ILLINOIS POLLUTION CONTROL BOARD
July 22, 1999

IN THE MATTER OF:	)	
	)	
SDWA UPDATE, USEPA REGULATIONS	)	R99-12
(July 1, 1998, through December 31, 1998)	)	(Identical-in-Substance Rulemaking -
	)	Public Water Supplies)

Adopted Rule. Final Order.

ORDER OF THE BOARD (by R.C. Flemal):

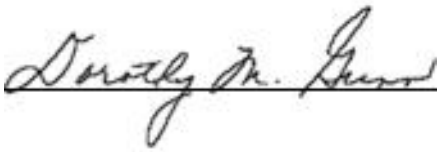
Under Section 17.5 of the Environmental Protection Act (Act) (415 ILCS 5/17.5 (1996)), the Board adopts amendments to the Illinois regulations that are "identical in substance" to the National Primary Drinking Water regulations (NPDWRs) adopted by the United States Environmental Protection Agency (USEPA). These regulations implement sections 1412(b), 1414(c), 1417(a), and 1445(a) of the Safe Drinking Water Act (SDWA), 42 U.S.C. §§ 300g-1(b), 300g-3(c), 300g-6(a), 300j-4(a). The nominal timeframe of this docket includes SDWA amendments that the USEPA adopted in the period July 1, 1998, through December 31, 1998. However, this docket also considers a correction taken after December 31, 1998, on which the Board is acting without delay. The USEPA took four actions during the nominal timeframe period that necessitate Board action. The federal SDWA regulations are found at 40 C.F.R. 141 and 142.

Section 17.5 provides for quick adoption of regulations that are "identical in substance" (IIS) to federal regulations that the USEPA adopts to implement sections 1412(b), 1414(c), 1417(a), and 1445(a) of the SDWA. Section 17.5 also provides that Title VII of the Act and Section 5 of the Administrative Procedure Act (APA) (5 ILCS 100/5-35 & 5-40 (1996)) do not apply to the Board's adoption of IIS regulations.

This final order is supported by an opinion that the Board also adopts today. The Board will cause the amendments to be published in the *Illinois Register*.

IT IS SO ORDERED.

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, do hereby certify that the above order was adopted on the 22nd day of July 1999 by a vote of 5-0.



Dorothy M. Gunn, Clerk
Illinois Pollution Control Board

TITLE 35: ENVIRONMENTAL PROTECTION
SUBTITLE F: PUBLIC WATER SUPPLIES
CHAPTER I: POLLUTION CONTROL BOARD

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AUTHORITY: Implementing Sections 17 and 17.5 and authorized by Section 27 of the Environmental Protection Act [415 ILCS 5/17, 17.5, and 27].

SOURCE: Adopted in R88-26 at 14 Ill. Reg. 16517, effective September 20, 1990; amended in R90-21 at 14 Ill. Reg. 20448, effective December 11, 1990; amended in R90-13 at 15 Ill. Reg. 1562, effective January 22, 1991; amended in R91-3 at 16 Ill. Reg. 19010, effective December 1, 1992; amended in R92-3 at 17 Ill. Reg. 7796, effective May 18, 1993; amended in R93-1 at 17 Ill. Reg. 12650, effective July 23, 1993; amended in R94-4 at 18 Ill. Reg. 12291, effective July 28, 1994; amended in R94-23 at 19 Ill. Reg. 8613, effective June 20, 1995; amended in R95-17 at 20 Ill. Reg. 14493, effective October 22, 1996; amended in R98-2 at 22 Ill. Reg. 5020, effective March 5, 1998; amended in R99-6 at 23 Ill. Reg. 2756, effective February 17, 1999; amended in R99-12 at 23 Ill. Reg. _____, effective _____.

Note: Capitalization denotes statutory language

SUBPART A: GENERAL

Section 611.101 Definitions

As used in this Part, the term:

"Act" means the Environmental Protection Act [415 ILCS 5].

