95%) of the measurements taken each month, measured as specified in sections 8.7(4) and 8.8(b) of this rule.

(4) A public water system may use a filtration technology not listed in this subsection if it demonstrates to the commissioner, using pilot plant studies or other means, that the alternative filtration technology, in combination with disinfection treatment that meets ~~the requirements of~~ section 8.6 of this rule, consistently achieves ninety-nine and nine-tenths percent (99.9%) removal ~~and/or~~ **or** inactivation, **or both**, of *Giardia lamblia* cysts and ninety-nine and ninety-nine hundredths percent (99.99%) removal ~~and/or~~ **or** inactivation, **or both**, of viruses. For a system that makes this demonstration, ~~the requirements of this subsection apply.~~ **applies.** Upon the effective date of this rule, systems serving a population of:

(A) at least ten thousand (10,000) individuals; **and**

(B) **beginning January 1, 2005, fewer than ten thousand (10,000) individuals;**
shall meet the requirements for other filtration technologies in 327 IAC 8-2.6-3.

(d) During plant operation, each public water system subject to this section shall be operated only by personnel who have been

certified by the commissioner under 327 IAC 8-11 through 327 IAC 8-12.

(e) In addition to complying with requirements in this section, systems serving a population of:

(1) at least ten thousand (10,000) individuals; and

(2) beginning January 1, 2005, fewer than ten thousand (10,000) individuals;

shall also comply with the requirements in ~~327 IAC 8-2-6-1~~: **327 IAC 8-2.6.** (*Water Pollution Control Board; 327 IAC 8-2-8.5; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1024; errata filed Apr 5, 1991, 3:30 p.m.: 14 IR 1626; errata, 14 IR 1730; filed Apr 12, 1993, 11:00 a.m.: 16 IR 2160; filed May 1, 2003, 12:00 p.m.: 26 IR 2816*)

SECTION 9. 327 IAC 8-2-8.7 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-8.7 Analytical and monitoring requirements; fecal coliform, total coliform, turbidity, disinfection

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-11-2; IC 13-14-8; IC 13-18-1; IC 13-18-2

Sec. 8.7. Only the analytical methods and procedures specified in this section, or otherwise approved by EPA, may be used to demonstrate compliance with the requirements of sections 8.5 and 8.6 of this rule. Measurements for pH, turbidity, temperature, and residual disinfectant concentrations must be conducted using methods specified in this rule. Measurements for total coliforms, fecal coliforms, and HPC must be conducted by a laboratory certified by the commissioner or EPA under 40 CFR 141.28*. Until laboratory certification criteria are developed for the analysis of fecal coliforms and HPC, any laboratory certified for total coliforms analysis by the commissioner or EPA is deemed certified for fecal coliforms and HPC analysis. The following procedures shall be conducted in accordance with the publications listed as follows:

(1) Total coliform¹ as set forth in the following:

(A) Total coliform fermentation technique^{2, 3, 4}, Method 9221A* and B*. ~~and C*.~~

(B) Total coliform membrane filter technique⁷, Method 9222A*, B*, and C*.

(C) ONPG-MUG test membrane⁵, Method 9223*.

(D) Presence-Absence (P-A) coliform test^{4, 7}, Method 9221D*.

(E) Colisure test⁸.*

(F) E*Colite test*.

(G) m-ColiBlue24 test*.

(H) ReadyCult Coliforms 100 Presence/Absence test*.

(I) Membrane Filter Technique using Chromocult Coliform Agar*.

(J) Colitag test*.

(2) Fecal coliforms¹ as set forth in:

(A) fecal coliform procedure⁹, Method 9221E*; or

(B) fecal coliform filter procedure, Method 9222D.

(3) Heterotrophic bacteria¹, Method 9215B*, pour plate method.

(4) Turbidity as set forth in:

(A) nephelometric method, Method 2130B* or Method 180.1*; or

(B) Great Lakes Instruments method, Method 2*.

(5) Residual disinfectant concentrations for free chlorine and combined chlorine (chloramines) as set forth in the following methods:

(A) Method 4500-Cl D*, amperometric titration method.

(B) Method 4500-Cl F*, DPD ferrous titrimetric method.

(C) Method 4500-Cl G*, DPD colorimetric method.

(D) Method 4500-Cl H*, syringaldazine (FACTS).

(E) DPD colorimetric test kits, if approved by the commissioner.

(F) Free chlorine residuals may be measured continuously by adapting a specified chlorine residual method for use with a continuous monitoring instrument, provided the chemistry, accuracy, and precision remain the same. Instruments used for continuous monitoring must be calibrated with a grab sample measurement at least every five (5) days, or with a protocol approved by the commissioner.

(6) Residual disinfectant concentrations for ozone by the indigo method, Method 4500-O₃ B*.

(7) Residual disinfectant concentrations for chlorine dioxide must be measured by Method 4500-ClO₂ C, amperometric method, Method 4500-ClO₂ E*, amperometric method, or Method 4500-ClO₂ D*, DPD method.

(8) Residual disinfectant concentrations for total chlorine by the following methods:

(A) Method 4500-Cl D*, amperometric titration.

(B) Method 4500-Cl E*, amperometric titration (low level measurement).

(C) Method 4500-Cl F*, DPD ferrous titrimetric.

(D) Method 4500-Cl I, iodometric electrode.

(E) Method 4500-Cl G*, DPD colorimetric.

(F) Total chlorine residuals may be measured continuously by adapting a specified chlorine residual method for use with a continuous monitoring instrument, provided the chemistry, accuracy, and precision remain the same. Instruments used for continuous monitoring must be calibrated with a grab sample measurement at least every five (5) days, or with a protocol approved by the commissioner.

¹The time from sample collection to initiation of analysis may not exceed ~~eight (8)~~ **thirty (30)** hours. Systems must hold samples below ten (10) degrees Celsius during transit.

²Lactose broth, as commercially available, may be used ~~in lieu instead~~ of lauryl tryptose broth if the system conducts at least twenty-five (25) parallel tests between this medium and lauryl tryptose broth using the water normally tested, and this comparison demonstrates that the false-positive rate and false-negative rate for total coliforms using lactose broth, is less than ten percent (10%).

³Media should cover inverted tubes at least one-half (½) to two-thirds (⅔) after the sample is added.

⁴No requirement exists to run the completed phase on ten percent (10%) of all total coliform-positive confirmed tubes.

⁵The ONPG-MUG test is also known as the Autoanalysis Colilert System.

⁶MI Agar may also be used*.

⁷**Six (6) times formulation strength may be used if the medium is filter-sterilized rather than autoclaved.**

⁸**The Colisure test may be read after an incubation time of twenty-four (24) hours.**

⁹A-1 broth may be held up to three (3) months in a tightly closed screwcap tube at four (4) degrees Celsius.

*The following methods are incorporated by reference:

(1) ~~Methods referenced in this section, except Method 180.1 and the Great Lakes Instruments Method 2, 2130B, 4500-Cl D, 4500-Cl E, 4500-Cl F, 4500-Cl G, 4500-Cl H, 4500-CL-I, 4500-ClO₂ C, 4500-ClO₂ D, 4500-ClO₂ E, 9215B, 9221A, 9221B, 9221D, 9221E, 9222A, 9222B, 9222C, 9222D, and 9223 may be found in “18th Edition of Standard Methods for the Examination of Water and Wastewater”, and “19th Edition of Standard Methods for the Examination of Water and Wastewater”, and “20th Edition of Standard Methods for the Examination of Water and Wastewater”, 1992, and 1995, and 1998 available from the American Public Health Association, 1015 Fifteenth Street, Washington, D.C. 20005. Either edition~~ **The cited methods published in any of these three (3) editions may be used.**

(2) **Method 4500-O₃ B may be found in “18th Edition of Standard Methods for the Examination of Water and Wastewater” and “19th Edition of Standard Methods for the Examination of Water and Wastewater”, 1992 and 1995, available from the American Public Health Association, 1014 Fifteenth Street, Washington, D.C. 20005. Either edition may be used.**

(3) **A description of the Colisure Test, February 28, 1994, may be obtained from IDEXX Laboratories, Inc., One IDEXX Drive, Westbrook, Maine 04092.**

(4) **A description of the E*Colite test, “Presence/Absence for Coliforms and E. coli in Water”, December 21, 1997, is available from Charm Sciences, Inc., 36 Franklin Street, Malden, Massachusetts 02148-4120.**

(5) **A description of the m-ColiBlue24 test, August 17, 1999, is available from the Hach Company, 100 Dayton Avenue, Ames, Iowa 50010.**

(6) **The ReadyCult Coliforms 100 Presence/Absence Test is described in the document “ReadyCult Coliforms 100 Presence/Absence Test for Indication of Coliform Bacteria and Escherichia coli in Finished Waters”, November 2000, Version 1.0, available from EM Science, an affiliate of Merck KggA of Darmstadt, Germany, 480 South Democrat Road, Gibbstown, New Jersey 08027-0342.**

(7) **Membrane Filter Technique using Chromocult Coliform Agar is described in the document “Chromocult Coliform Agar Presence/Absence Membrane Filter Test Method for Detection and Identification of Coliform Bacteria and Escherichia coli in Finished Waters”, November 2000, Version 1.0, available from EM Science, an affiliate of Merck KggA of Darmstadt, Germany, 480 South Democrat Road, Gibbstown, New Jersey 08027-0342.**

(8) **Colitag product for the determination of presence/absence of total coliforms and E. coli is described in “Colitag Product as a Test for Detection and Identification of Coliforms and E. coli Bacteria in Drinking Water and Source Water as Required in National Primary Drinking Water Regulations”, August 2001, available from CPI International, Inc., 5580 Skylane Drive, Santa Rosa, California 95403. The telephone number is (800) 878-7654.**

~~(2)~~ **(9) Method 180.1 may be found in “Methods for the Determination of Inorganic Substances in Environmental Samples”, EPA-600/R-93-100, August 1993, available from NTIS, PB94-121811, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161.**

~~(3)~~ **(10) The Great Lakes Instrument (GLI) Method 2 may be found in “Turbidity”, November 2, 1992, Great Lakes Instruments,**

Inc., 8855 North 55th Street, Milwaukee, Wisconsin 53223.

~~(4)~~ **(11)** 40 CFR 141.28 may be obtained from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402.

These methods are available for copying at the Indiana Department of Environmental Management, Office of Water Quality, 100 North Senate Avenue, Room 1255, Indianapolis, Indiana 46206. (*Water Pollution Control Board; 327 IAC 8-2-8.7; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1025; errata filed Jan 9, 1991, 2:30 p.m.: 14 IR 1070; filed Apr 12, 1993, 11:00 a.m.: 16 IR 2161; filed Aug 25, 1997, 8:00 a.m.: 21 IR 53; errata filed Dec 10, 1997, 3:45 p.m.: 21 IR 1348; filed Jul 23, 2001, 1:02 p.m.: 24 IR 3970*)

SECTION 10. 327 IAC 8-2-9 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-9 Radium-226, radium-228, gross alpha particle radioactivity, and uranium; maximum contaminant levels

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 9. The following are the ~~maximum contaminant levels~~ **MCLs** for radium-226, radium-228, ~~and~~ gross alpha particle radioactivity, **and uranium**:

(1) Combined radium-226 and radium-228: five (5) picocuri per liter. **The combined radium-226 and radium-228 value is determined by the addition of the results of the analysis for radium-226 and the analysis for radium-228.**

(2) Gross alpha particle activity (including radium-226 but excluding radon and uranium): fifteen (15) picocuri per liter.

(3) Uranium: thirty (30) micrograms per liter.

~~(3)~~ **(4)** The sampling frequency for the contaminants listed in this section shall be ~~pursuant to~~ **under** section 10.2 of this rule.

(5) The uranium MCL is effective December 8, 2003.

(*Water Pollution Control Board; 327 IAC 8-2-9; filed Sep 24, 1987, 3:00 p.m.: 11 IR 708; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1027*)

SECTION 11. 327 IAC 8-2-10.1 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-10.1 Analytical methods for radioactivity

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 10.1. (a) The following methods shall be used to determine compliance with sections 9 through 10 of this rule, except in cases where alternative methods have been approved in accordance with section 32 of this rule:

(1) One (1) of the following methods shall be used to test for gross alpha and beta¹:

(A) Method 900.0*.

(B) Page 1 of "Interim Radiochemical Methodology for Drinking Water*".

(C) Method 00-01*.

(D) Page 1 of "Radiochemical Analytical Procedures for Analysis of Environmental Samples*".

(E) Method 302*.

(F) Method 7110 B*.

(G) Method R-1120-76*.

(2) One (1) of the following methods shall be used to test for gross alpha¹:

(A) Method 00-02*.

(B) Method 7110 C*.

(3) One (1) of the following methods shall be used to test for radium 226:

(A) Method 903.1*.

(B) Method 903.0*.

(C) Page 16 of "Interim Radiochemical Methodology for Drinking Water*".

(D) Page 13 of "Interim Radiochemical Methodology for Drinking Water*".

(E) Method Ra-04*.

(F) Method Ra-03*.

(G) Page 19 of "Radiochemical Analytical Procedures for Analysis of Environmental Samples*".

(H) Method 7500-Ra C*.

(I) Method 304*.

(J) Method 305*.

- (K) Method 7500-Ra B*.
 - (L) Method ~~D 3454-91*~~ **D3454-97***.
 - (M) Method ~~D 2460-90*~~ **D2460-97***.
 - (N) Method R-1141-76*.
 - (O) Method ~~R-1142-76*~~ **R-1140-76***.
 - (P) Method ~~Ra-05*~~ **Ra-04***.
 - (Q) New York Method*.
- (4) One (1) of the following methods shall be used to test for radium 228:
- (A) Method 904.0*.
 - (B) Page 24 of “Interim Radiochemical Methodology for Drinking Water*”.
 - (C) Method Ra-05*.
 - (D) Page 19 of “Radiochemical Analytical Procedures for Analysis of Environmental Samples*”.
 - ~~(E) Method 304*~~
 - ~~(F)~~ **(E)** Method 7500-Ra D*.
 - ~~(G)~~ **(F)** Method R-1142-76*.
 - ~~(H)~~ **(G)** New York Method*.
 - (H) New Jersey Method*.**
- (5) One (1) of the following methods shall be used to test for uranium²:
- (A) Method 908.0*.
 - (B) Method 908.1*.
 - (C) Method 00-07*.
 - (D) Page 33 of “Radiochemical Analytical Procedures for Analysis of Environmental Samples*”.
 - (E) **Method 7500-U B***.
 - (F) **Method 7500-U C***.
 - (G) ~~D2907-91*~~ **Method D2907-97***.
 - (H) ~~D 3972-90*~~ **Method D3972-97***.
 - (I) ~~D 5174-91*~~ **Method D5174-97***.
 - (J) **Method R-1180-76***.
 - (K) **Method R-1181-76***.
 - (L) **Method R-1182-76***.
 - (M) **Method U-04***.
 - (N) **Method U-02***.
 - (O) ~~New Jersey Method 200.8*~~.
 - (P) Method D5673-03***.
 - (Q) Method 3125***.
- (6) One (1) of the following methods shall be used to test for radioactive cesium:
- (A) Method 901.0*.
 - (B) Method 901.1*.
 - (C) Page 92 of “Radiochemical Analytical Procedures for Analysis of Environmental Samples*”.
 - (D) Method 7500-Cs B*.
 - (E) Method 7120*.
 - (F) Method D 2459-72*.
 - (G) Method D 3649-91*.
 - (H) Method R-1111-76*.
 - (I) Method R-1110-76*.
 - (J) Method 4.5.2.3*.
 - (K) Page 4 of “Interim Radiochemical Methodology for Drinking Water*”.**
- (7) One (1) of the following methods shall be used to test for radioactive iodine:
- (A) Method 902.0*.
 - (B) Method 901.1*.
 - (C) Page 6 of “Interim Radiochemical Methodology for Drinking Water*”.
 - (D) Page 9 of “Interim Radiochemical Methodology for Drinking Water*”.
 - (E) Page 92 of “Radiochemical Analytical Procedures for Analysis of Environmental Samples*”.
 - (F) Method 7500-I B*.

- (G) Method 7500-I C*.
- (H) Method 7500-I D*.
- (I) Method 7120*.
- ~~(J) Method D 4785-88*.~~
- ~~(K) (J) Method 4.5.2.3*.~~
- (K) Method D 3649-91*.**

(8) One (1) of the following methods shall be used to test for radioactive strontium 89 and 90:

- (A) Method 905.0*.
- (B) Page 29 of “Interim Radiochemical Methodology for Drinking Water*”.
- (C) Method Sr-04*.
- (D) Page 65 of “Radiochemical Analytical Procedures for Analysis of Environmental Samples*”.
- (E) Method 303*.
- (F) Method 7500-Sr B*.
- (G) Method R-1160-76*.
- (H) Method Sr-01*.
- (I) Method Sr-02*.

(9) One (1) of the following methods shall be used to test for tritium:

- (A) Method 906.0*.
- (B) Page 34 of “Interim Radiochemical Methodology for Drinking Water*”.
- (C) Method H-02*.
- (D) Page 87 of “Radiochemical Analytical Procedures for Analysis of Environmental Samples*”.
- (E) Method 306*.
- (F) Method 7500-3H B*.
- (G) Method D 4107-91*.
- (H) Method R-1171-76*.

(10) One (1) of the following methods shall be used to test for gamma emitters:

- (A) Method 901.1*.
- (B) Method 902.0*.
- (C) Method 901.0*.
- (D) Page 92 of “Radiochemical Analytical Procedures for Analysis of Environmental Samples*”.
- (E) Method 7120*.
- (F) Method 7500-Cs B*.
- (G) Method 7500-I B*.
- (H) Method D 3649-91*.
- (I) Method ~~D 4785-88*~~ **D4785-91***.
- (J) Method R-1110-76*
- (K) Method ~~4.5.2.3*~~ **Ga-01-R***.

¹**Natural uranium and thorium-230 are approved as gross alpha calibration standards for gross alpha with coprecipitation and evaporation methods; americium-241 is approved with coprecipitation methods.**

²**If uranium (U) is determined by mass, a 0.67 pCi/μg of uranium conversion factor must be used. This conversion factor is based on the 1:1 activity ratio of U-235 and U-238 that is characteristic of naturally occurring uranium.**

(b) When the identification and measurement of radionuclides other than those listed in subsection (a) is required, the following references are to be used, except in cases where alternative methods have been approved in accordance with section 32 of this rule:

- (1) Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions, H.L. Krieger and S. Gold, EPA-R4-73-014, U.S. EPA, Cincinnati, Ohio, May 1973.
- (2) HASL Procedure Manual, edited by John H. Harley. HASL 300, ERDA Health and Safety Laboratory, New York, New York 1973.

(c) For the purpose of monitoring radioactivity concentrations in drinking water, the required sensitivity of the radioanalysis is defined in terms of a detection limit. The detection limit shall be that concentration ~~which that~~ can be counted with a precision of plus or minus one hundred percent (100%) at the ninety-five percent (95%) confidence level (one and ninety-six hundredths (1.96) σ where σ is the standard deviation of the net counting rate of the sample). Compliance requirements are as follows:

- (1) To determine compliance with section 9(1) of this rule, the detection limit shall not exceed one (1) picocuri per liter.
- (2) To determine compliance with section 9(2) of this rule, the detection limit shall not exceed three (3) picocuri per liter.

(3) To determine compliance with section 9(3) of this rule, the detection limit shall not exceed one (1) microgram per liter.

~~(3)~~ **(4) To determine compliance with section 10 of this rule, the detection limits shall not exceed the concentrations listed in the following table:**

Detection limits for manmade beta particle and photon emitters:

<u>Radionuclide</u>	<u>Detection limit</u>
Tritium	1,000 pCi/l
Strontium-89	10 pCi/l
Strontium-90	2 pCi/l
Iodine-131	1 pCi/l
Cesium-134	10 pCi/l
Gross beta	4 pCi/l
Other radionuclides	1/10 of the applicable limit

(d) To determine compliance with the MCL listed in sections 9 through 10 of this rule, averages of data shall be used and shall be rounded to the same number of significant figures as the MCL for the contaminant in question.

*The methods referenced in this section may be obtained as follows:

(1) Methods 900.0, 903.1, 903.0, 904.0, 908.0, 908.1, 901.0, 901.1, 902.0, 905.0, and 906.0 may be found in "Prescribed Procedures for Measurement of Radioactivity in Drinking Water", EPA 600/4-80-032, August 1980, PB 80-224744. Available from U.S. Department of Commerce, National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161, 800-553-6847.

(2) "Interim Radiochemical Methodology for Drinking Water", EPA 600/4-75-008 (revised), March 1976, PB 253258. Available from U.S. Department of Commerce, National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161, 800-553-6847.

(3) Methods 00-01, 00-02, Ra-04, Ra-03, Ra-05, 00-07, Sr-04, and H-02 may be found in "Radiochemistry Procedures Manual", EPA 520/5-84-006, December 1987, PB 84-215581. Available from U.S. Department of Commerce, National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161, 800-553-6847.

(4) "Radiochemical Analytical Procedures for Analysis of Environmental Samples", March 1979, EMSL LV 053917. Available from U.S. Department of Commerce, National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, Virginia 22161, 800-553-6847.

(5) Methods **302, 303, 304, 305, 306, 3125**, 7110 B, 7110 C, **7120**, 7500-Ra C, 7500-Ra B, 7500-Ra D, 7500-U B, 7500-Cs B, 7500-I B, 7500-I C, 7500-I D, 7500-Sr B, **7500-U C**, and 7500-3H B may be found in "Standard Methods for the Analysis of Water and Wastewater", 13th, 17th, 18th, and 19th, or 20th Editions, 1971, 1989, 1992, and 1995, and 1998. Available from American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005. **Methods 302, 303, 304, 305, and 306 are only in the 13th Edition. Methods 7110B, 7500-Ra B, 7500-Ra C, 7500-Ra D, 7500-U B, 7500-Cs B, 7500-I B, 7500-I C, 7500-I D, 7500-Sr B, and 7500-3H C are in the 17th, 18th, 19th, and 20th Editions. Method 7110 C is in the 18th, 19th, and 20th Editions. Method 7500-U C (Fluorometric Uranium) is only in the 17th Edition, and Method 7500-U C (Alpha Spectrometry) is only in the 18th, 19th, and 20th Editions. Method 7120 is only in the 19th and 20th Editions. Method 3125 is only in the 20th Edition.**

(6) Methods 302, 304, 305, 303, and 306 may be found in "Standard Methods for the Analysis of Water and Wastewater", 13th Edition, 1971. Available from American Public Health Association, 1015 Fifteenth Street N.W., Washington D.C. 20005.

(7) Method 7500-U C may be found in "Standard Methods for the Analysis of Water and Wastewater", 13th and 17th Editions, 1971, 1989. Available from American Public Health Association, 1015 Fifteenth Street N.W., Washington D.C. 20005.

(8) Method 7120 may be found in "Standard Methods for the Analysis of Water and Wastewater", 19th Edition, 1995. Available from American Public Health Association, 1015 Fifteenth Street N.W., Washington D.C. 20005.

~~(9)~~ (6) Methods ~~D 3454-91, D 2460-90, D2907-91, D 3972-90, D 5174-91, D 2459-72, D 3649-91, D4785-88, and D 4107-91~~ may be found in Annual Book of ASTM Standards, Vol 11.02, 1994. Available from American Society of Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428. **Any Annual Book containing the cited version of the method may be used.**

(7) Methods **D 3454-97, D 2460-97, D 2907-97, D 3972-97, and D 5174-97** may be found in Annual Book of ASTM of ASTM Standards, Vol. 11.01 and 11.02, 1999. Available from American Society of Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428. **Any Annual Book containing the cited version of the method may be used.**

(8) Method **D 5673-03** may be found in Annual Book of ASTM Standards, Vol. 11.02, May 2004. Available from American Society of Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428. **Any Annual Book containing the cited version of the method may be used.**

~~(10)~~ (9) Methods R-1120-76, R-1141-76, R-1140-76, R-1142-76, R-1180-76, R-1181-76, R-1182-76, R-1111-76, R-1110-76, R-1160-76, and R-1171-76 may be found in "Methods for Determination of Radioactive Substances in Water and Fluvial Sediments", Chapter A5 in Book 5 of Techniques of Water-Resources Investigations of the United States Geological Survey, 1977. Available from U.S. Geologic Survey (USGS) Information Services, Box 25286, Federal Center, Denver, Colorado 80225-0425.

~~(11)~~ (10) Methods U-04, U-2, **Ra-04**, Ra-05, 4.5.2.3, Sr-01, and Sr-02, and **Ga-01-R** may be found in "EML Procedures Manual", 27th Edition, Volume 1, 1990 or **28th Edition, Volumes 1 and 2, 1997. Either edition may be used. In the 27th Edition, Method Ra-04 is listed as Ra-05 and Method Ga-01-R is listed as Sect. 4.5.2.3.** Available from Environmental Measurements Laboratory, U.S. Department of Energy (DOE), 376 Hudson Street, New York, New York 10014-3621.

~~(12)~~ (11) New York Methods may be found in "Determination of Ra-226 and Ra-228 (Ra-02)", January 1980, Revised June 1982. Available from Radiological Sciences Institute Center for Laboratories and Research, New York State Department of Health, Empire State Plaza, Albany, New York 12201.

~~(13)~~ (12) New Jersey Method may be found in "Determination of Radium 228 in Drinking Water", August 1980. Available from State of New Jersey, Department of Environmental Protection, Division of Environmental Quality, Bureau of Radiation and Inorganic Analytical Services, 9 Ewing Street, Trenton, New Jersey 08625.

(13) For uranium ICP-MS Method 200.8, refer to "Determination of Trace Elements in Waters and Wastes by Inductively Coupled Plasma-Mass Spectrometry", Revision 5.4, published in "Methods for the Determination of Metals in Environmental Samples- Supplement I", EPA 600-R-94-111, May 1994. Available at NTIS PB 95-125472.

(Water Pollution Control Board; 327 IAC 8-2-10.1; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1028; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258; filed Jul 23, 2001, 1:02 p.m.: 24 IR 3971)

SECTION 12. 327 IAC 8-2-10.2 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-10.2 Monitoring frequency for radioactivity; community water systems

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 10.2. (a) Monitoring requirements for gross alpha particle activity, radium-226, and radium-228, and uranium in community water systems CWSs are as follows:

(1) Initial monitoring requirements for CWSs are as follows:

(A) CWSs must conduct initial monitoring to determine compliance with section 9 of this rule shall be based on the analysis of an annual composite of four (4) consecutive quarterly samples or the average of the analyses of four (4) samples obtained at quarterly intervals as follows:

(A) A gross alpha particle activity measurement may be substituted for the required radium-226 and radium-228 analysis, provided that the measured gross alpha particle activity does not exceed five (5) picocuri per liter at a confidence level of ninety-five percent (95%) (one and sixty-five hundredths (1.65) σ where σ is the standard deviation of the net counting rate of this sample). In localities where radium-228 may be present in drinking water, it is recommended that the commissioner require radium-226 or radium-228, or both, analyses when the gross alpha particle activity exceeds two (2) picocuri per liter.

(B) When the gross alpha particle activity exceeds five (5) picocuri per liter, the same or an equivalent sample shall be analyzed for radium-226. If the concentration of radium-226 exceeds three (3) picocuri per liter, the same or an equivalent sample shall be analyzed for radium-228.

(2) Suppliers of water shall monitor at least once every four (4) years following the procedure required by subdivision (1). At the discretion of the commissioner, when an annual record taken in conformance with subdivision (1) has established that the average annual concentration is less than one-half ($\frac{1}{2}$) the MCL established by section 9 of this rule, analysis of a single sample may be substituted for the quarterly sampling procedure required by subdivision (1) as follows:

(A) More frequent monitoring shall be conducted when ordered by the commissioner in the vicinity of mining or other operations which may contribute alpha particle radioactivity to either surface or ground water sources of drinking water.

(B) A supplier of water shall monitor in conformance with subdivision (1) within one (1) year of the introduction of a new water source for a community water system. More frequent monitoring shall be conducted when ordered by the commissioner in the event of possible contamination, or when changes in the distribution system or treatment processing occur which may increase the concentration of radioactivity in finished water.

(C) A community water system using two (2) or more sources having different concentrations of radioactivity shall monitor source water, in addition to water from a free-flowing tap, when ordered by the commissioner.

(D) Monitoring for compliance with section 9 of this rule after the initial period need not include radium-228 except when required by the commissioner, provided that the average annual concentration of radium-228 has been assayed at least once using the quarterly sampling procedure required by subdivision (1).

(E) Suppliers of water shall conduct monitoring of any community water system in which the radium-226 concentration exceeds three (3) picocuri per liter, when ordered by the commissioner.

(3) If the average annual MCL for gross alpha particle activity or total radium as set forth in section 9 of this rule is exceeded, the supplier for a community water system shall report to the commissioner pursuant to section 13 of this rule and notify the public pursuant to 327 IAC 8-2.1-7 through 327 IAC 8-2.1-16. Monitoring at quarterly intervals shall be continued until the annual average concentration no longer exceeds the MCL or until a monitoring schedule as a condition to an enforcement action shall become effective.

by December 31, 2007. Unless exempted under subdivision (2) or reduced under clause (D), systems must collect four (4) consecutive quarterly samples at all sampling points before December 31, 2007.

(B) For the purposes of monitoring for gross alpha particle activity, radium-226, radium-228, and uranium in drinking water, "detection limit" is as described in section 10.1(c) of this rule.

(C) Applicability and sampling location shall be according to the following:

(i) Every existing CWS or source using ground water or surface water or a system using both ground and surface water (to be known as "system" for purposes of this section) must sample at every entry point to the distribution system that is representative of all sources being used (to be known as "sampling point" for purposes of this section) under normal operating conditions. The system must take each sample at the same sampling point unless conditions make another sampling point more representative of each source.

(ii) Every new CWS or source or CWS that uses a new source of water must conduct initial monitoring for the new source within the first quarter after initiating use of the source.

(iii) A system must conduct more frequent monitoring when ordered by the commissioner in the event of possible contamination or when changes in the distribution system or treatment processes occur that may increase the concentration of radioactivity in finished water.

(D) The commissioner may waive the final two (2) quarters of initial monitoring for a sampling point if the results of the samples from the previous two (2) quarters are below the detection limit.

(E) If the average of the initial monitoring results for a sampling point is above the MCL, the system must collect and analyze quarterly samples at that sampling point until the system has results from four (4) consecutive quarters that are at or below the MCL, unless the system enters into another schedule as part of a formal compliance agreement with the commissioner.

(2) The commissioner may allow historical monitoring data, that which is collected at a sampling point between June 1, 2000, and December 8, 2003, to satisfy the initial monitoring requirements for that sampling point in the following situations:

(A) A CWS having only one (1) entry point to the distribution system may use its acceptable historical monitoring data from the latest sampling conducted during the specified period.

(B) A CWS with multiple entry points and having appropriate historical monitoring data for each entry point to the distribution system may use the monitoring data from the latest sampling conducted during the specified period.

(3) Sampling after completion of the initial monitoring specified in subdivision (1) is once every three (3) years unless reduced by the commissioner as follows:

(A) If the average of the initial monitoring results for each contaminant (gross alpha particle activity, uranium, radium-226, or radium-228) is below the detection limit specified in section 10.1 of this rule, the system must collect and analyze for at least one (1) sample for that contaminant at that sampling point every nine (9) years.

(B) For gross alpha particle activity and uranium, if the average of the initial monitoring results for each contaminant is at or above the detection limit but at or below one-half ($\frac{1}{2}$) the MCL:

(i) the system must collect and analyze at least one (1) sample for that contaminant at that sampling point every six (6) years; and

(ii) for combined radium-226 and radium-228, the analytical results must be combined. If the average of the combined initial monitoring results for radium-226 and radium-228 is at or above the detection limit but at or below one-half ($\frac{1}{2}$) the MCL, the system must collect and analyze at least one (1) sample for radium-226 and radium-228 that sampling point every six (6) years.

(C) Systems must use the samples collected during the most recent monitoring period to determine the monitoring frequency for subsequent monitoring periods. For example, if a system's sampling point is on a nine (9) year monitoring period and the sample result is above one-half ($\frac{1}{2}$) the MCL, then the next monitoring period for that sampling point is three (3) years.

(D) If a system has a monitoring result that exceeds the MCL while sampling less frequently than quarterly, the system must collect and analyze quarterly samples at that sampling point until the system has results from four (4) consecutive quarters that are below the MCL unless the system enters into another schedule as part of a formal compliance

agreement with the commissioner.

(4) To fulfill quarterly monitoring requirements for gross alpha particle activity, radium-226, radium-228, or uranium, a system may composite up to four (4) consecutive quarterly samples from a single entry point if analysis is done within one (1) year of the first sample. The commissioner will treat analytical results from the composited sample as the average analytical result to determine compliance with the MCLs and to determine the future monitoring frequency. If the analytical result from the composited sample is greater than one-half ($\frac{1}{2}$) the MCL, the commissioner may direct the system to take additional quarterly samples before allowing the system to sample once every three (3) years.

(5) A gross alpha particle activity measurement may be substituted for the required:

(A) radium-226 measurement provided that the measured gross alpha particle activity does not exceed five (5) pCi/l; and

(B) uranium measurement provided that the measured gross alpha particle activity does not exceed fifteen (15) pCi/l.

The gross alpha measurement shall have a confidence interval of ninety-five percent (95%) (1.65σ , where σ is the standard deviation of the net counting rate of the sample) for radium-226 and uranium. When a system uses a gross alpha particle activity measurement instead of the measurement for radium-226 or uranium, or both, the gross alpha particle activity analytical result will be used to determine the future monitoring frequency for radium-226 or uranium, or both. If the gross alpha particle activity result is less than detection, one-half ($\frac{1}{2}$) the detection limit will be used to determine compliance and the future monitoring frequency.

(b) For purposes of monitoring requirements for manmade beta particle and photon radioactivity in community drinking water, systems are as follows:

(1) Systems using surface water sources and serving more than one hundred thousand (100,000) persons and such other community water systems as are designated by the commissioner shall be monitored for "detection limit" is as described in section 10.1(c) of this rule. To determine compliance with the MCLs in section 10 of this rule by analysis of a composite of four (4) consecutive quarterly samples or analysis of four (4) quarterly samples: Compliance with section 10 of this rule may be assumed without further analysis if the average annual concentration of gross for beta particle activity is less than fifty (50) picocuri per liter and if the average annual concentrations of tritium and strontium-90 are less than those listed in the table in section 10 of this rule: Provided, that if both radionuclides are present, the sum of their annual dose equivalents to bone marrow shall not exceed four (4) millirem per year as follows:

(A) If the gross beta particle activity exceeds fifty (50) picocuri per liter an analysis of the sample must be performed to identify the major radioactive constituents present and the appropriate organ and total body doses shall be calculated to determine compliance with section 10 of this rule.

(B) Suppliers of water shall conduct additional monitoring, as ordered by the commissioner, to determine the concentration of manmade radioactivity in principal watersheds designated by the commissioner.

(C) At the discretion of the commissioner, suppliers of water utilizing only ground water may be required to monitor for manmade radioactivity.

(2) Suppliers of water shall monitor at least every four (4) years following the procedure given in subdivision (1).

(3) The supplier for any community water and photon radioactivity, a system designated by the commissioner as utilizing waters contaminated by effluents from nuclear facilities shall initiate quarterly monitoring for gross beta particle and iodine-131 radioactivity and annual monitoring for strontium-90 and tritium must comply with monitoring and sampling frequency requirements as follows:

(1) CWSs (both surface and ground water) designated by the commissioner as vulnerable must sample for beta particle and photon radioactivity. Systems must collect quarterly samples for beta emitters and annual samples for tritium and strontium-90 at each sampling point beginning within one (1) quarter after being notified by the commissioner of the designation. Designated systems must continue to sample until the commissioner reviews and either reaffirms or removes the designation. If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity at a sampling point has a running annual average (computed quarterly) less than or equal to fifty (50) pCi/l (screening level), the commissioner may reduce the frequency of monitoring at that sampling point to once every three (3) years. A system must continue to collect all other samples required by this subdivision during the reduced monitoring period.

(2) CWSs (both surface and ground water) designated by the commissioner as utilizing waters contaminated by effluents from nuclear facilities must sample for beta particle and photon radioactivity. A system designated under this subdivision must collect quarterly samples for beta emitters and iodine-131 and annual samples for tritium and strontium-90 at each entry point to the distribution system beginning within one (1) quarter after being notified by the commissioner of the designation. A system designated as using waters contaminated by effluents from a nuclear facility must continue to sample until the commissioner reviews and either reaffirms or removes the designation. The following monitoring and frequency of sampling requirements apply to vulnerable systems:

(A) Quarterly monitoring for gross beta particle activity shall be based on the analysis of monthly samples or the analysis of a

composite of three (3) monthly samples. The former is recommended. If the gross beta particle activity in a sample exceeds fifteen (15) picocuri per liter, the same or an equivalent sample shall be analyzed for strontium-89 and cesium-134. If the gross beta particle activity exceeds fifty (50) picocuri per liter, an analysis of the sample must be performed to identify the major radioactive constituents present and the appropriate organ and total body doses shall be calculated to determine compliance with section 10 of this rule.

(B) For iodine-131, a composite of five (5) consecutive daily samples shall be analyzed once each quarter. At the direction of the commissioner, more frequent monitoring shall be conducted when iodine-131 is identified in the finished water.

(C) Annual monitoring for strontium-90 and tritium shall be conducted by analysis of a composite of four (4) consecutive quarterly samples or analysis of four (4) quarterly samples. The latter procedure is recommended.

~~(D) The commissioner may allow the substitution of environmental surveillance data taken in conjunction with a nuclear facility for direct monitoring of manmade radioactivity by the supplier of water where the commissioner determines such data are applicable to a particular community water system.~~

(4) (D) If the average annual MCL for manmade radioactivity set forth in section 10 of this rule is exceeded, the operator of a community water system shall report to the commissioner pursuant to section 13 of this rule and give notice to the public pursuant to 327 IAC 8-2.1-7 through 327 IAC 8-2.1-16. Monitoring at monthly intervals shall be continued until the concentration no longer exceeds the MCL or until a monitoring schedule as a condition to an enforcement action shall become effective. gross beta particle activity minus the naturally occurring potassium-40 beta particle activity at a sampling point has a running annual average (computed quarterly) less than or equal to fifteen (15) pCi/l (screening level), the commissioner may reduce the frequency of monitoring at that sampling point to once every three (3) years. Systems must collect all samples required in this subdivision during the reduced monitoring period.

(3) CWSs may analyze for naturally occurring potassium-40 beta particle activity from the same or equivalent sample used for the gross beta particle activity analysis. Systems are allowed to subtract the potassium-40 beta particle activity value from the total gross beta particle activity value to determine if the screening level is exceeded. The potassium-40 beta particle activity must be calculated by multiplying elemental potassium concentrations (in mg/l) by a factor of eighty-two hundredths (0.82).

(4) If the gross beta particle activity minus the naturally occurring potassium-40 beta particle activity exceeds the appropriate screening level, an analysis of the sample must be performed to identify the major radioactive constituents present in the sample and the appropriate doses must be calculated and summed to determine compliance with section 10 of this rule using the formula in that section. Doses must be calculated and combined for measured levels of major radioactive constituents, tritium, and strontium to determine compliance.

(5) A system must monitor monthly at the sampling point or points that exceed the MCL in section 10 of this rule beginning the month after the exceedance occurs. A system must continue monthly monitoring until the system has established, by a rolling average of three (3) monthly samples, that the MCL is being met. A system that reestablishes compliance with the MCL must return to quarterly monitoring until the requirements set forth in subdivision (1) or (2)(D) are met.

(c) The following general monitoring and compliance requirements for radionuclides apply:

(1) The commissioner has the discretion to require:

(A) more frequent monitoring than specified in subsections (a) and (b); or

(B) confirmation samples.

The results of the initial and confirmation samples shall be averaged for use in compliance determinations.

(2) A community public water system shall monitor at the time designated by the commissioner during each compliance period.

(3) The following shall be used to determine whether a CWS is in compliance with sections 9 through 10 of this rule:

(A) Analytical results obtained at each sampling point must meet the applicable requirements of sections 9 through 10 of this rule. If one (1) sampling point is in violation of an MCL, the system is in violation of the MCL.

(B) For systems monitoring more than once per year, compliance with the MCL is determined by a running annual average at each sampling point. If the running annual average of any sampling point is greater than the MCL, then the system is out of compliance with the MCL.

(C) For systems monitoring more than once per year, if any single sample result will cause the running average to exceed the MCL at any sample point, the system is out of compliance with the MCL immediately.

(D) A system must include all samples taken and analyzed under this section in determining compliance even if that number is greater than the minimum required.

(E) If a system does not collect all required samples when compliance with the MCL is based on a running annual average of quarterly samples, compliance will be based on the running average of the samples collected.

(F) If a sample result is less than the detection limit, zero (0) shall be used to calculate the annual average, unless a gross

alpha particle activity is being used instead of radium-226 or uranium, or both. If the gross alpha particle activity result is less than detection, one-half (½) the detection limit will be used to calculate the annual average.

(4) The commissioner has the discretion to delete results of obvious sampling or analytic errors.

(5) If the MCL for radioactivity set forth in sections 9 through 10 of this rule is exceeded, the operator of a CWS must give notice to the commissioner under section 13 of this rule and to the public as required by 327 IAC 8-2.1-7 through 327 IAC 8-2.1-16.

(Water Pollution Control Board; 327 IAC 8-2-10.2; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1029; errata filed Aug 6, 1991, 3:45 p.m.: 14 IR 2258; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1094; errata filed Feb 22, 2002, 2:01 p.m.: 25 IR 2254)

SECTION 13. 327 IAC 8-2-10.3 IS ADDED TO READ AS FOLLOWS:

327 IAC 8-2-10.3 Best available technologies, small systems compliance technologies (SSCTs), and compliance technologies by system size category for radionuclides

Authority: IC 13-13-5-1; IC 13-14-8-7; IC 13-18-3-1; IC 13-18-3-2; IC 13-18-6

Affected: IC 13-14-9

Sec. 10.3. (a) Pursuant to Section 1412 of the Act, BATs for achieving compliance with sections 9 through 10 of this rule for radionuclides are identified in the following table:

Table 10.3(a)

BAT for Combined Radium-226 and Radium-228, Uranium, Gross Alpha Particle Activity, and Beta Particle and Photon Radioactivity

<u>Contaminant</u>	<u>BAT</u>
Combined radium-226 and radium-228	Ion exchange, reverse osmosis, lime softening
Uranium	Ion exchange, reverse osmosis, lime softening, coagulation/filtration
Gross alpha particle activity (excluding radon and uranium)	Reverse osmosis
Beta particle and photon radioactivity	Ion exchange, reverse osmosis

(b) The following table lists the small systems compliance technologies (SSCTs) for radionuclides and limitations of use:

Table 10.3(b)

List of Small Systems Compliance Technologies for Radionuclides and Limitations to Use

Unit Technologies	Limitations (see footnotes)	Operator Skill Level Required¹	Raw Water Quality Range and Considerations¹
1. Ion exchange (IE)	(a)	Intermediate	All ground waters.
2. Point of use (POU ²) IE	(b)	Basic	All ground waters.
3. Reverse osmosis (RO)	(c)	Advanced	Surface water usually require prefiltration.
4. POU ² RO	(b)	Basic	Surface water usually require prefiltration.
5. Lime softening	(d)	Advanced	All waters.
6. Green sand filtration	(e)	Basic	-----
7. Coprecipitation with barium sulfate	(f)	Intermediate to Advanced	Ground waters with suitable water quality.
8. Electrodialysis/electrodialysis reversal.	----	Basic to Intermediate	All ground waters.
9. Preformed hydrous manganese oxide filtration	(g)	Intermediate	All ground waters.
10. Activated alumina	(a), (h)	Advanced	All ground waters; competing anion concentrations may affect regeneration frequency.
11. Enhanced coagulation/filtration	(i)	Advanced	Can treat a wide range of water qualities.