"Agency" means the Illinois Environmental Protection Agency.

BOARD NOTE: The Department of Public Health ("Public Health") regulates non-community water supplies ("non-CWSs", including non-transient, non-community water supplies ("NTNCWSs") and transient non-community water

supplies ("transient non-CWSs")). For the purposes of regulation of supplies by Public Health by reference to this Part, "Agency" shall mean Public Health.

"Ai" means "inactivation ratio".

"Approved source of bottled water", for the purposes of Section 611.130(e)(4), means a source of water and the water therefrom, whether it be from a spring, artesian well, drilled well, municipal water supply, or any other source, that has been inspected and the water sampled, analyzed, and found to be a safe and sanitary quality according to applicable laws and regulations of State and local government agencies having jurisdiction, as evidenced by the presence in the plant of current certificates or notations of approval from each government agency or agencies having jurisdiction over the source, the water it bottles, and the distribution of the water in commerce.

BOARD NOTE: Derived from 40 CFR 142.62(g)(2) and 21 CFR 129.3(a) (1998). The Board cannot compile an exhaustive listing of all federal, state, and local laws to which bottled water and bottling water may be subjected. However, the statutes and regulations of which the Board is aware are the following: the Illinois Food, Drug and Cosmetic Act [410 ILCS 620], the Bottled Water Act [815 ILCS 310], the DPH Water Well Construction Code (77 Ill. Adm. Code 920), the DPH Water Well Pump Installation Code (77 Ill. Adm. Code 925), the federal bottled water quality standards (21 CFR 103.35), the federal drinking water processing and bottling standards (21 CFR 129), the federal Good Manufacturing Practices for human foods (21 CFR 110), the federal Fair Packaging and Labeling Act (15 USC 1451 et seq.), and the federal Fair Packaging and Labeling regulations (21 CFR 201).

"Best available technology" or "BAT" means the best technology, treatment techniques or other means that USEPA has found are available for the contaminant in question. BAT is specified in Subpart F of this Part.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Board" means the Illinois Pollution Control Board.

"CAS No" means "Chemical Abstracts Services Number".

"CT" or "CT_{calc}" is the product of "residual disinfectant concentration" (RDC or C) in mg/L determined before or at the first customer, and the corresponding "disinfectant contact time" (T) in minutes. If a supplier applies disinfectants at more than one point prior to the first customer, it shall 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 supplier shall determine the RDC of each disinfection sequence and

corresponding contact time before any subsequent disinfection application point(s). (See "$CT_{99.9}$".)
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"$CT_{99.9}$" is the CT value required for 99.9 percent (3-log) inactivation of Giardia lamblia cysts. $CT_{99.9}$ for a variety of disinfectants and conditions appear in Tables 1.1-1.6, 2.1 and 3.1 of Section 611.Appendix B. (See "Inactivation Ratio".)
BOARD NOTE: Derived from the definition of "CT" in 40 CFR 141.2 (1998).

"Coagulation" means a process using coagulant chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into flocs.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Community Water System" or "CWS" means a public water system (PWS) that serves at least 15 service connections used by year-round residents or regularly serves at least 25 year-round residents.
BOARD NOTE: Derived from 40 CFR 141.2 (1998). This definition differs slightly from that of Section 3.05 of the Act.

"Compliance cycle" means the nine-year calendar year cycle during which public water systems (PWSs) must monitor. Each compliance cycle consists of three three-year compliance periods. The first calendar 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.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Compliance period" means a three-year calendar year period within a compliance cycle. Each compliance cycle has three three-year compliance periods. Within the first compliance cycle, the first compliance period runs from January 1, 1993, to December 31, 1995; the second from January 1, 1996, to December 31, 1998; the third from January 1, 1999, to December 31, 2001.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Comprehensive performance evaluation" or "CPE" is 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.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"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.

BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Contaminant" means any physical, chemical, biological or radiological substance or matter in water.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Conventional filtration treatment" means a series of processes including coagulation, flocculation, sedimentation and filtration resulting in substantial particulate removal.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

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

A precoat cake of diatomaceous earth filter media is deposited on a support membrane (septum); and

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.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Direct filtration" means a series of processes including coagulation and filtration but excluding sedimentation resulting in substantial particulate removal.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Disinfectant" means any oxidant, including but not limited to chlorine, chlorine dioxide, chloramines and ozone added to water in any part of the treatment or distribution process, that is intended to kill or inactivate pathogenic microorganisms.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Disinfectant contact time" or "T" means the time in minutes that it takes for water to move from the point of disinfectant application or the previous point of RDC measurement to a point before or at the point where RDC is measured.

Where only one RDC 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 the point where RDC is measured.

Where more than one RDC is measured, T is:

For the first measurement of RDC, 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 RDC is measured, and

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

T 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.

T within mixing basins and storage reservoirs must be determined by tracer studies or an equivalent demonstration.

BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Disinfection" means a process that inactivates pathogenic organisms in water by chemical oxidants or equivalent agents.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Disinfection Byproduct" or "DBP" means a chemical byproduct that forms when disinfectants used for microbial control react with naturally occurring compounds already present in source water. DBPs include, but are not limited to, bromodichloromethane, bromoform, chloroform, dichloroacetic acid, bromate, chlorite, dibromochloromethane, and certain haloacetic acids.

"Disinfection profile" is a summary of daily Giardia lamblia inactivation through the treatment plant. The procedure for developing a disinfection profile is contained in Section 611.742.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Distribution system" includes all points downstream of an "entry point" to the point of consumer ownership.

"Domestic or other non-distribution system plumbing problem" means a coliform contamination problem in a PWS with more than one service connection that is limited to the specific service connection from which the coliform-positive sample was taken.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"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 (ICRU).

BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Enhanced coagulation" means the addition of sufficient coagulant for improved removal of disinfection byproduct (DBP) precursors by conventional filtration treatment.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Enhanced softening" means the improved removal of disinfection byproduct (DBP) precursors by precipitative softening.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Entry point" means a point just downstream of the final treatment operation, but upstream of the first user and upstream of any mixing with other water. If raw water is used without treatment, the "entry point" is the raw water source. If a PWS receives treated water from another PWS, the "entry point" is a point just downstream of the other PWS, but upstream of the first user on the receiving PWS, and upstream of any mixing with other water.

"Filter profile" is 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.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Filtration" means a process for removing particulate matter from water by passage through porous media.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"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.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"GAC10" means granular activated carbon (GAC) filter beds with an empty-bed contact time of 10 minutes based on average daily flow and a carbon reactivation frequency of every 180 days.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"GC" means "gas chromatography" or "gas-liquid phase chromatography".

"GC/MS" means gas chromatography (GC) followed by mass spectrometry (MS).

"Gross alpha particle activity" means the total radioactivity due to alpha particle emission as inferred from measurements on a dry sample.

BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Gross beta particle activity" means the total radioactivity due to beta particle emission as inferred from measurements on a dry sample.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Groundwater under the direct influence of surface water" means any water beneath the surface of the ground with significant occurrence of insects or other macroorganisms, algae, or large-diameter pathogens such as Giardia lamblia or (for Subpart B systems serving at least 10,000 persons only) Cryptosporidium, or significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions. "Groundwater under the direct influence of surface water" is as determined in Section 611.212.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"GWS" means "groundwater system", a public water supply (PWS) that uses only groundwater sources.
BOARD NOTE: Drawn from 40 CFR 141.23(b)(2) & 141.24(f)(2) note (1998).

"Haloacetic acids (five)" or HAA5 means the sum of the concentrations in milligrams per liter (mg/L) of five haloacetic acid compounds (monochloroacetic acid, dichloroacetic acid, trichloroacetic acid, monobromoacetic acid, and dibromoacetic acid), rounded to two significant figures after addition.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Halogen" means one of the chemical elements chlorine, bromine or iodine.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"HPC" means "heterotrophic plate count", measured as specified in Section 611.531(c).