¹National Research Council (NRC). Safe Water from Every Tap: Improving Water Service to Small Communities. National Academy Press. Washington, D.C. 1997.

²A POU, or “point-of-use” technology is a treatment device installed at a single tap used for the purpose of reducing

contaminants in drinking water at that one (1) tap. POU devices are typically installed at the kitchen tap. See the April 21, 2000, Federal Register, concerning Notice of Data Availability (NODA) for more details.

Limitations Footnotes: Technologies for Radionuclides:

^aThe regeneration solution contains high concentrations of the contaminant ions. Disposal options should be carefully considered before choosing this technology.

^bWhen POU devices are used for compliance, programs for long term operation, maintenance, and monitoring must be provided by water utility to ensure proper performance.

^cReject water disposal options should be carefully considered before choosing this technology. See other RO limitations described in, “Small System Compliance Technology List for the Surface Water Treatment Rule”, 1997, EPA 815-R-97-002, Washington, D.C.

^dThe combination of variable source water quality and the complexity of the water chemistry involved may make this technology too complex for small surface water systems.

^eRemoval efficiencies can vary depending on water quality.

^fThis technology may be very limited in application to small systems. Since the process requires static mixing, detention basins, and filtration, it is most applicable to systems with sufficiently high sulfate levels that already have a suitable filtration treatment train in place.

^gThis technology is most applicable to small systems that already have filtration in place.

^hHandling of chemicals required during regeneration and pH adjustment may be too difficult for small systems without an adequately trained operator.

ⁱAssumes modification to a coagulation/filtration process already in place.

(c) The following table lists the compliance technologies by system size category for radionuclide national primary drinking water regulations (NPDWRs):

Contaminant	Table 10.3(c) Compliance Technologies by System Size Category for Radionuclide NPDWRs		
	Compliance technologies ¹ for system size categories		
	(population served)		
	<u>25-500</u>	<u>501-3,300</u>	<u>3,300-10,000</u>
1. Combined radium-226 and radium-228	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9	1, 2, 3, 4, 5, 6, 7, 8, 9
2. Gross alpha particle activity	3, 4	3, 4	3, 4
3. Beta particle activity and photon activity	1, 2, 3, 4	1, 2, 3, 4	1, 2, 3, 4
4. Uranium	1, 2, 4, 10, 11	1, 2, 3, 4, 5, 10, 11	1, 2, 3, 4, 5, 10, 11

¹Numbers correspond to those technologies found listed in the table in subsection (b).

(Water Pollution Control Board; 327 IAC 8-2-10.3)

SECTION 14. 327 IAC 8-2-13 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-13 Reporting requirements; test results and failure to comply

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 13. (a) Except where a shorter period is specified in this rule, the supplier of water, ~~or the certified laboratory, as certified by the commissioner, provided the supplier of water has granted permission in writing to the laboratory~~ using forms provided by the commissioner, ~~and that permission is on file with the commissioner,~~ shall report to the commissioner the results of any test measurement or analysis required by this rule within **the shorter of the following periods of time:**

- (1) The first ten (10) days following the month in which the result is received. ~~or~~
- (2) The first ten (10) days following the end of the required monitoring period as stipulated by the commissioner. ~~whichever is shorter.~~

(b) ~~Except where a different reporting period is specified in this rule, the supplier of water, or the certified laboratory, as certified by the commissioner, provided the supplier of water has granted permission in writing to the laboratory using forms provided by the commissioner, and that permission is on file with the commissioner,~~ shall report to the commissioner within ~~forty-eight (48)~~ **twenty-four (24)** hours of completion of laboratory analysis **all drinking water results that indicate positive total coliform**

results, nitrate results that exceed five (5) milligrams per liter (mg/l), and the failure to comply with any MCL. and any other requirement set forth in this rule. The report must be made by telephone or one (1) of the methods specified in subsection (e). If notification is made by telephone, the results must follow also be reported to the commissioner using one (1) of the methods specified in subsection (e) within forty-eight (48) hours of the telephone notification. If the supplier of water cannot provide the results under this subsection, the supplier of water shall make arrangements with the certified laboratory performing the analysis to submit the results directly to the commissioner using the methods specified in subsection (e).

(c) ~~The supplier of water or the certified laboratory, as certified by the commissioner, provided the supplier of water has granted permission in writing to the laboratory using forms provided by is not required to report analytical results to the commissioner and that permission is on file with the commissioner, shall report when the Indiana state laboratory performs the analysis and reports the results to the commissioner. within (48) hours of completion of laboratory analysis any positive total coliform results by telephone or the methods specified in subsection (e). If notification is made by telephone, the results must follow using one (1) of the methods specified in subsection (e) within forty-eight (48) hours of the telephone notification.~~

(d) The supplier of water, within ten (10) days of completing the public notification required by 327 IAC 8-2.1-7 through ~~327 IAC 8-2.1-16~~, **327 IAC 8-2.1-17**, for the initial public notice and any repeat notices, shall submit to the commissioner a certification that it has fully complied with the public notification regulations. The public water system must include with this certification a representative copy of each type of notice distributed, published, posted, or made available to the persons served by the system or to the media.

(e) The submittal of the information required under this section shall be submitted in one (1) of the following manners:

- (1) Mail.
- (2) Facsimile.
- (3) Electronic mail.
- (4) Hand delivery.
- (5) Other means determined by the commissioner to provide the degree of:
 - (A) confidentiality;
 - (B) reliability;
 - (C) convenience; and
 - (D) security;

appropriate to the information to be submitted.

(Water Pollution Control Board; 327 IAC 8-2-13; filed Dec 28, 1990, 5:10 p.m.: 14 IR 1030; filed Jul 23, 2001, 1:02 p.m.: 24 IR 3974; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1096; errata filed Feb 22, 2002, 2:01 p.m.: 25 IR 2254; filed May 1, 2003, 12:00 p.m.: 26 IR 2817)

SECTION 15. 327 IAC 8-2-34 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-34 Maximum contaminant level goals; inorganic contaminants

Authority: IC 13-13-5-1; IC 13-14-8-7; IC 13-18-3-1; IC 13-18-3-2; IC 13-18-6

Affected: IC 13-14-9

Sec. 34. MCLGs for the following contaminants are as indicated:

<u>Contaminant</u>	<u>MCLG in Milligrams per Liter</u>
Fluoride	4.0
Asbestos	7 million fibers per liter (longer than 10 micrometers)
Barium	2
Cadmium	0.005
Chromium	0.1
Copper	1.3
Lead	0
Mercury	0.002
Nitrate	10 (as nitrogen)
Nitrite	1 (as nitrogen)
Total nitrate + nitrite	10 (as nitrogen)
Selenium	0.05

Antimony	0.006
Arsenic	0¹
Beryllium	0.004
Cyanide (as free cyanide)	0.2
Nickel	0.1
Thallium	0.0005

¹This value for arsenic is effective January 1, 2006. Until then, there is no MCLG.

(Water Pollution Control Board; 327 IAC 8-2-34; filed Aug 24, 1994, 8:15 a.m.: 18 IR 67)

SECTION 16. 327 IAC 8-2-34.1 IS ADDED TO READ AS FOLLOWS:

327 IAC 8-2-34.1 Maximum contaminant level goals; radionuclides

Authority: IC 13-13-5-1; IC 13-14-8-7; IC 13-18-3-1; IC 13-18-3-2; IC 13-18-6

Affected: IC 13-14-9

Sec. 34.1. MCLGs for the following contaminants are as indicated:

<u>Contaminant</u>	<u>MCLG</u>
Combined radium-226 and radium-228	0
Gross alpha particle activity (excluding radon and uranium)	0
Beta particle and photon radioactivity	0
Uranium	0

(Water Pollution Control Board; 327 IAC 8-2-34.1)

SECTION 17. 327 IAC 8-2-45 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-45 Analytical methods; lead and copper

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-11-2; IC 13-14-8; IC 13-18-1; IC 13-18-2

Sec. 45. (a) Analysis for lead, copper, pH, conductivity, calcium, alkalinity, orthophosphate, silica, and temperature shall be conducted using the following methods:

(1) Lead as follows:

- (A) Atomic absorption; furnace technique, Method D3559-90D¹*, Method D3559-96*, or Method 3113B¹.*
- (B) Inductively-coupled plasma; mass spectrometry, Method 200.8*.
- (C) Atomic absorption; platform furnace technique, Method 200.9¹*.
- (D) Differential pulse anodic stripping voltammetry, Method 1001*.

(2) Copper as follows:

- (A) Atomic absorption; furnace technique, Method D1688-90C*, Method D1688-95C*, or Method 3113B*.
- (B) Atomic absorption; direct aspiration, Method D1688-90A*, Method D1688-95A*, or Method 3111B*.
- (C) Inductively-coupled plasma; Method 200.7* or Method 3120B*.
- (D) Inductively-coupled plasma; mass spectrometry, Method 200.8*.
- (E) Atomic absorption; platform furnace, Method 200.9*.

(3) pH, electrometric, Method 150.1*, Method 150.2*, Method D1293-84*, Method D1293-95*, or Method 4500-H⁺-B*.

(4) Conductivity, conductance, Method D1125-91A*, Method D1125-95A*, or Method 2510B*.

(5) Calcium as follows:

- (A) EDTA titrimetric, Method D511-93A* or Method 3500-Ca-D*.
- (B) Atomic absorption; direct aspiration, Method D511-93B* or Method 3111-B*.
- (C) Inductively-coupled plasma, Method 200.7 or Method 3120B*.

(6) Alkalinity as follows:

- (A) Titrimetric, Method D1067-92B* or Method 2320B.
- (B) Electrometric titration, Method I-1030-85*.

(7) Orthophosphate, unfiltered, no digestion or hydrolysis as follows:

- (A) Colorimetric, automated, ascorbic acid, Method 365.1* or Method 4500-P-F*.
- (B) Colorimetric, ascorbic acid, single reagent, Method D515-88A* or Method 4500-P-E*.

(C) Colorimetric, phosphomolybdate, Method I-1601-85* or automated-segmented flow, Method I-2601-90*, or automated discrete, Method I-2598-85*.

(D) Ion chromatography, Method 300.0*, Method ~~D 4327-91*~~, **D 4327-97***, or Method 4110B*.

(8) Silica as follows:

(A) Colorimetric, molybdate blue, Method I-1700-85 or automated-segmented flow, Method I-2700-85*.

(B) Colorimetric, Method D859-88* or Method D859-95*.

(C) Molybdosilicate, Method 4500-Si-D* **or Method 4500-SiO₂ C***.

(D) Heteropoly blue, Method 4500-Si-E* **or Method 4500-SiO₂ D***.

(E) Automated method for molybdate-reactive silica, Method 4500-Si-F* **or Method 4500-SiO₂ E***.

(F) Inductively-coupled plasma, Method 200.7* or Method 3120B*.

(9) Temperature, thermometric, Method 2550*.

¹Because MDLs reported in EPA Methods 200.7 and 200.9 were determined using a 2× preconcentration step during sample digestion, MDLs determined when samples are analyzed by direct analysis, that is, no sample digestion, will be higher. Preconcentration may be required to direct analysis of lead by Method 200.9, Method 3113 B, and Method D 3559-90D unless multiple in-furnace depositions are made.

(b) Analyses for alkalinity, calcium, conductivity, orthophosphate, pH, silica, and temperature may be performed by any person acceptable to the commissioner. Analyses under this section for lead and copper shall only be conducted by laboratories that have been certified by the EPA or the commissioner. To obtain certification to conduct analysis for lead and copper, laboratories must do the following:

(1) Successfully analyze performance evaluation (PE) samples ~~which that~~ include lead and copper provided by or acceptable to EPA or the commissioner at least once each year by each method for which the laboratory desires certification.

(2) Achieve quantitative acceptance limits as follows:

(A) For lead, plus or minus thirty percent (30%) of the actual amount in the ~~performance evaluation PE~~ sample when the actual amount is greater than or equal to ~~five-thousandths (0.005)~~ **five-hundredths (0.05)** milligram per liter.

(B) For copper, plus or minus ten percent (10%) of the actual amount in the ~~performance evaluation PE~~ sample when the actual amount is greater than or equal to five-thousandths (0.005) milligram per liter.

(3) Achieve the method detection limit for lead of one-thousandth (0.001) milligram per liter according to the procedures in Appendix B of 40 CFR 136 (July 1, 1991). This need only be done if the laboratory will be processing source water composite samples under section 39 of this rule.

(4) Be currently certified by EPA or the state to perform analyses to the specifications described in subsection (a)(2).

(c) The commissioner has the authority to allow the use of previously collected monitoring data for purposes of monitoring if the data were collected and analyzed in accordance with ~~the requirements of~~ sections 36 through 44 of this rule, this section, and sections 46 and 47 of this rule.

(d) All lead levels measured between the practical quantitation level and the method detection limit must be either reported as measured or they can be reported as one-half (½) the practical quantitation level (twenty-five ~~thousandths (0.025)~~ **ten-thousandths (0.0025)** milligram per liter). All levels below the lead method detection level must be reported as zero (0).

(e) All copper levels measured between the practical quantitation level and the method detection limit must be either reported as measured or they can be reported as one-half (½) the practical quantitation level (twenty-five thousandths (0.025) milligram per liter). All levels below the copper method detection limit must be reported as zero (0).

¹For analyzing lead and copper, the technique applicable to total metals must be used and samples cannot be filtered.

*Methods referenced in this section may be obtained as follows:

(1) Methods 150.1 and 150.2, may be found in “Methods for Chemical Analysis of Water and Wastes”, EPA/600/4-79/020, March 1983, available from NTIS, PB84-128677, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161.

(2) Methods 200.7, 200.8, and 200.9 may be found in “Methods for the Determination of Metals in Environmental Samples-Supplement 1”, EPA-600/R-94-111, May 1994, available from NTIS, PB95-125472, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161.

(3) Methods D3559-90D, D1688-90C, D1688-90A, D1293-84, D1125-91A, and D859-88 may be found in “Annual Book of ASTM Standards”, Vols. 11.01, 1994, American Society for Testing and Materials, available from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428. **Any year containing the cited version of the method may be used.**

(4) Methods D1067-92B, D511-93A, D511-93B, D1688-95C, D1688-95A, D1125-95A, D3559-96, D515-88A, D4327-91,

D1293-95, and D859-95 may be found in “Annual Book of ASTM Standards, Vols. 11.01 and 11.02, 1994 and 1996, available from the American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, Pennsylvania 19428. **Any year containing the cited version of the method may be used.**

(5) Methods ~~2320B~~, 3113B, ~~3111B~~, 3120B, ~~4500-H⁺-B~~, ~~2510B~~, ~~3500-Ca-D~~, ~~2320B~~, ~~4500-P-F~~, ~~4500-P-E~~, ~~4110B~~, 4500-Si-D, 4500-Si-E, **and** 4500-Si-F, ~~and~~ 2550 may be found in “Standard Methods for the Examination of Water and Wastewater”, 18th Edition, 1992, and “Standard Methods for the Examination of Water and Wastewater”, 19th Edition, 1995, American Public Health Association, available from the American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005. Either edition may be used.

(6) **Methods 2320B, 3111B, 3120B, 4500-H⁺-B, 2510B, 3500-Ca-D, 2320B, 4500-P-F, 4500-P-E, 4110B, and 2550 may be found in “Standard Methods for the Examination of Water and Wastewater”, 18th Edition, 1992, and “Standard Methods for the Examination of Water and Wastewater”, 19th Edition, 1995, and “Standard Methods for the Examination of Water and Wastewater”, 20th Edition, 1998, American Public Health Association, available from the American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005. The cited methods published in any of the three (3) editions may be used.**

(7) **Methods 4500-SiO₂ C, 4500-SiO₂ D, and 4500-SiO₂ E may be found in “Standard Methods for the Examination of Water and Wastewater”, 20th Edition, 1998, American Public Health Association, 1015 Fifteenth Street NW, Washington, D.C. 20005.**

~~(6)~~ (8) Methods I-1030-85, I-1601-85, I-2598-85, I-1700-85, and I-2700-85 may be found in “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, Colorado 80225-0425.

~~(7)~~ (9) Method I-2601-90 may be found in “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, available from Information Services, U.S. Geological Survey, Federal Center, Box 25286, Denver, Colorado 80225-0425.

~~(8)~~ (10) Methods 365.1 and 300.0 may be found in “Methods for the Determination of Inorganic Substances in Environmental Samples”, EPA-600/R-93-100, August 1993, available from NTIS, PB94-120821, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161.

~~(9)~~ (11) Method 1001 is available from Palintest, LTC, 21 Kenton Lands Road, P.O. Box 18395, Erlanger, Kentucky 41018 or from the Hach Company, P.O. Box 389, Loveland, Colorado 80539-0389.

These methods are also available for copying at the Indiana Department of Environmental Management, Office of Water Quality, 100 North Senate Avenue, Room 1255, Indianapolis, Indiana 46206. (*Water Pollution Control Board; 327 IAC 8-2-45; filed Aug 24, 1994, 8:15 a.m.: 18 IR 82; errata filed Oct 11, 1994, 2:45 p.m.: 18 IR 532; filed Aug 25, 1997, 8:00 a.m.: 21 IR 72; errata filed Dec 10, 1997, 3:45 p.m.: 21 IR 1349; filed Jul 23, 2001, 1:02 p.m.: 24 IR 3978; errata filed Jul 25, 2001, 3:25 p.m.: 24 IR 3991*)

SECTION 18. 327 IAC 8-2-46 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2-46 Reporting requirements; lead and copper

Authority: IC 13-13-5; IC 13-14-8-7; IC 13-14-9; IC 13-18-3; IC 13-18-16

Affected: IC 13-18

Sec. 46. (a) Reporting requirements for tap water monitoring for lead and copper and for water quality parameter monitoring shall be as follows:

(1) Except as provided in clause (G), a water system shall report the following information for all tap water samples within the first ten (10) days following the end of each applicable monitoring period specified in sections 37 and 38 of this rule, that is, every six (6) months, annually, every three (3) years, or every nine (9) years:

(A) The results of all tap samples for lead and copper, including the location of each site and the criteria under section 37(a)(3) through 37(a)(7) of this rule, or any under which the site was selected for the system’s sampling pool.

(B) Documentation for each tap water lead or copper sample for which the system requests an invalidation ~~pursuant to~~ **under** section 37(f)(2) of this rule.

(C) The ninetieth percentile lead and copper concentrations measured from among all lead and copper tap samples collected during each monitoring period (calculated in accordance with section 36(c)(3) of this rule unless the commissioner calculates the system’s ninetieth percentile lead and copper levels under subsection (h)).

(D) With the exception of initial tap sampling conducted under section 37(d)(1) of this rule, the system shall designate any site ~~which that~~ was not sampled during previous monitoring periods and include an explanation of why sampling sites have changed.

(E) The results of all tap samples for pH and, where applicable, alkalinity, calcium, conductivity, temperature, and orthophosphate or silica collected under section 38(c) through 38(f) of this rule.

(F) The results of all samples collected at the entry point to the distribution system for applicable water quality parameters under section 38(c) through 38(f) of this rule.

(G) A water system shall report the results of all water quality parameter samples collected under section 38(c) through 38(f) of this rule during each six (6) month monitoring period specified in section 38(d) of this rule within the first ten (10) days following the end of the monitoring period unless the commissioner has specified a more frequent reporting requirement.

(2) For ~~a nontransient noncommunity water system~~ **an NTNCWS** or a ~~community water system~~ **CWS** meeting the criteria of section 44(c)(7)(A) and 44(c)(7)(B) of this rule that does not have enough taps that can provide first-draw samples, the system must do either of the following:

(A) Provide written documentation to the commissioner identifying standing times and locations for enough nonfirst-draw samples to make up its sampling pool under section 37(b)(5) of this rule by the start of the first applicable monitoring period under section 37(d) of this rule that commences after April 11, 2000, unless the commissioner has waived prior approval of nonfirst-draw sample sites selected by the system ~~pursuant to~~ **under** section 37(b)(5) of this rule.

(B) If the commissioner has waived prior approval of nonfirst-draw sample sites selected by the system, identify, in writing, each site that did not meet the six (6) hour minimum standing time and the length of the standing time for that particular substitute sample collected ~~pursuant to~~ **under** section 37(b)(5) of this rule and include this information with the lead and copper tap sample results required to be submitted ~~pursuant to~~ **under** subdivision (1)(A).

(3) No later than sixty (60) days after the addition of a new source or any change in water treatment unless the commissioner requires earlier notification, a water system deemed to have optimized corrosion control under section 40(b)(3) of this rule, a water system subject to reduced monitoring ~~pursuant to~~ **under** section 37(d)(4) of this rule, or a water system subject to a monitoring waiver ~~pursuant to~~ **under** section 37(g) of this rule, shall send written documentation to the commissioner describing the change. In those instances where prior approval by the commissioner of the treatment change or new source is not required, water systems are encouraged to provide the notification to the commissioner beforehand to minimize the risk the treatment change or new source will adversely affect optimal corrosion control.

(4) Any small system applying for a monitoring waiver under section 37(g) of this rule, or subject to a waiver granted ~~pursuant to~~ **under** section 37(g)(3) of this rule, shall provide the following information to the commissioner in writing by the specified deadline:

(A) By the start of the first applicable monitoring period in section 37(d) of this rule, any small water system applying for a monitoring waiver shall provide the documentation required to demonstrate that it meets the waiver criteria of section 37(g)(1) and 37(g)(2) of this rule.

(B) No later than nine (9) years after the monitoring previously conducted ~~pursuant to~~ **under** section 37(g)(2) or 37(g)(4)(A) of this rule, each small system desiring to maintain its monitoring waiver shall provide the information required by section 37(g)(4)(A) and 37(g)(4)(B) of this rule.

(C) No later than sixty (60) days after ~~it~~ **the public water system** becomes aware that it is no longer free of lead or copper containing materials, or both, each small system with a monitoring waiver shall provide written notification to the commissioner, setting forth the circumstances resulting in the lead or copper containing materials, or both, being introduced into the system and what corrective action, if any, the system plans to remove these materials.

(D) By October 10, 2000, any small system with a waiver granted prior to April 11, 2000, and that has not previously met the requirements of section 37(g)(2) of this rule shall provide the information required.

(5) Each ground water system that limits water quality parameter monitoring to a subset of entry points under section 38(d)(3) of this rule shall provide, by the commencement of such monitoring, written correspondence to the commissioner that identifies the selected entry points and includes information sufficient to demonstrate that the sites are representative of water quality and treatment conditions throughout the system.

(b) Source water monitoring reporting requirements shall be as follows:

(1) A water system shall report the sampling results for all source water samples collected in accordance with section 39 of this rule within the first ten (10) days following the end of each source water monitoring period, that is, annually, per compliance period, per compliance cycle, specified in section 39 of this rule.

(2) With the exception of the first round of source water sampling conducted under section 39(b) of this rule, the system shall specify any site ~~which~~ **that** was not sampled during previous monitoring periods and include an explanation of why the sampling point has changed.

(c) This subsection establishes requirements for corrosion control treatment reporting. By the applicable dates under section 40 of this rule, systems shall report the following information:

(1) For systems demonstrating that they already have optimized corrosion control, information required in section 40(b)(2) or 40(b)(3) of this rule.

(2) For systems required to optimize corrosion control, their recommendation regarding optimal corrosion control treatment under section 41(a) of this rule.

(3) For systems required to evaluate the effectiveness of corrosion control treatments under section 41(c) of this rule, the information required under that subsection.

(4) For systems required to install optimal corrosion control designated by the commissioner under section 41(d) of this rule, a letter certifying that the system has completed installing that treatment.

(d) This subsection establishes requirements for source water treatment reporting. By the applicable dates in section 42 of this rule, systems shall provide the following information to the commissioner:

(1) If required under section 42(b)(1) of this rule, their recommendation regarding source water treatment.

(2) For systems required to install source water treatment under section 42(b)(2) of this rule, a letter certifying that the system has completed installing the treatment designated by the commissioner within twenty-four (24) months after the commissioner designated the treatment.

(e) This subsection establishes requirements for lead service line replacement reporting. Systems shall report the following information to the commissioner to demonstrate compliance with ~~the requirements of~~ section 43 of this rule:

(1) Within twelve (12) months after a system exceeds the lead action level in sampling referred to in section 43(a) of this rule, the system shall demonstrate in writing to the commissioner that it has conducted a material evaluation, including the evaluation in section 37(a) of this rule, to identify the initial number of lead service lines in its distribution system, and shall provide the commissioner with the system's schedule for replacing annually at least seven percent (7%) of the initial number of lead service lines within its distribution system.

(2) Within twelve (12) months after a system exceeds the lead action level in sampling referred to in section 43(a) of this rule, and every twelve (12) months thereafter, the system shall demonstrate to the commissioner in writing that the system has done either of the following:

(A) Replaced in the previous twelve (12) months, at least seven percent (7%) of the initial lead service lines (or a greater number of lines specified by the commissioner under section 43(e) of this rule) in its distribution system.

(B) Conducted sampling ~~which that~~ demonstrates that the lead concentration in all service line samples from an individual line, taken under section 37(b)(3) of this rule, is less than or equal to fifteen-thousandths (0.015) milligram per liter. In such cases, the total number of lines replaced and ~~which that~~ meet the criteria in section 43(b) of this rule shall equal at least seven percent (7%) of the initial number of lead lines identified under subsection (a) (or the percentage specified by the commissioner under section 43(e) of this rule).

(3) The annual letter submitted to the commissioner under subdivision (2) shall contain the following information:

(A) The number of lead service lines scheduled to be replaced during the previous year of the system's replacement schedule.

(B) The number and location of each lead service line replaced during the previous year of the system's replacement schedule.

(C) If measured, the water lead concentration and location of each service line sampled, the sampling method, and the date of sampling.

(4) Any system that collects lead service line samples following partial lead service line replacement required by section 43 of this rule shall report the results to the commissioner within the first ten (10) days of the month following the month when the system receives the laboratory results or as specified by the commissioner. A system shall also report any additional information as specified by the commissioner. The results shall be reported in the time and manner prescribed by the commissioner to verify that all partial lead service line replacement activities have taken place.

(f) The following are requirements for public education program reporting:

(1) Any water system that is subject to the public education requirements in section 44 of this rule shall, within ten (10) days after the end of each period in which the system is required to perform public education tasks in accordance with section 44(c) of this rule, send written documentation to the commissioner that contains the following information:

(A) A demonstration that the system has delivered the public education materials that meet the content requirements in section 44(a) and 44(b) of this rule and the delivery requirements in section 44(c) of this rule.

(B) A list of all the:

(i) newspapers;

(ii) radio stations;

(iii) television stations;

(iv) facilities; and

(v) organizations;

to which the system delivered public education materials during the period in which the system was required to perform the

public education tasks.

(2) Unless required by the commissioner, a system that previously submitted the information required by subdivision (1)(B) **need not resubmit the information required** as long as there have been no changes in the distribution list and the system certifies that the public education materials were distributed to the same list submitted previously.

(g) Any system that collects sampling data in addition to that required by sections 36 through 45 of this rule, this section, and section 47 of this rule shall report the results to the commissioner within the first ten (10) days following the end of the applicable monitoring period under sections 37 through 39 of this rule during which the samples are collected.

(h) A water system is not required to report the ninetieth percentile lead and copper concentrations measured from among all lead and copper tap water samples collected in each monitoring period as required by subsection (a)(1)(C) if the following conditions are met:

(1) The commissioner has previously notified the water system that it will calculate the water system's ninetieth percentile lead and copper concentrations, based on the lead and copper results submitted ~~pursuant to~~ **under** subdivision (2)(A), and has specified a date before the end of the applicable monitoring period by which the system must provide the results of lead and copper tap water samples.

(2) The system has provided the following information to the commissioner by the date specified in subdivision (1):

(A) The results of all tap samples for lead and copper including the location of each site and the criteria under section 37(a)(3), 37(a)(4), 37(a)(5), 37(a)(6), or 37(a)(7) of this rule, under which the site was selected for the system's sampling pool ~~pursuant to~~ **under** subsection (a)(1)(A).

(B) An identification of the sampling sites utilized during the current monitoring period that were not sampled during previous monitoring periods and an explanation why sampling sites have changed.

(3) The commissioner has provided the results of the ninetieth percentile lead and copper calculations, in writing, to the water system before the end of the monitoring period.

(i) The information required by this section shall be submitted to the commissioner using the methods specified in section 13(e) of this rule. (*Water Pollution Control Board; 327 IAC 8-2-46; filed Aug 24, 1994, 8:15 a.m.: 18 IR 84; filed Oct 24, 1997, 4:30 p.m.: 21 IR 945; filed Jul 23, 2001, 1:02 p.m.: 24 IR 3980; filed Oct 26, 2001, 4:55 p.m.: 25 IR 784; errata filed Oct 30, 2001, 10:50 a.m.: 25 IR 813; errata filed Feb 22, 2002, 1:59 p.m.: 25 IR 2254*)

SECTION 19. 327 IAC 8-2.1-3 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2.1-3 Content of the reports

Authority: IC 13-13-5-1; IC 13-13-5-2; IC 13-18-16-6; IC 13-18-16-7; IC 13-18-16-9

Affected: IC 13-18-16

Sec. 3. (a) A ~~community water system~~ **CWS** shall provide to its customers an annual report that contains the information specified in this section and section 4 of this rule.

(b) The report must contain information on the source of the water delivered, including the following:

(1) The source or sources of water delivered by the ~~community water system~~ **CWS** by including information on ~~the~~:

(A) ~~the~~ type of water, such as surface water or ground water; and

(B) ~~the~~ commonly used name, if any; and

(C) location of the body or bodies of water.

(2) If a source water assessment has been completed, the report must notify the consumers of the availability of this information and the means to obtain it. In addition, 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 commissioner, the report must include a brief summary of the system's susceptibility to potential sources of contamination, using language provided by the commissioner or written by the operator.

(c) The report must include the following definitions:

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

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

(2) “Maximum contaminant level goal” or “MCLG” means the level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

(d) A report that contains data on contaminants that the department or EPA regulates and uses any of the following terms must include definitions, as applicable, of the terms used:

~~(1) “Treatment technique” means a required process intended to reduce the level of a contaminant in drinking water.~~

~~(2) (1) “Action level” means the concentration of a contaminant that, if exceeded, triggers treatment or other requirements that a water system shall follow.~~

(2) “Maximum residual disinfectant level” or “MRDL” means 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.

(3) “Maximum residual disinfectant level goal” or “MRDLG” means the level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLG does not reflect the benefits of the use of disinfectants to control microbial contaminants.

(4) “Treatment technique” means a required process intended to reduce the level of a contaminant in drinking water.

(e) A report must include the information specified in this subsection for the following contaminants subject to mandatory monitoring, other than *Cryptosporidium*:

(1) Contaminants subject to an MCL, action level, or treatment technique, hereafter referred to as regulated contaminants.

(2) Disinfection byproducts or microbial contaminants for which monitoring is required by 40 CFR 141.142* and 40 CFR 141.143*, except as provided in subsection ~~(c)(1)~~; **(f)(1)** and that are detected in the finished water.

(3) The data relating to these contaminants must be displayed in one (1) table or in several adjacent tables. Any additional monitoring results that a ~~community water system~~ **CWS** chooses to include in its report must be displayed separately.

(4) 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 the following:

(A) Where a system is allowed to monitor for regulated contaminants less often than once a year, the table or tables 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: 327 IAC 8-2, 327 IAC 8-2.5, 327 IAC 8-2.6, and 40 CFR 141.~~ No data older than five (5) years need be included.

(B) Results of monitoring in compliance with 40 CFR 141.142* and 40 CFR 141.143* need only be included:

(i) for five (5) years from the date of the last sample; or

(ii) until any of the detected contaminants becomes regulated and subject to routine monitoring requirements; whichever comes first.

(5) For detected regulated contaminants listed in section 6(a) of this rule, the table or tables must contain the following information:

(A) The MCL for that contaminant expressed as a number equal to or greater than one and zero tenths (1.0), as listed in section 6(a) of this rule.

(B) The MCLG for that contaminant expressed in the same units as the MCL.

(C) If there is no MCL for a detected contaminant, the table must indicate that there is a treatment technique, or specify the action level, applicable to that contaminant, and the report shall include the definitions for treatment technique or action level, or both, as appropriate, specified in subsection ~~(c)(4)~~; **(d)**.

(D) For contaminants subject to an MCL, except turbidity and total coliforms, the highest contaminant level used to determine compliance with this rule and the range of detected levels as follows:

(i) 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.

(ii) 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.

(iii) 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 turbidity is reported ~~pursuant to~~ **under** 327 IAC 8-2-8.8 or 327 IAC 8-2.6-3, the highest single measurement and the lowest monthly percentage of samples meeting the turbidity limits specified in 327 IAC 8-2-8.8 or 327 IAC 8-2.6-3 for the filtration technology being used. The report must include an explanation of the reasons for measuring turbidity.

(F) For lead and copper, the ninetieth percentile value of the most recent round of sampling and the number of sampling sites exceeding the action level.

(G) For total coliform, the highest monthly:

(i) number of positive samples for systems collecting fewer than forty (40) samples per month; or

- (ii) percentage of positive samples for systems collecting at least forty (40) samples per month.
- (H) For fecal coliform, the total number of positive samples.
- (I) The likely source or sources 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 must be used when available to the operator. If the operator lacks specific information on the likely source, the report must include one (1) or more of the typical sources for that contaminant listed in section 6(b) of this rule that are most applicable to the system.
- (6) If a ~~community water system~~ **CWS** distributes water to its customers from multiple hydraulically independent distribution systems that are fed by different raw water sources:
 - (A) the table must contain a separate column for each service area, and the report must identify each separate distribution system; or
 - (B) the system may produce separate reports tailored to include data for each service area.
- (7) The table must clearly identify any data indicating violations of MCLs or treatment techniques, and the report must contain a clear and readily understandable explanation of the violation, including:
 - (A) the length of the violation;
 - (B) the potential adverse health effects; and
 - (C) actions taken by the system to address the violation.

To describe the potential health effects, the system shall use the relevant language of section 6(c) of this rule.

(8) For detected unregulated contaminants for which monitoring is required (except Cryptosporidium), the table 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.

- (f) Each report must contain the following information on Cryptosporidium, radon, and other contaminants:
 - (1) If the system has performed any monitoring for Cryptosporidium, including monitoring performed to satisfy the requirements of 40 CFR 141.143*, that indicates Cryptosporidium may be present in the source water or the finished water, the report must include:
 - (A) a summary of the results of the monitoring; and
 - (B) an explanation of the significance of the results.
 - (2) If the system has performed any monitoring for radon that indicates radon may be present in the finished water, the report must include:
 - (A) the results of the monitoring; and
 - (B) an explanation of the significance of the results.
 - (3) If the system has performed additional monitoring that indicates the presence of other contaminants in the finished water, the commissioner strongly encourages systems to report any results that may indicate a health concern. To determine if results may indicate a health concern, the commissioner recommends that systems find out if EPA has proposed a national primary drinking water regulation (NPDWR) or issued a health advisory for that contaminant by calling the Safe Drinking Water Hotline at (800) 426-4791. The commissioner and EPA consider levels detected above a proposed federal or state MCL or health advisory level to indicate possible health concerns. For such contaminants, the commissioner recommends that the report includes:
 - (A) the results of the monitoring; and
 - (B) an explanation of the significance of the results noting the existence of a health advisory or a proposed regulation.

(g) In addition to the requirements of subsection ~~(d)(5)~~, **(e)(5)**, the report must note any violation of a requirement listed in this subsection that occurred during the year covered by the report 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. Violations of the following requirements must be included:

- (1) Monitoring and reporting of compliance data.
- (2) Filtration and disinfection prescribed by 327 IAC 8-2-8.5 and 327 IAC 8-2-8.6. For systems that have failed to install adequate filtration or disinfection equipment or processes, or have had a failure of such equipment or processes that constitutes a violation, the report must include the following language as part of the explanation of potential health effects, "inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches."
- (3) Lead and copper control requirements prescribed by 327 IAC 8-2-36 through 327 IAC 8-2-47. For systems that fail to take one (1) or more actions prescribed by 327 IAC 8-2-36(d) or 327 IAC 8-2-40 through 327 IAC 8-2-43, the report must include the applicable language from section 6(c) of this rule for lead or copper, or both.
- (4) Treatment techniques for acrylamide and epichlorohydrin prescribed by 327 IAC 8-2-35. For systems that violate 327 IAC 8-2-35, the report shall include the relevant language from section 6(c) of this rule.

- (5) Record keeping of compliance data.
- (6) Special monitoring requirements prescribed by 327 IAC 8-2-21.
- (7) Violation of the terms of an administrative or judicial order.

(h) The following additional information must be contained in the report:

(1) A brief explanation regarding contaminants that may reasonably be expected to be found in drinking water, including bottled water. This explanation may include the language in clauses (A) through (C), or systems may use their own comparable language. The report must also include the language of clause (D). The language is as follows:

(A) The 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.

(B) Contaminants that may be present in source water include the following:

(i) Microbial contaminants, such as viruses and bacteria, that may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.

(ii) Inorganic contaminants, such as salts and metals, that can be naturally-occurring or result from urban stormwater run-off, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.

(iii) Pesticides and herbicides that may come from a variety of sources, such as agriculture, urban stormwater run-off, and residential uses.

(iv) Organic chemical contaminants, including synthetic and volatile organic chemicals, that are byproducts of industrial processes and petroleum production and can also come from gas stations, urban stormwater run-off, and septic systems.

(v) Radioactive contaminants that can be naturally-occurring or be the result of oil and gas production and mining activities.

(C) In order to ensure that tap water is safe to drink, the department and EPA prescribe regulations that limit the amount of certain contaminants in water provided by public water systems. Federal Drug Administration (FDA) regulations establish limits for contaminants in bottled water that must provide the same protection for public health.

(D) 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 the 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 at (800) 426-4791.

(2) The telephone number of the owner, operator, or designee of the ~~community water system~~ CWS as a source of additional information concerning the report.

(3) In communities with a large proportion of non-English speaking residents, in which twenty percent (20%) or more of the residents speak the same language other than English, the report must contain:

(A) information in the appropriate language or languages regarding the importance of the report; or ~~contain~~

(B) 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.

(4) The report must include information about opportunities for public participation in decisions that may affect the quality of water. This information may include, but is not limited to, the time and place of regularly scheduled board meetings.

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

*The Code of Federal Regulations (CFR) citations are incorporated by reference into this rule and are available from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402 or from the Indiana Department of Environmental Management, Office of Water Quality, Indiana Government Center-North, Twelfth Floor, Room 1255, 100 North Senate Avenue, Indianapolis, Indiana 46206. (*Water Pollution Control Board; 327 IAC 8-2.1-3; filed Mar 22, 2000, 3:23 p.m.: 23 IR 1899; filed Jul 23, 2001, 1:02 p.m.: 24 IR 3982; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1098; filed May 1, 2003, 12:00 p.m.: 26 IR 2818*)

SECTION 20. 327 IAC 8-2.1-4 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2.1-4 Required additional health information

Authority: IC 13-13-5-1; IC 13-13-5-2; IC 13-18-16-6; IC 13-18-16-7; IC 13-18-16-9

Affected: IC 13-18-16

Sec. 4. (a) A report must prominently display the 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. U.S. Environmental Protection Agency and Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline at (800) 426-4791.”.

(b) ~~¶~~ **Ending in the report due by July 1, 2001, a system that detects arsenic at levels above twenty-five (25) micrograms per liter, but below the MCL, it fifty (50) micrograms per liter, and beginning in the report due by July 1, 2002, a system that detects arsenic above five (5) micrograms per liter and up to and including ten (10) micrograms per liter shall do one (1) of the following:**

(1) Include in its report the language: ~~“The U.S. Environmental Protection Agency is reviewing the~~ **a short informational statement about arsenic, using language such as “While your drinking water meets EPA’s standard for arsenic, because of special concerns that it may not be stringent enough, it does contain low levels of arsenic. EPA’s standard balances the current understanding of arsenic’s possible health effects against the costs of removing arsenic from drinking water. EPA continues to research the health effects of low levels of arsenic, which is a naturally-occurring mineral known to cause cancer in humans at high concentrations and is linked to other health effects such as skin damage and circulatory problems.”.**

(2) Write its own educational statement, if ~~such~~ **the** statement is written in consultation with the commissioner, and include that statement in the report.

(c) If a system detects nitrate at levels above five (5) milligrams per liter, but below the MCL, ~~it the system~~ shall do one (1) of the following:

(1) Include in its report the language: “Nitrate in drinking water at levels above ten (10) parts per million is a health risk for infants of less than six (6) 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, seek advice from your health care provider.”.

(2) Write its own educational statement, if ~~such~~ **the** statement is written in consultation with the commissioner, and include that statement in the report.

(d) If a system detects lead above the action level in more than five percent (5%), and up to and including ten percent (10%), of homes sampled, ~~it the system~~ shall do one (1) of the following:

(1) Include in its report the language: “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 thirty (30) seconds to two (2) minutes before using tap water. Additional information is available from the Safe Drinking Water Hotline at (800) 426-4791.”.

(2) Write its own educational statement, if ~~such~~ **the** statement is written in consultation with the commissioner, and include that statement in the report.

(e) If a system detects ~~total trihalomethanes~~ **TTHM** above eight-hundredths (0.08) milligrams per liter, but below the MCL in 327 IAC 8-2-5(a), as an annual average, monitored and calculated under ~~the provisions of 327 IAC 8-2-5.3,~~ **it the system** shall include in its report the health effects language in table 17(G)(74) contained in section 17 of this rule.

(f) Beginning in the report due by July 1, 2002, and ending December 31, 2005, a CWS that detects arsenic above ten-hundredths (0.10) mg/l and up to and including fifty-hundredths (0.50) mg/l must include the arsenic health effects language in Table 17(B)(4) of section 17 of this rule. (Water Pollution Control Board; 327 IAC 8-2.1-4; filed Mar 22, 2000, 3:23 p.m.: 23 IR 1902; filed May 1, 2003, 12:00 p.m.: 26 IR 2821)

SECTION 21. 327 IAC 8-2.1-6 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2.1-6 Other required information

Authority: IC 13-13-5-1; IC 13-13-5-2; IC 13-18-16-6; IC 13-18-16-7; IC 13-18-16-9

Affected: IC 13-18-16

Sec. 6. (a) In order to convert MCLs to numbers greater than or equal to one and zero-tenths (1.0) for the required table referenced in section 3 of this rule, a ~~community water system~~ **CWS** shall use the following table:

Table 6-1: Converting MCL Compliance Values for Consumer Confidence Reports

Contaminant	MCL in Compliance Units (mg/l)	multiply by...	MCL in CCR Units	MCLG in CCR Units
Microbiological contaminants				
1. Total coliform bacteria	5% of monthly samples are positive (systems that collect forty (40) or more samples per month); one (1) positive monthly sample (systems that collect fewer than forty (40) samples per month).		5% of monthly samples are positive (systems that collect forty (40) or more samples per month); one (1) positive monthly sample (systems that collect fewer than forty (40) samples per month).	0
2. Fecal coliform and E. coli	0		A routine sample and a repeat sample are total coliform positive, and one (1) is also fecal coliform or E. coli positive.	0
3. Total organic carbon	TT		TT	n/a
4. Turbidity	TT		TT (NTU)	n/a
Radioactive contaminants				
5. Beta/photon emitters	4 mrem/year		4 mrem/year	0
6. Alpha emitters	15 pCi/l		15 pCi/l	0
7. Combined radium	5 pCi/l		5 pCi/l	0
8. Uranium	0.030	1,000	30 ppb	0
Inorganic contaminants				
8. 9. Antimony	0.006	1,000	6 ppb	6
9. 10. Arsenic	0.05 0.010¹	1,000	50 10¹ ppb	n/a 0¹
10. 11. Asbestos	7 MFL		7 MFL	7
11. 12. Barium	2		2 ppm	2
12. 13. Beryllium	0.004	1,000	4 ppb	4
14. Bromate	0.10	1,000	10 ppb	0
13. 15. Cadmium	0.005	1,000	5 ppb	5
16. Chloramines	MRDL = 4.0		MRDL = 4.0 ppm	MRDLG = 4
17. Chlorine	MRDL = 4.0		MRDL = 4.0 ppm	MRDLG = 4
18. Chlorine dioxide	MRDL = 0.8	1,000	MRDL = 800 ppb	MRDLG = 800
19. Chlorite	1		1 ppm	0.8
14. 20. Chromium	0.1	1,000	100 ppb	100
15. 21. Copper	AL = 1.3		AL = 1.3 ppm	1.3
16. 22. Cyanide	0.2	1,000	200 ppb	200
17. 23. Fluoride	4		4 ppm	4
18. 24. Lead	AL = 0.015	1,000	AL = 15 ppb	0
19. 25. Mercury (inorganic)	0.002	1,000	2 ppb	2
20. 26. Nitrate (as nitrogen)	10		10 ppm	10
21. 27. Nitrite (as nitrogen)	1		1 ppm	1
22. 28. Selenium	0.05	1,000	50 ppb	50
23. 29. Thallium	0.002	1,000	2 ppb	0.5
Synthetic organic contaminants including pesticides and herbicides				
24. 30. 2,4-D	0.07	1,000	70 ppb	70
25. 31. 2,4,5-TP (silvex)	0.05	1,000	50 ppb	50
26. 32. Acrylamide	TT		TT	0
27. 33. Alachlor	0.002	1,000	2 ppb	0
28. 34. Atrazine	0.003	1,000	3 ppb	3

29: 35. Benzo(a)pyrene (PAH)	0.0002	1,000,000	200 ppt	0
30: 36. Carbofuran	0.04	1,000	40 ppb	40
31: 37. Chlordane	0.002	1,000	2 ppb	0
32: 38. Dalapon	0.2	1,000	200 ppb	200
33: 39. Di(2-ethylhexyl)adipate	.4	1,000	400 ppb	400
34: 40. Di(2-ethylhexyl)phthalate	0.006	1,000	6 ppb	0
35: 41. Dibromochloropropane	0.0002	1,000,000	200 ppt	0
36: 42. Dinoseb	0.007	1,000	7 ppb	7
37: 43. Diquat	0.02	1,000	20 ppb	20
38: 44. Dioxin (2,3,7,8-TCDD)	0.00000003	1,000,000,000	30 ppq	0
39: 45. Endothall	0.1	1,000	100 ppb	100
40: 46. Endrin	0.002	1,000	2 ppb	2
41: 47. Epichlorohydrin	TT		TT	0
42: 48. Ethylene dibromide	0.00005	1,000,000	50 ppt	0
43: 49. Glyphosate	0.7	1,000	700 ppb	700
44: 50. Heptachlor	0.0004	1,000,000	400 ppt	0
45: 51. Heptachlor epoxide	0.0002	1,000,000	200 ppt	0
46: 52. Hexachlorobenzene	0.001	1,000	1 ppb	0
47: 53. Hexachlorocyclopentadiene	0.05	1,000	50 ppb	50
48: 54. Lindane	0.0002	1,000 1,000,000	200 ppt	200
49: 55. Methoxychlor	0.04	1,000	40 ppb	40
50: 56. Oxamyl (vydate)	0.2	1,000	200 ppb	200
51: 57. PCBs (polychlorinated biphenyls)	0.0005	1,000,000	500 ppt	0
52: 58. Pentachlorophenol	0.001	1,000	1 ppb	0
53: 59. Picloram	0.5	1,000	500 ppb	500
54: 60. Simazine	0.004	1,000	4 ppb	4
55: 61. Toxaphene	0.003	1,000	3 ppb	0
Volatile organic contaminants				
56: 62. Benzene	0.005	1,000	5 ppb	0
57: Bromate	0.010	1,000	10 ppb	0
58: 63. Carbon tetrachloride	0.005	1,000	5 ppb	0
59: Chloramines	MRDL = 4		MRDL = 4 ppm	MRDLG = 4
60: Chlorine	MRDL = 4		MRDL = 4 ppm	MRDLG = 4
61: Chlorite	†		† ppm	.8
62: Chloride dioxide	MRDL = .8	1,000	MRDL = 800ppb	MRDLG = 800
63: 64. Chlorobenzene	0.1	1,000	100 ppb	100
64: 65. o-Dichlorobenzene	0.6	1,000	600 ppb	600
65: 66. p-Dichlorobenzene	0.075	1,000	75 ppb	75
66: 67. 1,2-Dichloroethane	0.005	1,000	5 ppb	0
67: 68. 1,1-Dichloroethylene	0.007	1,000	7 ppb	7
68: 69. cis-1,2-Dichloroethylene	0.07	1,000	70 ppb	70
69: 70. trans-1,2-Dichloroethylene	0.1	1,000	100 ppb	100
70: 71. Dichloromethane	0.005	1,000	5 ppb	0
71: 72. 1,2-Dichloropropane	0.005	1,000	5 ppb	0
72: 73. Ethylbenzene	0.7	1,000	700 ppb	700
73: 74. Haloacetic acids (HAA)	.060	1,000	60 ppb	n/a
74: 75. Styrene	0.1	1,000	100 ppb	100
75: 76. Tetrachloroethylene	0.005	1,000	5 ppb	0
76: 77. 1,2,4-Trichlorobenzene	0.07	1,000	70 ppb	70
77: 78. 1,1,1-Trichloroethane	0.2	1,000	200 ppb	200
78: 79. 1,1,2-Trichloroethane	0.005	1,000	5 ppb	3
79: 80. Trichloroethylene	0.005	1,000	5 ppb	0

80: 81. TTHMs (total trihalomethanes)	0.1	1,000	100 ppb	n/a
81: 82. Toluene	1		1 ppm	1
82: 83. Vinyl chloride	0.002	1,000	2 ppb	0
83: 84. Xylenes	10		10 ppm	10

¹These arsenic values are effective January 1, 2006. Until then, the MCL is 0.05 mg/L and there is no MCLG.

Key:

AL = Action level.

MCL = Maximum contaminant level.

MCLG = Maximum contaminant level goal.

MFL = Million fibers per liter.

MRDL = Maximum residual disinfectant level.

MRDLG = Maximum residual disinfectant level goal.

mrem/year = Millirems per year (a measure of radiation absorbed by the body).

N/A = Not applicable

NTU = Nephelometric turbidity units.

pCi/l = Picocuries per liter (a measure of radioactivity).

ppm = Parts per million, or milligrams per liter (mg/l).

ppb = Parts per billion, or micrograms per liter (µg/l).

ppt = Parts per trillion, or nanograms per liter (ng/l).

ppq = Parts per quadrillion, or picograms per liter (pg/l).

TT = Treatment technique.

(b) In order to show potential sources of contamination for the table required by section 3 of this rule, a ~~community water system~~ **CWS** shall use the following table:

Table 6-2: Regulated Contaminants

Contaminant (units)	MCLG	MCL	Major Sources in Drinking Water
Microbiological contaminants			
1. Total coliform bacteria	0	5% of monthly samples are positive (systems that collect forty (40) or more samples per month); one (1) positive monthly sample (systems that collect fewer than forty (40) samples per month).	Naturally present in the environment.
2. Fecal coliform and E. coli	0	A routine sample and a repeat sample are total coliform positive, and one (1) is also fecal coliform or E. coli positive.	Human and animal fecal waste.
3. Total organic carbon	n/a	TT	Naturally present in the environment.
4. Turbidity	n/a	TT	Soil run-off.
Radioactive contaminants			
5. Beta/photon emitters (mrem/year)	0	4	Decay of natural and manmade deposits.
6. Alpha emitters (pCi/l)	0	15	Erosion of natural deposits.
7. Combined radium (pCi/l)	0	5	Erosion of natural deposits.
8. Uranium (ppb)	0	30	Erosion of natural deposits.
Inorganic contaminants			
8: 9. Antimony (ppb)	6	6	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder.
9: 10. Arsenic (ppb)	n/a 0¹	50 10¹	Erosion of natural deposits; run-off from orchards; run-off from glass and electronics production wastes.

10 11. Asbestos (MFL)	7	7	Decay of asbestos cement water mains; erosion of natural deposits.
11 12. Barium (ppm)	2	2	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits.
12 13. Beryllium (ppb)	4	4	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries.
14. Bromate (ppb)	10	0	Byproduct of drinking water disinfection.
13 15. Cadmium (ppb)	5	5	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; run-off from waste batteries and paints.
16. Chloramines (ppm)	MRDLG = 4	MRDL = 4.0	Water additive used to control microbes.
17. Chlorine (ppm)	MRDLG = 4	MRDL = 4.0	Water additive used to control microbes.
18. Chlorine dioxide (ppb)	MRDLG = 800	MRDL = 800	Water additive used to control microbes.
19. Chlorite (ppm)	0.8	1	Byproduct from drinking water disinfection.
14 20. Chromium (ppb)	100	100	Discharge from steel and pulp mills; erosion of natural deposits.
15 21. Copper (ppm)	1.3	AL = 1.3	Corrosion of household plumbing systems; erosion of natural deposits; leaching from wood preservatives.
16 22. Cyanide (ppb)	200	200	Discharge from steel/metal factories; discharge from plastic and fertilizer factories.
17 23. Fluoride (ppm)	4	4	Erosion of natural deposits; water additive that promotes strong teeth; discharge from fertilizer and aluminum factories.
18 24. Lead (ppb)	0	AL = 15	Corrosion of household plumbing systems; erosion of natural deposits.
19 25. Mercury (inorganic) (ppb)	2	2	Erosion of natural deposits; discharge from refineries and factories; run-off from landfills; run-off from cropland.
20 26. Nitrate (as nitrogen) (ppm)	10	10	Run-off from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits.
21 27. Nitrite (as nitrogen) (ppm)	1	1	Run-off from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits.
22 28. Selenium (ppb)	50	50	Discharge from petroleum and metal refineries; erosion of natural deposits; discharge from mines.
23 29. Thallium (ppb)	0.5	2	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories.

Synthetic organic contaminants, including pesticides and herbicides			
24: 30. 2,4-D (ppb)	70	70	Run-off from herbicide used on row crops.
25: 31. 2,4,5-TP (Silvex) (ppb)	50	50	Residue of banned herbicide.
26: 32. Acrylamide	0	TT	Added to water during sewage/wastewater treatment.
27: 33. Alachlor (ppb)	0	2	Run-off from herbicide used on row crops.
28: 34. Atrazine (ppb)	3	3	Run-off from herbicide used on row crops.
29: 35. Benzo(a)pyrene (PAH) (ppt)	0	200	Leaching from linings of water storage tanks and distribution lines.
30: 36. Carbofuran (ppb)	40	40	Leaching of soil fumigant used on rice and alfalfa.
31: 37. Chlordane (ppb)	0	2	Residue of banned termiticide.
32: 38. Dalapon (ppb)	200	200	Run-off from herbicide used on rights-of-way.
33: 39. Di(2-ethylhexyl)adipate (ppb)	400	400	Discharge from chemical factories.
34: 40. Di(2-ethylhexyl)phthalate (ppb)	0	6	Discharge from rubber and chemical factories.
35: 41. Dibromochloropropane (ppt)	0	200	Run-off/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards.
36: 42. Dinoseb (ppb)	7	7	Run-off from herbicide used on soybeans and vegetables.
37: 43. Diquat (ppb)	20	20	Run-off from herbicide use.
38: 44. Dioxin (2,3,7,8-TCDD) (ppq)	0	30	Emissions from waste incineration and other combustion; discharge from chemical factories.
39: 45. Endothall (ppb)	100	100	Run-off from herbicide use.
40: 46. Endrin (ppb)	2	2	Residue of banned insecticide.
41: 47. Epichlorohydrin	0	TT	Discharge from industrial chemical factories; an impurity of same some water treatment chemicals.
42: 48. Ethylene dibromide (ppt)	0	50	Discharge from petroleum refineries.
43: 49. Glyphosate (ppb)	700	700	Run-off from herbicide use.
44: 50. Heptachlor (ppt)	0	400	Residue of banned termiticide: pesticide.
45: 51. Heptachlor epoxide (ppt)	0	200	Breakdown of heptachlor.
46: 52. Hexachlorobenzene (ppb)	0	1	Discharge from metal refineries and agricultural chemical factories.
47: 53. Hexachlorocyclopentadiene (ppb)	50	50	Discharge from chemical factories.
48: 54. Lindane (ppt)	200	200	Run-off/leaching from insecticide used on cattle, lumber, and gardens.
49: 55. Methoxychlor (ppb)	40	40	Run-off/leaching from insecticide used on fruits, vegetables, alfalfa, and livestock.
50: 56. Oxamyl (vydate) (ppb)	200	200	Run-off/leaching from insecticide used on apples, potatoes, and tomatoes.
51: 57. PCBs (polychlorinated biphenyls) (ppt)	0	500	Run-off from landfills; discharge of waste chemicals.

52: 58. Pentachlorophenol (ppb)	0	1	Discharge from wood preserving factories.
53: 59. Picloram (ppb)	500	500	Herbicide run-off.
54: 60. Simazine (ppb)	4	4	Herbicide run-off.
55: 61. Toxaphene (ppb)	0	3	Run-off/leaching from insecticide used on cotton and cattle.
Volatile organic contaminants			
56: 62. Benzene (ppb)	0	5	Discharge from factories; leaching from gas storage tanks and landfills.
57: Bromate (ppb)	0	10	Byproduct of drinking water chlorination.
58: 63. Carbon tetrachloride (ppb)	0	5	Discharge from chemical plants and other industrial activities.
59: Chloramines (ppm)	MRDLG = 4	MRDL = 4	Water additive used to control microbes.
60: Chlorine (ppm)	MRDLG = 4	MRDL = 4	Water additive used to control microbes.
61: Chlorite (ppm)	.8	1	Byproduct of drinking water chlorination.
62: Chloride dioxide (ppb)	MRDLG = 800	MRDL = 800	Water additive used to control microbes.
63: 64. Chlorobenzene (ppb)	100	100	Discharge from chemical and agricultural chemical factories.
64: 65. o-Dichlorobenzene (ppb)	600	600	Discharge from industrial chemical factories.
65: 66. p-Dichlorobenzene (ppb)	75	75	Discharge from industrial chemical factories.
66: 67. 1,2-Dichloroethane (ppb)	0	5	Discharge from industrial chemical factories.
67: 68. 1,1-Dichloroethylene (ppb)	7	7	Discharge from industrial chemical factories.
68: 69. cis-1,2-Dichloroethylene (ppb)	70	70	Discharge from industrial chemical factories.
69: 70. trans-1,2-Dichloroethylene (ppb)	100	100	Discharge from industrial chemical factories.
70: 71. Dichloromethane (ppb)	0	5	Discharge from pharmaceutical and chemical factories.
71: 72. 1,2-Dichloropropane (ppb)	0	5	Discharge from industrial chemical factories.
72: 73. Ethylbenzene (ppb)	700	700	Discharge from petroleum refineries.
73: 74. Haloacetic Acids (HAA) (ppb)	n/a	60	Byproduct of drinking water disinfection.
74: 75. Styrene (ppb)	100	100	Discharge from rubber and plastic factories; leaching from landfills.
75: 76. Tetrachloroethylene (ppb)	0	5	Discharge from factories and dry cleaners.
76: 77. 1,2,4-Trichlorobenzene (ppb)	70	70	Discharge from textile-finishing factories.
77: 78. 1,1,1-Trichloroethane (ppb)	200	200	Discharge from metal degreasing sites and other factories.
78: 79. 1,1,2-Trichloroethane (ppb)	3	5	Discharge from industrial chemical factories.
79: 80. Trichloroethylene (ppb)	0	5	Discharge from metal degreasing sites and other factories.
80: 81. TTHMs (total trihalomethanes) (ppb)	n/a	100 80	Byproduct of drinking water chlorination.

81. 82. Toluene (ppm)	1	1	Discharge from petroleum factories.
82. 83. Vinyl chloride (ppb)	0	2	Leaching from PVC piping; discharge from plastics factories.
83. 84. Xylenes (ppm)	10	10	Discharge from petroleum factories; discharge from chemical factories.

¹These arsenic values are effective January 1, 2006. Until then, the MCL is 0.05 mg/l and there is no MCLG.

Key:

AL = Action level.

MCL = Maximum contaminant level.

MCLG = Maximum contaminant level goal.

MFL = Million fibers per liter.

MRDL = Maximum residual disinfectant level.

MRDLG = Maximum residual disinfectant level goal.

mrem/year = millirems per year (a measure of radiation absorbed by the body).

N/A = Not applicable.

NTU = Nephelometric turbidity units.

pCi/l = Picocuries per liter (a measure of radioactivity).

ppm = Parts per million, or milligrams per liter (mg/l).

ppb = Parts per billion, or micrograms per liter (µg/l).

ppt = Parts per trillion, or nanograms per liter (ng/l).

ppq = Parts per quadrillion, or picograms per liter (pg/l).

TT = Treatment technique.

(c) The language in section 17 of this rule shall be used if there is a violation referenced in section 3 of this rule and health effects language is required. ~~unless alternate language is listed in this subsection as follows:~~

~~(1) Fecal coliform/E. coli: Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with animal or human wastes. Microbes in these wastes can cause short term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, and people with severely compromised immune systems.~~

~~(2) Fluoride: 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. Children may get mottled teeth.~~

~~(Water Pollution Control Board; 327 IAC 8-2.1-6; filed Mar 22, 2000, 3:23 p.m.: 23 IR 1903; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1100; filed May 1, 2003, 12:00 p.m.: 26 IR 2822)~~

SECTION 22. 327 IAC 8-2.1-8 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2.1-8 Tier 1 public notice; form, manner, and frequency of notice

Authority: IC 13-13-5-1; IC 13-13-5-2; IC 13-18-16-6; IC 13-18-16-7; IC 13-18-16-9

Affected: IC 13-18-16

Sec. 8. (a) The following violations or situations require 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 327 IAC 8-2-7(b), or the water system fails to test for fecal coliforms or E. coli when any repeat sample tests positive for coliform as specified in 327 IAC 8-2-8.3.

(2) Violation of the MCL for nitrate, nitrite, or total nitrate and nitrite, as defined in 327 IAC 8-2-4, or when the water system fails to take a confirmation sample within twenty-four (24) hours of the system's receipt of the first sample showing an exceedance of the nitrate or nitrite MCL, as specified in 327 IAC 8-2-4.1(h)(2).

(3) Exceedance of the nitrate MCL by noncommunity water systems, where permitted to exceed the MCL by the commissioner under 327 IAC 8-2-4 **and section 14 of this rule.**

(4) Violation of the 327 IAC 8-2-8.5(c) **or 327 IAC 8-2.6-1** treatment technique requirement resulting from a single exceedance of the maximum allowable turbidity limit as identified in section 16 of this rule, where the commissioner determines after consultation that a Tier 1 notice is required or where consultation does not take place within twenty-four (24) hours after the system learns of the violation.

(5) Occurrence of a waterborne disease outbreak, as defined in 327 IAC 8-2-1, or other waterborne emergency. This includes

failure or significant interruption in key water treatment processes, a natural disaster that disrupts the water supply or distribution system, or a chemical spill or unexpected loading of possible pathogens into the source water that significantly increases the potential for drinking water contamination.

(6) 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 commissioner either in its regulations or on a case-by-case basis.

(7) Violation of the MRDL for chlorine dioxide as defined in 327 IAC 8-2.5-3(a) and determined according to 327 IAC 8-2.5-5 **when one (1) 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 327 IAC 8-2.5-7(c)(2).**

(b) Tier 1 public notice needs to be provided as follows:

(1) Provide a public notice as soon as practical but no later than twenty-four (24) hours after the system learns of the violation.

(2) Initiate consultation with the commissioner as soon as practical, but no later than twenty-four (24) hours after the public water system learns of the violation or situation, to determine additional public notice requirements.

(3) Comply with any additional public notification requirements that are established as a result of the consultation with the commissioner, including any repeat notices or direction on the duration of the posted notices. To reach all persons served, such requirements may include **the following:**

(A) Timing.

(B) Form.

(C) Manner.

(D) Frequency. ~~and~~

(E) Content of repeat notices and other actions designed.

(4) Public water systems must provide the notice within twenty-four (24) hours in a form and manner reasonably calculated to reach all persons served. The form and manner used by the public water system are to fit the specific situation, but must be designed to reach residential, transient, and nontransient users of the water system. In order to reach all persons served, water systems are to use, at a minimum, one (1) or more of the following forms of delivery:

(A) Appropriate broadcast media, such as:

(i) radio; or

(ii) 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.

(D) Another delivery method approved in writing by the commissioner.

(5) A community public water system shall give a copy of the most recent public notice to all new billing units or new hookups ~~prior to before~~ or at the time service begins for any of the following outstanding violations:

(A) Any ~~maximum contaminant level:~~ **MCL.**

(B) Any ~~maximum residual disinfectant level:~~ **MRDL.**

(C) Any treatment technique requirement.

(c) For violations of the MRDLs of disinfectants that may pose an acute risk to human health, a copy of the notice must be furnished to the radio and television stations serving the area served by the public water system as soon as possible but in no case later than seventy-two (72) hours after the violation. (*Water Pollution Control Board; 327 IAC 8-2.1-8; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1110; filed May 1, 2003, 12:00 p.m.: 26 IR 2828*)

SECTION 23. 327 IAC 8-2.1-9 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2.1-9 Tier 2 notice; form, manner, and frequency of notice

Authority: IC 13-13-5-1; IC 13-13-5-2; IC 13-18-16-6; IC 13-18-16-7; IC 13-18-16-9

Affected: IC 13-18-16

Sec. 9. (a) The following violations or situations require 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 section 8(a) of this rule or where the commissioner determines a Tier 1 notice is required.

(2) Violations of the monitoring and testing procedure requirements, where the commissioner 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.

(b) Tier 2 public notice needs to be provided as follows:

(1) Public water systems must provide the public notice as soon as practical, but no later than thirty (30) days after the system learns of the violation. If the public notice is posted, the notice must remain in place for as long as the violation or situation persists, but in no case for less than seven (7) days, even if the violation or situation is resolved. The commissioner may, in appropriate circumstances, allow additional time for the initial notice of up to three (3) months from the date the system learns of the violation. It is not appropriate for the commissioner to grant an extension to the thirty (30) day deadline for any unresolved violation or to allow across-the-board extensions by rule or policy for other violations or situations requiring a Tier 2 public notice. Extensions granted by the commissioner must be in writing.

(2) The public water system must repeat the notice every three (3) months as long as the violation or situation persists, unless the commissioner determines that appropriate circumstances warrant a different repeat notice frequency. In no circumstance may the repeat notice be given less frequently than once per year. It is not appropriate for the commissioner to allow less frequent repeat notice for an MCL violation under the 327 IAC 8-2-7, 327 IAC 8-2-8, 327 IAC 8-2-8.1, and 327 IAC 8-2-8.3 or a treatment technique violation under 327 IAC 8-2-8.5, 327 IAC 8-2-8.6, and 327 IAC 8-2-8.8. The commissioner determinations allowing repeat notices to be given less frequently than once every three (3) months must be in writing.

(3) If there is a violation of the treatment technique requirement in 327 IAC 8-2-8.5(c) **or 327 IAC 8-2.6-1** that results from a single exceedance of the maximum allowable turbidity limit, then public water systems must consult with the commissioner as soon as practical but no later than twenty-four (24) hours after the public water system learns of the violation, to determine whether a Tier 1 public notice under section 8(a) of this rule is required to protect public health. When consultation does not take place within the twenty-four (24) hour period, the water system must distribute a Tier 1 notice of the violation within the next twenty-four (24) hours (for example, no later than forty-eight (48) hours after the system learns of the violation), following the requirements under section 8(b) and 8(c) of this rule.

(c) Public water systems must 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~~ **the public notice** must at a minimum meet the following requirements:

(1) Unless directed otherwise by the commissioner in writing, ~~community water systems CWSs~~ must provide notice by the following methods:

(A) Mail or other direct delivery to:

(i) each customer receiving a bill; and ~~to~~

(ii) other service connections to which water is delivered by the public water system.

(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 clause (A). Such persons may include those who do not pay water bills or do not have service connection addresses, including any of the following:

(i) House renters.

(ii) Apartment dwellers.

(iii) University students.

(iv) Nursing home patients.

(v) Prison inmates.

(C) Other methods may include any of the following:

(i) Publication in a local newspaper.

(ii) Delivery of multiple copies for distribution by customers that provide their drinking water to others, such as:

(AA) apartment building owners; or

(BB) large private employers.

(iii) Posting in public places served by the system or on the Internet.

(iv) Delivery to community organizations.

(2) Unless directed otherwise by the commissioner in writing, noncommunity water systems must provide notice by the following methods:

(A) Posting the notice in conspicuous locations throughout the distribution system frequented by persons served by the system.

(B) By mail or direct delivery to each customer and service connection if known.

(C) 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 clauses (A) and (B). 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:

(i) publication in a local newspaper or newsletter distributed to customers;

(ii) use of e-mail to notify employees or students; or

(iii) delivery of multiple copies in central locations, such as community centers.

(Water Pollution Control Board; 327 IAC 8-2.1-9; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1110)

SECTION 24. 327 IAC 8-2.1-14 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2.1-14 Special notice for nitrate exceedances above MCL by noncommunity water systems; granted permission by the commissioner under 327 IAC 8-2-4(b)

Authority: IC 13-13-5-1; IC 13-13-5-2; IC 13-18-16-6; IC 13-18-16-7; IC 13-18-16-9

Affected: IC 13-18-16

Sec. 14. (a) The owner or operator of a noncommunity water system granted permission by the commissioner under 327 IAC 8-2-4(b) to exceed the nitrate MCL must provide notice to persons served according to the requirements for a Tier 1 notice under ~~327 IAC 8-2-8.1~~ **section 8 of this rule.**

(b) Noncommunity water systems granted permission by the commissioner to exceed the nitrate MCL under 327 IAC 8-2-4(b) must provide continuous posting of **the:**

(1) ~~the~~ fact that nitrate levels exceed ten (10) milligrams per liter; and

(2) ~~the~~ potential health effects of exposure;

in accordance with the requirements for Tier 1 notice delivery under section 8 of this rule and the content requirements under section 11 of this rule. (Water Pollution Control Board; 327 IAC 8-2.1-14; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1114)

SECTION 25. 327 IAC 8-2.1-16 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2.1-16 Drinking water violations; other situations requiring public notice

Authority: IC 13-13-5-1; IC 13-13-5-2; IC 13-18-16-6; IC 13-18-16-7; IC 13-18-16-9

Affected: IC 13-18-16

Sec. 16. (a) Drinking water violations and other situations that require public notice according to this rule are contained in the following table:

Table 16. Drinking Water Violations and Other Situations Requiring Public Notice				
Contaminant	MCL/MRDL/TT/AL Violations		Monitoring and Testing Procedure Violations	
	Tier of Public Notice Required	Citation	Tier of Public Notice Required	Citation
I. Violations of Drinking Water Regulations:				
A. Microbiological Contaminants				
1. Total coliform	2	327 IAC 8-2-7(a)	3	327 IAC 8-2-8 327 IAC 8-2-8.1 327 IAC 8-2-8(f) 327 IAC 8-2-8.2 327 IAC 8-2-8.3
2. Fecal coliform/E. coli	1	327 IAC 8-2-7(b)	1, 3	327 IAC 8-2-8.3
3. Turbidity TT (resulting from a single exceedance of maximum allowable turbidity levels)	2,1	327 IAC 8-2-8.5(a) 327 IAC 8-2.6-3(1)(B) 327 IAC 8-2.6-3(2) 327 IAC 8-2.6-3(3)	3	327 IAC 8-2-8.8(b) 327 IAC 8-2.6-4
4. Surface water treatment rule violations, other than violations resulting from single exceedance of maximum allowable turbidity level (TT)	2	327 IAC 8-2-8.5 327 IAC 8-2-8.6	3	327 IAC 8-2-8.8

5. Interim enhanced surface water treatment rule violations, other than violations resulting from single exceedance of maximum allowable turbidity level (TT)	2	327 IAC 8-2.6-1 327 IAC 8-2.6-2 327 IAC 8-2.6-3	3	327 IAC 8-2.6-2 327 IAC 8-2.6-4
6. Filter backwash recycling rule	2	327 IAC 8-2.6-6	3	327 IAC 8-2.6-6
7. Long term 1 enhanced surface water treatment rule violations, other than violations resulting from single exceedance of maximum allowable turbidity level (TT)	2	327 IAC 8-2.6-1 327 IAC 8-2.6-2.1 327 IAC 8-2.6-3	3	327 IAC 8-2.6-2.1 327 IAC 8-2.6-4
B. Inorganic Chemicals (IOCs)				
1. Antimony	2	327 IAC 8-2-4(d)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(e)
2. Arsenic	2	327 IAC 8-2-4(d) 327 IAC 8-2-4.1(1)(5)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(1)(3) 327 IAC 8-2-4.1(1)(4) 327 IAC 8-2-4.1(e)
3. Asbestos (fibers >10 µm)	2	327 IAC 8-2-4(d)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(d)
4. Barium	2	327 IAC 8-2-4(d)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(e)
5. Beryllium	2	327 IAC 8-2-4(d)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(e)
6. Cadmium	2	327 IAC 8-2-4(d)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(e)
7. Chromium (total)	2	327 IAC 8-2-4(d)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(e)
8. Cyanide	2	327 IAC 8-2-4(d)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(e)
9. Fluoride	2	327 IAC 8-2-4(c)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(e)
10. Mercury (inorganic)	2	327 IAC 8-2-4(d)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(e)
11. Nitrate	1	327 IAC 8-2-4(b)	1, 3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(f) 327 IAC 8-2-4.1(h)(2)
12. Nitrite	1	327 IAC 8-2-4(b)	1, 3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(g) 27 IAC 8-2-4.1(h)(2)
13. Total nitrate and nitrite	1	327 IAC 8-2-4(b)	3	327 IAC 8-2-4.1(c)
14. Selenium	2	327 IAC 8-2-4(d)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(e)
15. Thallium	2	327 IAC 8-2-4(d)	3	327 IAC 8-2-4.1(c) 327 IAC 8-2-4.1(e)
C. Lead and Copper Rule				
1. Lead and copper rule (TT)	2	327 IAC 8-2-36 327 IAC 8-2-40 327 IAC 8-2-41 327 IAC 8-2-42 327 IAC 8-2-43 327 IAC 8-2-44	3	327 IAC 8-2-37 327 IAC 8-2-38 327 IAC 8-2-39 327 IAC 8-2-45

D. Synthetic Organic Chemicals (SOCs)				
1. 2,4-D	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
2. 2,4,5-TP (silvex)	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
3. Alachlor	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
4. Atrazine	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
5. Benzo(a)pyrene (PAHs)	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
6. Carbofuran	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
7. Chlordane	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
8. Dalapon	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
9. Di (2-ethylhexyl) adipate	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
10. Di (2-ethylhexyl) phthalate	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
11. Dibromochloropropane	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
12. Dinoseb	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
13. Dioxin (2,3,7,8-TCDD)	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
14. Diquat	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
15. Endothall	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
16. Endrin	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
17. Ethylene dibromide	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
18. Glyphosate	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
19. Heptachlor	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
20. Heptachlor epoxide	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
21. Hexachlorobenzene	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
22. Hexachlorocyclopentadiene	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
23. Lindane	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
24. Methoxychlor	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
25. Oxamyl (vydate)	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
26. Pentachlorophenol	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
27. Picloram	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
28. Polychlorinated biphenyls (PCBs)	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
29. Simazine	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
30. Toxaphene	2	327 IAC 8-2-5(a)	3	327 IAC 8-2-5.1
E. Volatile Organic Chemicals (VOCs)				
1. Benzene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
2. Carbon tetrachloride	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
3. Chlorobenzene (monochlorobenzene)	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
4. o-Dichlorobenzene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
5. p-Dichlorobenzene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
6. 1,2-Dichloroethane	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
7. 1,1-Dichloroethylene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
8. cis-1,2-Dichloroethylene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
9. trans-1,2-Dichloroethylene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
10. Dichloromethane	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
11. 1,2-Dichloropropane	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
12. Ethylbenzene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
13. Styrene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
14. Tetrachloroethylene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
15. Toluene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
16. 1,2,4-Trichlorobenzene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
17. 1,1,1-Trichloroethane	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5

18. 1,1,2-Trichloroethane	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
19. Trichloroethylene	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
20. Vinyl chloride	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
21. Xylenes (total)	2	327 IAC 8-2-5.4(a)	3	327 IAC 8-2-5.5
F. Radioactive Contaminants				
1. Beta/photon emitters	2	327 IAC 8-2-10	3	327 IAC 8-2-10.2 327 IAC 8-2-10.2(b)
2. Alpha emitters	2	327 IAC 8-2-9(2)	3	327 IAC 8-2-10.2 327 IAC 8-2-10.2(a)
3. Combined radium (226 and 228)	2	327 IAC 8-2-9(1)	3	327 IAC 8-2-10.2 327 IAC 8-2-10.2(a)
4. Uranium	2	327 IAC 8-2-9(3)	3	327 IAC 8-2-10.2 327 IAC 8-2-10.2(a)
G. Disinfection Byproducts (DBPs). Where disinfection is 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 DBPs in drinking water.				
1. Total trihalomethanes (TTHMs)	2	327 IAC 8-2-5(a) and 327 IAC 8-2-5(c)	3	327 IAC 8-2-5.3
2. Haloacetic acids (HAA5)	2	327 IAC 8-2.5-2(a)	3	327 IAC 8-2.5-6(a) and 327 IAC 8-2.5-6(b)
3. Bromate	2	327 IAC 8-2.5-2(a)	3	327 IAC 8-2.5-6(a) and 327 IAC 8-2.5-6(b)
4. Chlorite	2	327 IAC 8-2.5-2(a)	3	327 IAC 8-2.5-6(a) and 327 IAC 8-2.5-6(b)
5. Chlorine (MRDL)	2	327 IAC 8-2.5-3(a)	3	327 IAC 8-2.5-6(a) and 327 IAC 8-2.5-6(c)
6. Chloramine (MRDL)	2	327 IAC 8-2.5-3(a)	3	327 IAC 8-2.5-6(a) and 327 IAC 8-2.5-6(c)
7. Chlorine dioxide (MRDL), where any 2 consecutive daily samples at entrance to distribution system only are above MRDL	2	327 IAC 8-2.5-3(a)	2, 3	327 IAC 8-2.5-6(a), 327 IAC 8-2.5-6(c), and 327 IAC 8-2.5-7(c)(2)
8. Chlorine dioxide (MRDL), where samples in distribution system the next day are also above MRDL	1	327 IAC 8-2.5-3(a)	1	327 IAC 8-2.5-6(a), 327 IAC 8-2.5-6(c), and 327 IAC 8-2.5-7(c)(2)
9. Control of DBP precursors - TOC (TT)	2	327 IAC 8-2.5-9(a) and 327 IAC 8-2.5-9(b)	3	327 IAC 8-2.5-6(a) and 327 IAC 8-2.5-6(d)
10. Bench marking and disinfection profiling	N/A	N/A	3	327 IAC 8-2.6-2 327 IAC 8-2.6-2.1
11. Development of monitoring plan	N/A	N/A	3	327 IAC 8-2.5-6(f)
H. Other Treatment Techniques				
1. Acrylamide (TT)	2	327 IAC 8-2-35	N/A	N/A
2. Epichlorohydrin (TT)	2	327 IAC 8-2-35	N/A	N/A
II. Unregulated Contaminant Monitoring:				
A. Nickel	N/A	N/A	3	327 IAC 8-2-4.1(e)
III. Other Situations Requiring Public Notification:				
A. Fluoride secondary maximum contaminant level (SMCL) exceedance	3	40 CFR § 143.3*	N/A	N/A

B. Exceedance of nitrate MCL for noncommunity systems, as allowed by the commissioner	1	327 IAC 8-2-4(b)	N/A	N/A
C. Waterborne disease outbreak	1	327 IAC 8-2-1	N/A	N/A
D. Other waterborne emergency	1	N/A	N/A	N/A
E. Other situations as determined by the commissioner	1, 2, 3	N/A	N/A	N/A

Key:

MCL = Maximum contaminant level.

MRDL = Maximum residual disinfectant level.

TT = Treatment technique.

Violations of drinking water regulations include violations of MCL, MRDL, treatment technique, monitoring, and testing procedure requirements.

(b) Drinking water violations and other situations that require public notice according to this rule are contained in the following provisions:

(1) Violations and other situations not listed in table 16 in subsection (a), such as reporting violations and failure to prepare Consumer Confidence Report do not require notice, unless otherwise determined by the commissioner. The commissioner may, at their option, also require a more stringent public notice tier such as Tier 1 instead of Tier 2 or Tier 2 instead of Tier 3 for specific violations and situations listed in table 16 in subsection (a).

(2) 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.

(3) Systems with treatment technique violations involving a single exceedance of maximum turbidity limit under the:

(A) surface water treatment rule (SWTR);

(B) **interim enhanced surface water treatment rule (IESWTR); or**

(C) **long term 1 enhanced surface water treatment rule (LT1ESWTR);**

are required to initiate consultation with the commissioner within twenty-four (24) hours after learning of the violation. Based on this consultation, the commissioner may subsequently decide to elevate the violation to Tier 1. If a system is unable to make contact with the commissioner in the twenty-four (24) hour period, the violation is automatically elevated to Tier 1.

(4) Failure to take a confirmation sample within twenty-four (24) hours for nitrate or nitrite after an initial sample exceeds the MCL is a Tier 1 Violation. Other monitoring violations for nitrate are Tier 3.

(5) Other waterborne emergencies require a Tier 1 public notice under section 8(a) of this rule for situations that do not meet the definition of a waterborne disease outbreak given in 327 IAC 8-2-1, but that still have the potential to have serious adverse effects on health as a result of short term exposure. These **waterborne emergencies** could include outbreaks not related to treatment deficiencies, as well as situations that have the potential to cause outbreaks, such as:

(A) failures or significant interruption in water treatment processes;

(B) natural disasters that disrupt the water supply or distribution system;

(C) chemical spills; or

(D) unexpected loading of possible pathogens into the source water.

(6) The commissioner may place other situations in any tier believed appropriate, based on threat to public health.

*40 CFR 143.3 is incorporated by reference and is available for copying at the Indiana Department of Environmental Management, Office of Water Quality, 100 North Senate Avenue, Room 1255, Indianapolis, Indiana 46206. (*Water Pollution Control Board; 327 IAC 8-2.1-16; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1115; errata filed Feb 22, 2002, 2:01 p.m.: 25 IR 2254; filed May 1, 2003, 12:00 p.m.: 26 IR 2829*)

SECTION 26. 327 IAC 8-2.1-17 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2.1-17 Drinking water violations; standard health effects language for public notice

Authority: IC 13-13-5-1; IC 13-13-5-2; IC 13-18-16-6; IC 13-18-16-7; IC 13-18-16-9

Affected: IC 13-18-16

Sec. 17. A public water system must comply with the standard health effects language for public notification contained in the following table:

Table 17. Standard Health Effects Language for Public Notification			
Contaminant	MCLG mg/l	MCL mg/l	Standard Health Effects Language for Public Notification
Drinking Water Regulations:			
A. Microbiological Contaminants, Surface Water Treatment Rule, and Interim Enhanced Surface Water Treatment Rule, and Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR)			
1a. Total coliform	0	See footnote ¹	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	0	0	Fecal coliforms and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Microbes in these wastes can cause short term effects, such as diarrhea, cramps, nausea, headaches, or other symptoms. They may pose a special health risk for infants, young children, some of the elderly, and people with severely compromised immune systems.
2a. Turbidity (MCL) ²	None	1 NTU ² /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, and IESWTR TT, and LT1ESWTR TT) ²	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.
2c. Giardia lamblia 2d. Viruses 2e. Heterotrophic plate count (HPC) bacteria ³ 2f. Legionella 2g. Cryptosporidium	0	TT ⁴	Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms, such as nausea, cramps, diarrhea, and associated headaches.
B. Inorganic Chemicals (IOCs)			
3. 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.
4. Arsenic ⁵	None 0	0.05 0.10	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.
5. Asbestos (>10 µm)	7 MFL	7 MFL	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.
6. 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.
7. Beryllium	0.004	0.004	Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.
8. Cadmium	0.005	0.005	Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.
9. 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.

10. 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.
11. 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 (9) years old of age . Mottling, also known as dental fluorosis, may include brown staining or pitting of the teeth, or both, and occurs only in developing teeth before they erupt from the gums.

12. 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.
13. Nitrate	10	10	Infants below the age of six (6) months of age 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.
14. Nitrite	1	1	Infants below the age of six (6) months of age who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue baby syndrome.
15. Total nitrate and nitrite	10	10	Infants below the age of six (6) months of age 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.
16. 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.
17. 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			
18. Lead	0	TT	Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink this water over many years could develop kidney problems or high blood pressure.
19. Copper	1.3	TT	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)			
20. 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.
21. 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.
22. Alachlor	0	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.
23. 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.
24. Benzo(a)pyrene (PAHs)	0	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.
25. Carbofuran	0.04	0.04	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.

26. Chlordane	0	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.
27. 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.
28. Di (2-ethylhexyl) adipate	0.4	0.4	Some people who drink water containing di (2-ethylhexyl) adipate well in excess of the MCL over many years could experience general toxic effects or reproductive difficulties.
29. Di (2-ethylhexyl) phthalate	0	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.
30. Dibromochloropropane (DBCP)	0	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.
31. 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.
32. Dioxin (2,3,7,8-TCDD)	0	3×10^{-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.
33. Diquat	0.02	0.02	Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.
34. Endothall	0.1	0.1	Some people who drink water containing endothall in excess of the MCL over many years could experience problems with their stomach or intestines.
35. Endrin	0.002	0.002	Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems.
36. Ethylene dibromide	0	0.00005	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.
37. 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.
38. Heptachlor	0	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.
39. Heptachlor epoxide	0	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.
40. Hexachlorobenzene	0	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.
41. 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.
42. 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.
43. Methoxychlor	0.04	0.04	Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.
44. 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.

45. Pentachlorophenol	0	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.
46. 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.
47. Polychlorinated biphenyls (PCBs)	0	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 getting cancer.
48. 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.
49. Toxaphene	0	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)			
50. Benzene	0	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 getting cancer.
51. Carbon tetrachloride	0	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.
52. Chlorobenzene (monochlorobenzene)	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.
53. 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.
54. p-Dichlorobenzene	0.075	0.075	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.
55. 1,2-Dichloroethane	0	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.
56. 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.
57. 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.
58. 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.
59. Dichloromethane	0	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.
60. 1,2-Dichloropropane	0	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.
61. 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.
62. 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.

63. Tetrachloroethylene	0	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.
64. 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.
65. 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.
66. 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.
67. 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.
68. Trichloroethylene	0	0.005	Some people who drink water containing trichloroethylene in excess of the MCL over many years could experience problems with their liver and may have an increased risk of getting cancer.
69. Vinyl chloride	0	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.
70. 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			
71. Beta/photon emitters	0	4 mrem/yr	Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta particle and photon emitters radioactivity in excess of the MCL over many years may have an increased risk of getting cancer.
72. Alpha emitters	0	15 pCi/l	Certain minerals are radioactive and may emit a form of radiation known as alpha radiation. Some people who drink water containing alpha emitters in excess of the MCL over many years may have an increased risk of getting cancer.
73. Combined radium (226 and 228)	0	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.
74. Uranium	Zero	30 µg/l	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): Where disinfection is 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.			
74: 75. Total trihalomethanes (TTHMs)	N/A	0.10 0.080 ⁶	Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous system and may have an increased risk of getting cancer.
75: 76. Haloacetic acids (HAA)	N/A	0.060 ⁷	Some people who drink water containing haloacetic acids in excess of the MCL over many years may have an increased risk of getting cancer.
76: 77. Bromate	0	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.
77: 78. 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.

78: 79. Chlorine	4 MRDLG	4.0 MRDL	Some people who use drinking 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.
79: 80. Chloramines	4 MRDLG	4.0 MRDL	Some people who use drinking 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.
80a: 81a. Chlorine dioxide, where any 2 two 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 dioxide violations reported today are the result of exceedances at the treatment facility only, not within the distribution system that delivers water to consumers. Continued compliance with chlorine dioxide levels within the distribution system minimizes the potential risk of these violations to consumers.
80b: 81b. Chlorine dioxide, where one or more distribution system samples 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 dioxide violations reported today include exceedances of the EPA standard within the distribution system which that 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.
81: 82. 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 kidney problems, or nervous system effects and may lead to an increased risk of getting cancer.
H. Other Treatment Techniques			
82: 83. Acrylamide	0	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.
83: 84. Epichlorohydrin	0	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.

Key:

MCLG - Maximum contaminant level goal.

MCL - Maximum contaminant level.

MRDL = Maximum residual disinfectant level.

MRDLG = Maximum residual disinfectant level goal.

NTU - Nephelometric turbidity unit.

TT - Treatment technique.

MFL - Millions of fiber per liter.

Action Level (Lead) = 0.015 mg/L.

Action Level (Copper) = 1.3 mg/L.

mrem - millirems per year.

ppq - picocuries per liter.

(+) ¹For water systems analyzing at least forty (40) samples per month, no more than five percent (5.0%) of the monthly samples may be positive for total coliforms. For systems analyzing fewer than forty (40) samples per month, no more than one (1) sample per month may be positive for total coliforms.

²There are various regulations that set turbidity standards for different types of systems, including the 1989 Surface Water Treatment Rule, the 1998 Interim Enhanced Surface Water Treatment Rule, and the 2001 Long Term 1 Enhanced Surface Water Treatment Rule. The following apply:

(1) Systems subject to 327 IAC 8-2-8.5 through 327 IAC 8-2-8.8 (also known as the Surface Water Treatment Rule (SWTR)), for both filtered and unfiltered systems, may not exceed five (5) NTU. In addition, in filtered systems, ninety-five percent (95%) of samples each month must not exceed five-tenths (0.5) NTU in systems using conventional or direct filtration and must not exceed one (1) NTU in systems using slow sand or diatomaceous earth filtration or other filtration technologies approved by the commissioner.

(2) For systems subject to 327 IAC 8-2.6-1, 327 IAC 8-2.6-2, 327 IAC 8-2.6-3, 327 IAC 8-2.6-4, and 327 IAC 8-2.6-5 (also known as the Interim Enhanced Surface Water Treatment Rule (IESWTR)), for systems serving at least ten thousand (10,000) individuals 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 three-tenths (0.3) NTU in at least ninety-five percent (95%) of monthly measurements, and the turbidity level of a system's combined filter effluent must not exceed one (1) NTU at any time.

(3) Systems subject to 327 IAC 8-2.6-1, 327 IAC 8-2.6-2, 327 IAC 8-2.6-3, 327 IAC 8-2.6-4, and 327 IAC 8-2.6-5, the IESWTR, using technologies other than conventional, direct, slow sand, or diatomaceous earth filtration must meet turbidity limits set by the commissioner.

(4) For systems subject to 327 IAC 8-2.6-1 through 327 IAC 8-2.6-5 (also known as the Long Term 1 Enhanced Surface Water Treatment Rule (LT1ESWTR)), for systems serving fewer than ten thousand (10,000) individuals using surface water or ground water under the direct influence of surface water that use conventional filtration or direct filtration, after January 1, 2005, the turbidity level of a system's combined filter effluent may not exceed three-tenths (0.3) NTU in at least ninety-five percent (95%) of monthly measurements, and the turbidity level of a system's combined filter effluent must not exceed one (1) NTU at any time.

(5) Systems subject to 327 IAC 8-2.6-1 through 327 IAC 8-2.6-5, the LT1ESWTR, using technologies other than conventional, direct, slow sand, or diatomaceous earth filtration must meet turbidity limits set by the commissioner.

(-) ³The 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.

(-) ⁴SWTR, IESWTR, and LT1ESWTR treatment technique violations that involve turbidity exceedances may use the health effects language for turbidity instead.

(4) 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.

⁵The arsenic MCL and MCLG are effective January 1, 2006. Until then, the MCL is 0.05 mg/l and there is no MCLG.

(5) ⁶The MCL for total trihalomethanes (TTHM) is the sum of the concentrations of the individual trihalomethanes.

⁷The MCL for haloacetic acids is the sum of the concentrations of the individual haloacetic acids.

(Water Pollution Control Board; 327 IAC 8-2.1-17; filed Nov 20, 2001, 10:20 a.m.: 25 IR 1118; errata filed Feb 22, 2002, 2:01 p.m.: 25 IR 2254; filed May 1, 2003, 12:00 p.m.: 26 IR 2833)

SECTION 27. 327 IAC 8-2.6-1 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2.6-1 General requirements; enhanced filtration and disinfection

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 1. (a) Upon the effective date of this rule, unless otherwise specified in this section, all Subpart H systems serving a population of at least ten thousand (10,000) individuals **and, beginning January 1, 2005, systems serving a population of fewer than ten thousand (10,000) individuals** shall establish treatment technique requirements **in lieu instead of maximum contaminant levels** MCLs for the following contaminants:

- (1) Giardia lamblia.
- (2) Viruses.
- (3) Heterotrophic plate count bacteria.
- (4) Legionella.
- (5) Cryptosporidium.
- (6) Turbidity.

The systems shall also provide treatment of their source water that complies with these treatment technique requirements in addition to those identified in 327 IAC 8-2-8.5.

(b) The treatment technique requirements consist of installing and properly operating water treatment processes that reliably achieve the following:

- (1) At least ninety-nine percent (99%) (2-log) removal of Cryptosporidium between a point where the raw water is not subject to recontamination by surface water run-off and a point downstream before or at the first customer for filtered systems or Cryptosporidium control under the water shed control plan for unfiltered systems.
- (2) Compliance with the profiling and benchmark requirements under section 2 of this rule **for systems serving a population of at least ten thousand (10,000) individuals and, beginning January 1, 2005, section 2.1 of this rule for systems serving a population of fewer than ten thousand (10,000) individuals.**

(c) A public water system subject to ~~the requirements of~~ this section is considered to be in compliance with ~~the requirements of~~ subsections (a) and (b) if it meets the:

- (1) disinfection requirements in 327 IAC 8-2-8.6 and section 2 of this rule; or
- (2) applicable filtration requirements in either 327 IAC 8-2-8.5 or section 3 of this rule and the disinfection requirements in 327 IAC 8-2-8.6 and section 2 of this rule;

for systems serving a population of at least ten thousand (10,000) individuals and, beginning January 1, 2005, section 2.1 of this rule for systems serving a population of fewer than ten thousand (10,000) individuals.

(d) Subpart H systems ~~serving a population of greater than ten thousand (10,000)~~ are not permitted to begin construction of uncovered finished water storage facilities after the effective date of this rule.

(e) Subpart H systems **that did not conduct optional monitoring under section 2 of this rule when such monitoring was required because they served fewer than ten thousand (10,000) individuals but serve more than ten thousand (10,000) individuals prior to January 1, 2005, must comply with this section and sections 3 through 5 of this rule. These systems must also consult with the commissioner to establish a disinfection benchmark. A system that decides to make a significant change to its disinfection practice, as described in section 2(c)(1)(A) through 2(c)(1)(D) of this rule must consult with the commissioner before making such change.** (*Water Pollution Control Board; 327 IAC 8-2.6-1; filed May 1, 2003, 12:00 p.m.: 26 IR 2854*)

SECTION 28. 327 IAC 8-2.6-2 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2.6-2 Disinfection profiling and benchmarking for systems serving a population of at least 10,000 individuals

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 2. (a) A public water system subject to ~~the requirements of~~ this section will determine its TTHM annual average using the procedure in subdivision (1) and its HAA5 annual average using the procedure in subdivision (2). The annual average is the arithmetic average of the quarterly averages of four (4) consecutive quarters of monitoring. A public water system subject to ~~the requirements of~~ this section shall meet the following monitoring requirements to determine its TTHM annual average and its HAA5 annual average:

- (1) The TTHM annual average must be the annual average during the same period as is used for the HAA5 annual average. Those Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals that:
 - (A) collected data under 40 CFR 141* must use the results of the samples collected during the last four (4) quarters of required monitoring under 40 CFR 141.142*;
 - (B) use grandfathered HAA5 occurrence data that meet the provisions of subdivision (2)(B) must use the TTHM data collected at the same time under 327 IAC 8-2-5(a) and 327 IAC 8-2-5.3; and
 - (C) use HAA5 occurrence data that meet the provisions of subdivision (2)(C)(i) must use the TTHM data collected at the same

time under 327 IAC 8-2-5(a) and 327 IAC 8-2-5.3.

(2) The HAA5 annual average must be the annual average during the same period as is used for the TTHM annual average. Those Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals that:

(A) collected data under 40 CFR 141* must use the results of the samples collected during the last four (4) quarters of required monitoring under 40 CFR 141.142*;

(B) have collected four (4) quarters of HAA5 occurrence data that meets the routine monitoring sample number and location requirements for TTHM in 327 IAC 8-2-5(a) and 327 IAC 8-2-5.3 and handling and analytical method requirements of 40 CFR 141.142(b)(1)* may use those data to determine whether ~~the requirements of this section apply;~~ **applies;** and

(C) have not collected four (4) quarters of HAA5 occurrence data that meets the provisions of ~~either~~ clause (A) or (B) by March 16, 1999, must either:

(i) conduct monitoring for HAA5 that meets the routine monitoring sample number and location requirements for TTHM in 327 IAC 8-2-5(a), 327 IAC 8-2-5.3, and handling and analytical method requirements of 40 CFR 141.142(b)(1)* to determine the HAA5 annual average and whether ~~the requirements of subsection (b) apply;~~ **applies.** This monitoring must be completed so that the applicability determination can be made no later than March 31, 2000; or

(ii) comply with all other provisions of this section as if the HAA5 monitoring had been conducted and the results required compliance with subsection (b).

(3) Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals may request that the commissioner approve a more representative annual data set than the data set determined under subdivision (1) or (2) for the purpose of determining applicability of ~~the requirements of this section.~~

(4) The commissioner may require that a system use a more representative annual data set than the data set determined under subdivision (1) or (2) for the purpose of determining applicability of ~~the requirements of this section.~~

(5) Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals shall submit data to the commissioner based on the following schedules:

(A) Those Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals that collected TTHM and HAA5 data under 40 CFR 141*, as required by subdivisions (1)(A) and (2)(A), shall submit the results of the samples collected during the last twelve (12) months of monitoring required under 40 CFR 141.142* not later than December 31, 1999.

(B) Those Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals that have collected four (4) consecutive quarters of HAA5 occurrence data that meets the routine monitoring sample number and location for TTHM in 327 IAC 8-2-5(a), 327 IAC 8-2-5.3, and handling and analytical method requirements of 40 CFR 141.142(b)(1)*, as allowed by subdivisions (1)(B) and (2)(B), must submit those data to the commissioner not later than April 15, 1999. Until the commissioner has approved the data, the system shall conduct monitoring for HAA5 using the monitoring requirements specified under subdivision (2)(C).

(C) Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals that conduct monitoring for HAA5 using the monitoring requirements specified by subdivision (2)(C)(i) shall submit TTHM and HAA5 data not later than March 31, 2000.

(D) Those systems that elect to comply with all other provisions of this section as if the HAA5 monitoring had been conducted and the results required compliance with this section, as allowed under subdivision (2)(C)(ii), shall notify the commissioner in writing of their election not later than December 31, 1999.

(E) If the system elects to represent that the commissioner approve a more representative annual data set than the data set determined under subdivision (2)(A), the system must submit this request in writing not later than December 31, 1999.

(6) Any Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals having either a TTHM annual average greater than or equal to sixty-four thousandths (0.064) milligram per liter or an HAA5 annual average greater than or equal to forty-eight thousandths (0.048) milligram per liter during the period identified in subdivisions (1) and (2) shall comply with subsection (b).

(b) Disinfection profiling requirements are as follows:

(1) Any Subpart H system serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals that meets the criteria in subsection (a)(6) shall develop a disinfection profile of its disinfection practice for a period of up to three (3) years.

(2) Not later than April 1, 2000, Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals shall monitor daily for a period of twelve (12) consecutive calendar months to determine the total logs of inactivation for each day of operation based on the CT99.9 values in Tables 1.1 through 1.6, 2.1, and 3.1 of 40 CFR 141.74(b)*, as appropriate, through the entire treatment plant. At a minimum, Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals with a single or multiple point of disinfectant application prior to entrance to the distribution system shall conduct the monitoring in clauses (A) through (D) for each disinfection segment. The system shall monitor the parameters necessary to

determine the total ~~inactivation~~ **inactivation** ratio using analytical methods in 327 IAC 8-2-8.7 as follows:

- (A) The temperature of the disinfection water shall be measured one (1) time per day at each residual disinfectant concentration sampling point during peak hourly flow.
 - (B) If the system uses chlorine, the pH of the disinfected water shall be measured one (1) time per day at each chlorine residual disinfectant concentration sampling point during peak hourly flow.
 - (C) The disinfectant contact time (T) shall be determined for each day during peak hourly flow.
 - (D) The residual disinfectant concentration (C) of the water before or at the first customer and prior to each additional point of disinfection shall be measured each day during peak hourly flow.
- (3) ~~In lieu~~ **Instead** of the monitoring conducted under subdivision (2) to develop the disinfection profile, Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals may elect to meet either of the following requirements:
- (A) Not later than March 31, 2000, Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals that ~~has have~~ three (3) years of existing operational data may submit those data, a profile generated using those data, and a request that the commissioner approve use of those data ~~in lieu~~ **instead** of monitoring under subdivision (2). The commissioner shall determine whether these operational data are substantially equivalent to data collected under subdivision (2) and whether these data are representative of Giardia lamblia inactivation through the entire treatment plant and not just of certain treatment segments. Until the commissioner approves this request, the system is required to conduct monitoring under subdivision (2).
 - (B) In addition to the disinfection profile generated under subdivision (2), Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals that ~~has have~~ existing operational data may use those data to develop a disinfection profile for additional years. Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) **individuals** may use these additional yearly disinfection profiles to develop a benchmark under subsection (c). The commissioner shall determine whether these operational data are substantially equivalent to data collected under subdivision (2). These data must also be representative of inactivation through the entire treatment plant and not just of certain treatment segments.
- (4) Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals shall calculate the total inactivation ratio as follows:
- (A) If the system uses only one (1) point of disinfectant application, the system may determine the total inactivation ratio for the disinfection segment by using either of the following methods:
 - (i) Determine one (1) inactivation ratio ($CT_{calc}/CT_{99.9}$) before or at the first customer during peak hourly flow.
 - (ii) Determine successive $CT_{calc}/CT_{99.9}$ values, representing sequential inactivation ratios, between the point of disinfectant application and a point before or at the first customer during peak hourly flow. Under this alternative, the system must calculate the total inactivation ratio by determining ($CT_{calc}/CT_{99.9}$) for each sequence and then adding the ($CT_{calc}/CT_{99.9}$) values together to determine ($\Sigma (CT_{calc}/CT_{99.9})$).
 - (B) Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals that use more than one (1) point of disinfectant application before the first customer shall determine the CT value of each disinfection segment immediately prior to the next point of disinfectant application, or for the final segment, before or at the first customer, during peak hourly flow. The ($CT_{calc}/CT_{99.9}$) value of each segment and ($\Sigma (CT_{calc}/CT_{99.9})$) shall be calculated using the method in clause (A).
 - (C) Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals shall determine the total logs of inactivation by multiplying the value calculated in clause (A) or (B) by three and zero-tenths (3.0).
- (5) Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals that use either chloramines or ozone for primary disinfection shall also calculate the logs of inactivation for viruses using a method approved by the commissioner.
- (6) Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals shall retain disinfection profile data in graphic form, as a spreadsheet, or in some other format acceptable to the commissioner for review as part of sanitary surveys conducted by the commissioner.

(c) Disinfection benchmarking requirements are as follows:

- (1) A Subpart H system serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals required to develop a disinfection profile under subsections (a) and (b) that decides to make a significant change to its disinfection practice shall consult with the commissioner ~~prior to~~ **before** making ~~such~~ **the** change. As used in this subdivision, “significant changes” means **changes to** the following:
 - (A) ~~Changes to the~~ Point of disinfection.
 - (B) ~~Changes to the~~ Disinfectants used in the treatment plant.
 - (C) ~~Changes to the~~ Disinfection process.

(D) Any other modification identified by the commissioner.

(2) A Subpart H system serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals that is modifying its disinfection practice shall calculate its disinfection benchmark using the following procedures:

(A) Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals shall determine the lowest average monthly Giardia lamblia inactivation for each year of profiling data collected and calculated under subsection (b). The system shall determine the average Giardia lamblia inactivation for each calendar month for each year of profiling data by dividing the sum of daily Giardia lamblia inactivation by the number of values calculated for that month.

(B) The disinfection benchmark is the lowest monthly average value (for Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) with one (1) year of profiling data) or average of lowest monthly average values (for Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals with more than one (1) year of profiling data) of the monthly logs of Giardia lamblia inactivation for each year of profiling data.

(C) Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals that use either chloramines or ozone for primary disinfection shall also calculate the disinfection benchmark for viruses using a method approved by the commissioner.

(D) The system shall submit the following information to the commissioner as part of its consultation process:

(i) A description of the proposed change in disinfection practice.

(ii) The disinfection profile for Giardia lamblia (and, if necessary, viruses) under subsection (b) and benchmark as required by this subsection.

(iii) An analysis of how the proposed change will affect the current levels of disinfection.

*40 CFR 141, 40 CFR 141.142, 40 CFR 141.142(b)(1), and 40 CFR 141.74(b) are incorporated by reference and are available for copying at the Indiana Department of Environmental Management, Office of Water Quality, 100 North Senate Avenue, Room 1255, Indianapolis, Indiana 46206. (*Water Pollution Control Board; 327 IAC 8-2.6-2; filed May 1, 2003, 12:00 p.m.: 26 IR 2854*)

SECTION 29. 327 IAC 8-2.6-2.1 IS ADDED TO READ AS FOLLOWS:

327 IAC 8-2.6-2.1 Disinfection profiling and benchmarking for systems serving a population of fewer than 10,000 individuals beginning January 1, 2005

Authority: IC 13-13-5-1; IC 13-14-8-7; IC 13-18-3-1; IC 13-18-3-2; IC 13-18-6

Affected: IC 13-14-9

Sec. 2.1. (a) A disinfection profile is a graphical representation of a system's level of Giardia lamblia or virus inactivation measured during the course of a year. Beginning January 1, 2005, Subpart H systems serving a population of fewer than ten thousand (10,000) individuals must develop a disinfection profile unless the commissioner determines that the system's profile is unnecessary. The commissioner may approve the use of a more representative data set for disinfection profiling than the data set required under subsection (c).

(b) The commissioner may only determine that a system's profile is unnecessary if a system's TTHM and HAA5 levels are below sixty-four thousandths (0.064) mg/l and forty-eight thousandths (0.048) mg/l, respectively. To determine these levels, TTHM and HAA5 samples must be collected after January 1, 1998, during the month with the warmest water temperature and at the point of maximum residence time in a system's distribution system.

(c) Disinfection profiling requirements are as follows:

(1) A disinfection profile consists of three (3) steps:

(A) Subpart H systems serving a population of fewer than ten thousand (10,000) individuals must collect data for several parameters from the plant over the course of twelve (12) months according to subdivision (2). If the system serves more than five hundred (500) and fewer than ten thousand (10,000) individuals, the system must begin to collect data no later than July 1, 2003. If the

system serves fewer than five hundred (500) individuals, the system must begin to collect data no later than January 1, 2004.

(B) The system must use this data to calculate weekly log inactivation according subdivisions (3) and (4).

(C) The system must use these weekly log inactivations to develop a disinfection profile as specified in subdivisions (5) through (8).

(2) Subpart H systems serving a population of fewer than ten thousand (10,000) individuals must monitor the following parameters to determine the total log inactivation using the analytical methods in 327 IAC 8-2-8.7, once per week on the same calendar day, over twelve (12) consecutive months:

- (A) The temperature of the disinfected water at each residual disinfectant concentration sampling point during peak hourly flow.
- (B) If the system uses chlorine, the pH of the disinfected water at each residual disinfectant concentration sampling point during peak hourly flow.
- (C) The disinfectant contact time or times (T) during peak hourly flow.
- (D) The residual disinfectant concentration or concentrations (C) of the water before or at the first customer and prior to each additional point of disinfection during peak hourly flow.

(3) Calculate the total inactivation ratio using the following table and multiply the value by three and zero-tenths (3.0) to determine log inactivation of *Giardia lamblia*:

For systems that ***	The system must determine ***
(A) Use only one (1) point of disinfectant application	(i) One (1) inactivation ratio ($CT_{calc}/CT_{99.9}$) before or at the first customer during peak hourly flow; or (ii) Successive $CT_{calc}/CT_{99.9}$ values, representing sequential inactivation ratios, between the point of disinfectant application and a point before or at the first customer during peak hourly flow. Under this alternative, systems must calculate the total inactivation ratio by determining ($CT_{calc}/CT_{99.9}$) for each sequence and then adding the ($CT_{calc}/CT_{99.9}$) values together to determine ($3CT_{calc}/CT_{99.9}$).
(B) Use more than one (1) point of disinfectant application before the first customer	The ($CT_{calc}/CT_{99.9}$) value of each disinfection segment immediately prior to the next point of disinfectant application, or, for the final segment, before or at the first customer during peak hourly flow using the procedure specified in (A)(ii) of this table.

- (4) Subpart H systems serving a population of fewer than ten thousand (10,000) individuals that use chloramines, ozone, or chlorine dioxide for primary disinfection must also calculate the logs of inactivation for viruses and develop an additional disinfection profile for viruses using methods approved by the commissioner.
- (5) Develop a disinfection profile by plotting each log inactivation as a data point. Systems should have fifty-two (52) measurements to plot (one (1) for every week of the year).
- (6) Subpart H systems serving a population of fewer than ten thousand (10,000) individuals and the commissioner should evaluate the disinfection profile to examine microbial inactivation variations over the course of the year by looking at all fifty-two (52) measurements.
- (7) Subpart H systems serving a population of fewer than ten thousand (10,000) individuals must retain the disinfection profile data in graphic form, such as a spreadsheet, that must be available for review by the commissioner as part of a sanitary survey.
- (8) Subpart H systems serving a population of fewer than ten thousand (10,000) individuals must use this data to calculate a benchmark if they are considering changes to disinfection practices.

(d) Disinfection benchmark requirements are as follows:

- (1) Subpart H systems serving a population of fewer than ten thousand (10,000) individuals that are required to develop a disinfection profile under subsections (a) through (c) must develop a disinfection benchmark if a significant change is made to the system's disinfection practices.
- (2) Subpart H systems serving a population of fewer than ten thousand (10,000) individuals must consult with the commissioner for approval before implementing a significant disinfection practice change. Significant changes to disinfection practices include changes to the following:
 - (A) Point of disinfection.
 - (B) Disinfectant or disinfectants used in the treatment plant.
 - (C) Disinfection process.
 - (D) Any other modification identified by the commissioner.
- (3) Subpart H systems serving a population of fewer than ten thousand (10,000) individuals that are considering a significant change to their disinfection practices must calculate a disinfection benchmark or benchmarks according to subdivisions (4) and (5) and provide the benchmark or benchmarks to the commissioner. Subpart H systems serving a population of fewer than ten thousand (10,000) individuals may make a significant disinfection practice change only after consulting with the commissioner for approval. Subpart H systems serving a population of fewer than ten thousand (10,000) individuals must submit the following information to the commissioner as part of the consultation and approval

process:

- (A) A description of the proposed change.
- (B) The disinfection profile for *Giardia lamblia* (and, if necessary, viruses) and disinfection benchmark.
- (C) An analysis of how the proposed change will affect the current levels of disinfection.
- (D) Any additional information requested by the commissioner.

(4) Subpart H systems serving a population of fewer than ten thousand (10,000) individuals that are making a significant change to their disinfection practices must calculate a disinfection benchmark using the following procedure:

- (A) Using the data collected by the system to develop the disinfection profile, determine the average *Giardia lamblia* inactivation for each calendar month by dividing the sum of all *Giardia lamblia* inactivations for that month by the number of values calculated for that month.
- (B) Determine the lowest monthly average value out of the twelve (12) values. This value becomes the disinfection benchmark.

(5) Subpart H systems serving a population of fewer than ten thousand (10,000) individuals and using chloramines, ozone, or chlorine dioxide for primary disinfection must calculate the disinfection benchmark from the data collected for viruses by the system to develop the disinfection profile in addition to the *Giardia lamblia* disinfection benchmark calculated under subdivision (4). This viral benchmark must be calculated in the same manner used to calculate the *Giardia lamblia* disinfection benchmark in subdivision (4).

(Water Pollution Control Board; 327 IAC 8-2.6-2.1)

SECTION 30. 327 IAC 8-2.6-3 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2.6-3 Enhanced filtration

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 3. By December 31, 2001, Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals **and, beginning January 1, 2005, Subpart H systems serving a population of fewer than ten thousand (10,000) individuals** shall provide treatment consisting of both disinfection, as specified in 327 IAC 8-2-8.6, and filtration treatment that complies with the following:

(1) Requirements for systems using conventional filtration or direct filtration are as follows:

- (A) For Subpart H systems ~~serving a population of greater than ten thousand (10,000) individuals~~ using conventional filtration or direct filtration, the turbidity level of representative samples of the system's filtered water must be less than or equal to three-tenths (0.3) nephelometric turbidity unit in at least ninety-five percent (95%) of the measurements taken each month, measured as specified in 327 IAC 8-2-8.7 and 327 IAC 8-2-8.8.
- (B) The turbidity level of representative samples of the system's filtered water must at no time exceed one (1) nephelometric turbidity unit, measured as specified in 327 IAC 8-2-8.7 and 327 IAC 8-2-8.8.
- (C) A system that uses lime softening may acidify representative samples prior to analysis using a protocol approved by the commissioner.

(2) A Subpart H system ~~serving a population greater than ten thousand (10,000)~~ may use filtration technologies other than:

- (A) conventional filtration treatment;
- (B) direct filtration;
- (C) slow sand filtration; or
- (D) diatomaceous earth filtration;

if it demonstrates to the commissioner, using pilot plant studies or other means, that the alternative filtration technology, in combination with disinfection treatment that meets the requirements of 327 IAC 8-2-8.6, consistently achieves ninety-nine and nine-tenths percent (99.9%) removal or inactivation of *Giardia lamblia* cysts and ninety-nine and ninety-nine hundredths percent (99.99%) removal or inactivation of viruses, and ninety-nine percent (99%) removal of *Cryptosporidium* oocysts, and the commissioner approves the use of the filtration technology.

(3) For each approval under subdivision (2), the commissioner will set turbidity performance requirements that the system must meet at least ninety-five percent (95%) of the time (**not to exceed 1 NTU**) and that the system may not exceed at any time at a level that consistently achieves ninety-nine and nine-tenths percent (99.9%) removal or inactivation of *Giardia lamblia* cysts, ninety-nine and ninety-nine hundredths percent (99.99%) removal or inactivation of viruses, and ninety-nine percent (99%) removal of *Cryptosporidium* oocysts (**not to exceed 5 NTU**).

(Water Pollution Control Board; 327 IAC 8-2.6-3; filed May 1, 2003, 12:00 p.m.: 26 IR 2857)

SECTION 31. 327 IAC 8-2.6-4 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2.6-4 Filtration sampling requirements

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 4. (a) In addition to monitoring required by 327 IAC 8-2-8.7, a Subpart H system serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals **and, beginning January 1, 2005, a Subpart H system serving a population of fewer than ten thousand (10,000) individuals** that provides conventional filtration treatment or direct filtration shall comply with the following:

- (1) Conduct continuous monitoring of turbidity for each individual filter using an approved method in 327 IAC 8-2-8.7.
- (2) Calibrate turbidimeters using the procedure specified by the manufacturer.
- (3) Record the results of individual filter monitoring every fifteen (15) minutes.

(4) Monthly reporting must be completed and records must be maintained according to section 5 of this rule.

(b) If there is a failure in the continuous turbidity monitoring equipment, Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals must conduct grab sampling every four (4) hours ~~in lieu instead~~ of continuous monitoring, but for no more than five (5) working days following the failure of the equipment. **Beginning January 1, 2005, a Subpart H system serving a population of fewer than ten thousand (10,000) individuals must conduct grab sampling every four (4) hours instead of continuous monitoring until the turbidimeter is back in operation. The system has fourteen (14) days to resume continuous monitoring before a violation is incurred.**

(c) **Beginning January 1, 2005, if a system serving a population of fewer than ten thousand (10,000) individuals only consists of two (2) or fewer filters, the system may conduct continuous monitoring of combined filter effluent turbidity instead of individual filter effluent turbidity monitoring. Continuous monitoring must meet the same requirements set forth in subsections (a) and (b).** (*Water Pollution Control Board; 327 IAC 8-2.6-4; filed May 1, 2003, 12:00 p.m.: 26 IR 2857*)

SECTION 32. 327 IAC 8-2.6-5 IS AMENDED TO READ AS FOLLOWS:

327 IAC 8-2.6-5 Enhanced filtration and disinfection reporting and record keeping requirements

Authority: IC 13-13-5-1; IC 13-14-8-2; IC 13-14-8-7; IC 13-18-3-2

Affected: IC 13-12-3-1; IC 13-13-5-2; IC 13-14-9; IC 13-18-11

Sec. 5. Beginning January 1, 2002, a Subpart H system serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals **and, beginning January 1, 2005, a Subpart H system serving a population of fewer than ten thousand (10,000) individuals** that is subject to the requirements of section 3 of this rule and provides conventional filtration treatment or direct filtration shall meet the following requirements in addition to the reporting and record keeping requirements in 327 IAC 8-2-14:

(1) Turbidity measurements as required by section 3 of this rule shall be reported within ten (10) days after the end of each month the system serves water to the public. Information that ~~shall~~ **must** be reported includes the following:

(A) The total number of filtered water turbidity measurements taken during the month.

(B) The number and percentage of filtered water turbidity measurements taken during the month ~~which that~~ are less than or equal to the turbidity limits specified in section 3 of this rule.

(C) The date and value of any turbidity measurements taken during the month that exceed:

(i) one and zero-tenths (1.0) nephelometric turbidity unit for systems using conventional filtration treatment or direct filtration; or

(ii) the maximum level set by the commissioner under section 3 of this rule. This reporting requirement is ~~in lieu instead~~ of the reporting specified in 327 IAC 8-2-14(b).

(2) Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals shall maintain the results of individual filter monitoring taken under section 4 of this rule for at least three (3) years. These systems shall report that they have conducted individual filter turbidity monitoring under section 3 of this rule within ten (10) days after the end of each month they serve water to the public if measurements demonstrate one (1) or more of the following conditions:

(A) For any individual filter that has a measured turbidity level of greater than one and zero-tenths (1.0) nephelometric turbidity unit in two (2) consecutive measurements taken fifteen (15) minutes apart, Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals shall report the:

(i) filter number; ~~the~~

(ii) turbidity measurement; and ~~the~~

(iii) ~~date on which~~ **when** the exceedance occurred.

In addition, the system shall either produce a filter profile for the filter within seven (7) days of the exceedance, if the system is not able to identify an obvious reason for the abnormal filter performance, and report that the profile has been produced or report the obvious reason for the exceedance.

(B) For any individual filter that has a measured turbidity level of greater than five-tenths (0.5) in two (2) consecutive measurements taken fifteen (15) minutes apart at the end of the first four (4) hours of continuous filter operation after the filter has been backwashed or otherwise taken off-line, Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals shall report the:

(i) filter number; ~~the~~

(ii) turbidity **measurement**; and ~~the~~

(iii) ~~date on which~~ **when** the exceedance occurred.

In addition, the system shall either produce a filter profile for the filter within seven (7) days of the exceedance, if the system is not able to identify an obvious reason for the abnormal filter performance, and report that the profile has been produced or report the obvious reason for the exceedance.

(C) For any individual filter that has a measured turbidity level of greater than one and zero-tenths (1.0) nephelometric turbidity unit in two (2) consecutive measurements taken fifteen (15) minutes apart at any time in each of three (3) consecutive months, Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) shall report the filter number, the turbidity measurement, and the ~~date on which~~ **when** the exceedance occurred. In addition, the system shall conduct a self-assessment of the filter within fourteen (14) days of the exceedance and report that the self-assessment was conducted. The self-assessment shall consist of at least the following components:

(i) Assessment of filter performance.

(ii) Development of a filter profile.

(iii) Identification and prioritization of factors limiting filter performance.

(iv) Assessment of the applicability of corrections.

(v) Preparation of a filter self-assessment report.

(D) For any individual filter that has a measured turbidity level of greater than two and zero-tenths (2.0) nephelometric turbidity units in two (2) consecutive measurements taken fifteen (15) minutes apart at any time in each of two (2) consecutive months, Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals shall report the:

(i) filter number; ~~the~~

(ii) turbidity measurement; and ~~the~~

(iii) ~~date on which~~ **when** the exceedance occurred.

In addition, the system shall arrange for the conduct of a ~~comprehensive performance evaluation~~ **CPE** by the commissioner or a third party approved by the commissioner no later than thirty (30) days following the exceedance and have the evaluation completed and submitted to the commissioner no later than ninety (90) days following the exceedance.

(3) Additional reporting requirements **for Subpart H systems serving a population of at least ten thousand (10,000) individuals** are as follows:

(A) If at any time the turbidity exceeds one and zero-tenths (1.0) nephelometric turbidity unit in representative samples of filtered water in a Subpart H system serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals using conventional filtration treatment or direct filtration, the system shall inform the commissioner as soon as possible, but no later than the end of the next business day.

(B) If at any time the turbidity in representative samples of filtered water exceeds the maximum level set by the commissioner under section 3 of this rule for filtration technologies other than:

(i) conventional filtration treatment;

(ii) direct filtration;

(iii) slow sand filtration; or

(iv) diatomaceous earth filtration;

Subpart H systems serving a population of ~~greater than~~ **at least** ten thousand (10,000) individuals shall inform the commissioner as soon as possible, but no later than the end of the next business day.

(4) Beginning January 1, 2005, a Subpart H system serving a population of fewer than ten thousand (10,000) individuals shall maintain the results of individual filter monitoring taken under section 4 of this rule for at least three (3) years. The system shall report to the commissioner the results of conducting individual filter turbidity monitoring under section 3 of this rule within ten (10) days after the end of each month that water is served to the public if measurements demonstrate one (1) or more of the following conditions:

(A) If the turbidity of an individual filter (or the turbidity of combined filter effluent (CFE) for systems with two (2)

filters that monitor CFE instead of individual filters) exceeds one and zero-tenths (1.0) NTU in two (2) consecutive recordings fifteen (15) minutes apart, a Subpart H system serving a population of fewer than ten thousand (10,000) individuals must report to the commissioner by the tenth day of the following month and include:

- (i) the filter number or numbers;
- (ii) corresponding date or dates; and
- (iii) turbidity value or values;

that exceeded one and zero-tenths (1.0) NTU and the cause (if known) for the exceedance or exceedances.

(B) If a Subpart H system serving a population of fewer than ten thousand (10,000) individuals was required to report to the commissioner for three (3) months in a row and turbidity exceeded one and zero-tenths (1.0) NTU in two (2) consecutive recordings fifteen (15) minutes apart at the same filter (or CFE for systems with two (2) filters that monitor CFE instead of individual filters), the system must conduct a self-assessment of the filter or filters within fourteen (14) days of the day the filter exceeded one and zero-tenths (1.0) NTU in two (2) consecutive measurements for the third straight month unless a CPE as specified in clause (C) was required. Systems with two (2) filters that monitor CFE instead of individual filters must conduct a self-assessment on both filters. The system must report to the commissioner the date that the self-assessment was triggered and the date it was completed. The self-assessment must consist of at least the following components:

- (i) Assessment of filter performance.
- (ii) Development of a filter profile.
- (iii) Identification and prioritization of factors limiting filter performance.
- (iv) Assessment of the applicability of corrections.
- (v) Preparation of a filter self-assessment report.

(C) If a Subpart H system serving a population of fewer than ten thousand (10,000) individuals was required to report to the commissioner for two (2) months in a row and turbidity exceeded two and zero-tenths (2.0) NTU in two (2) consecutive recordings fifteen (15) minutes apart at the same filter (or CFE for systems with two (2) filters that monitor CFE instead of individual filters), the system must arrange to have a CPE conducted by the commissioner or a third party approved by the commissioner not later than sixty (60) days following the day the filter exceeded two and zero-tenths (2.0) NTU in two (2) consecutive measurements for the second straight month. The system must also report to the commissioner that a CPE is required and the date that it was triggered within ten (10) days after the end of each month that water is served to the public. If a CPE has been completed by the commissioner or a third party approved by the commissioner within the twelve (12) prior months or the system and commissioner are jointly participating in an ongoing comprehensive technical assistance (CTA) project at the system, a new CPE is not required. If conducted, a CPE must be completed and submitted to the commissioner not later than one hundred twenty (120) days following the day the filter exceeded two and zero-tenths (2.0) NTU in two (2) consecutive measurements for the second straight month.

(5) Beginning January 1, 2005, disinfection profiling and benchmarking reporting and record keeping requirements for Subpart H systems serving a population of fewer than ten thousand (10,000) individuals are as follows:

(A) Disinfection profiling reporting and record keeping requirements are as follows:

- (i) Systems must report results of optional monitoring that show:
 - (AA) TTHM levels less than sixty-four thousandths (0.064) mg/l and HAA5 levels less than forty-eight thousandths (0.048) mg/l (only if the system is not conducting a profile); or
 - (BB) the system has begun disinfection profiling by July 1, 2003, for systems serving five hundred (500) to nine thousand nine hundred ninety-nine (9,999) and January 1, 2004, for systems serving fewer than five hundred (500).
- (ii) Systems subject to disinfection profiling under section 2.1 of this rule must keep results of profiling (including raw data and analysis) indefinitely.

(B) Disinfection benchmarking reporting and record keeping requirements are as follows:

- (i) A system considering a significant change to its disinfection practice that is subject to disinfection benchmarking requirements under section 2.1 of this rule must report the following to the commissioner:
 - (AA) A description of the proposed change in disinfection.
 - (BB) The system's disinfection profile for *Giardia lamblia* (and, if necessary, viruses).
 - (CC) The system's disinfection benchmark.
 - (DD) An analysis of how the proposed change will affect the current levels of disinfection.
- (ii) Systems subject to disinfection benchmarking under section 2.1 of this rule must keep the benchmark (including raw data and analysis) indefinitely.

(6) Systems that use lime softening may apply to the commissioner for alternative exceedance levels for the levels specified in ~~subdivision~~ subdivisions (2) and ~~this subdivision~~ (4) if they can demonstrate that higher turbidity levels in individual filters are due to lime carryover only and not due to degraded filter performance.

(Water Pollution Control Board; 327 IAC 8-2.6-5; filed May 1, 2003, 12:00 p.m.: 26 IR 2857)

Notice of Public Hearing

Under IC 4-22-2-24, IC 13-14-8-6, and IC 13-14-9, notice is hereby given that on January 12, 2005 at 1:30 p.m., at the Indiana Government Center-South, 402 West Washington Street, Conference Center Room A, Indianapolis, Indiana the Water Pollution Control Board will hold a public hearing on proposed amendments to drinking water rules at 327 IAC 8-2, 327 IAC 8-2.1, and 327 IAC 8-2.6 concerning radionuclides, long term enhanced surface water treatment, arsenic, minor corrections to interim enhanced surface water treatment, disinfectants and disinfection byproducts, lead and copper, public notification, and analytical methods for public drinking water systems.

The purpose of this hearing is to receive comments from the public prior to consideration of final adoption of this rule by the board. All interested persons are invited and will be given reasonable opportunity to express their views concerning the proposed rule amendments. Oral statements will be heard, but, for the accuracy of the record, all comments should be submitted in writing.

Additional information regarding this action may be obtained from MaryAnn Stevens, Rules Section, Office of Water Quality, (317) 232-8635 or (800) 451-6027 (in Indiana).

Individuals requiring reasonable accommodations for participation in this event should contact the Indiana Department of Environmental Management, Americans with Disabilities Act coordinator at:

Attn: ADA Coordinator

Indiana Department of Environmental Management

100 North Senate Avenue

P.O. Box 6015

Indianapolis, Indiana 46206-6015

or call (317) 233-0855 or (317) 232-6565 (TDD). Speech and hearing impaired callers may contact IDEM via the Indiana Relay Service at 1-800-743-3333. Please provide a minimum of 72 hours' notification.

Copies of these rules are now on file at the Office of Water Quality, Indiana Department of Environmental Management, Indiana Government Center-North, 100 North Senate Avenue, Room 1255 and Legislative Services Agency, One North Capitol, Suite 325, Indianapolis, Indiana and are open for public inspection.

Tim Method
Deputy Commissioner
Indiana Department of Environmental Management