"Inactivation Ratio" (Ai) means:

$$Ai = CT_{calc}/CT_{99.9}$$

The sum of the inactivation ratios, or "total inactivation ratio" (B) is calculated by adding together the inactivation ratio for each disinfection sequence:

$$B = \Sigma(Ai)$$

A total inactivation ratio equal to or greater than 1.0 is assumed to provide a 3-log inactivation of Giardia lamblia cysts.

BOARD NOTE: Derived from the definition of "CT" in 40 CFR 141.2 (1998).

"Initial compliance period" means the three-year compliance period that begins January 1, 1993, except for the MCLs for dichloromethane, 1,2,4-trichlorobenzene, 1,1,2-trichloroethane, benzo[a]pyrene, dalapon, di(2-ethylhexyl)adipate, di(2-ethyl-hexyl)phthalate, dinoseb, diquat, endothall, endrin, glyphosate, hexachlorobenzene, hexachlorocyclopentadiene, oxamyl, picloram, simazine, 2,3,7,8-TCDD, antimony, beryllium, cyanide, nickel, and thallium as they apply to suppliers whose supplies have fewer than 150 service connections, for which it means the three-year compliance period that begins on January 1, 1996.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Inorganic contaminants" or "IOCs" refers to that group of contaminants designated as such in United States Environmental Protection Agency (USEPA) regulatory discussions and guidance documents. IOCs include antimony, asbestos, barium, beryllium, cadmium, chromium, cyanide, mercury, nickel, nitrate, nitrite, selenium, and thallium.
BOARD NOTE: The IOCs are derived from 40 CFR 141.23(a)(4) (1998).

"L" means "liter".

"Legionella" means a genus of bacteria, some species of which have caused a type of pneumonia called Legionnaires Disease.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Man-made beta particle and photon emitters" means all radionuclides emitting beta particles ~~and/~~or photons listed in Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure, NCRP Report Number 22, incorporated by reference in Section 611.102, except the daughter products of thorium-232, uranium-235 and uranium-238.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Maximum contaminant level" ("MCL") means the maximum permissible level of a contaminant in water that is delivered to any user of a public water system. (See Section 611.121.)
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Maximum contaminant level goal" ("MCLG") means the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. MCLGs are nonenforceable health goals.
BOARD NOTE: Derived from 40 CFR 141.2 (1998). The Board has not routinely adopted the regulations relating to the federal MCLGs because they are

outside the scope of the Board's identical-in-substance mandate under Section 17.5 of the Act.

"Maximum residual disinfectant level" or "MRDL" means the maximum permissible 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. MRDLs are enforceable in the same manner as are MCLs. (See Section 611.313 and Section 611.383.)
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"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 persons would occur, and which allows an adequate margin of safety. MRDLGs are nonenforceable health goals and do not reflect the benefit of the addition of the chemical for control of waterborne microbial contaminants.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Maximum Total Trihalomethane Potential" or "MTP" means the maximum concentration of total trihalomethanes (TTHMs) produced in a given water containing a disinfectant residual after 7 days at a temperature of 25° C or above.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"MFL" means millions of fibers per liter larger than 10 micrometers.
BOARD NOTE: Derived from 40 CFR 141.23(a)(4)(i) (1998).

"mg" means milligrams (1/1000th of a gram).

"mg/L" means milligrams per liter.

"Mixed system" means a PWS that uses both groundwater and surface water sources.
BOARD NOTE: Drawn from 40 CFR 141.23(b)(2) and 141.24(f)(2) note (1998).

"MUG" means 4-methyl-umbelliferyl-beta-d-glucuronide.

"Near the first service connection" means at one of the 20 percent of all service connections in the entire system that are nearest the public water system (PWS) treatment facility, as measured by water transport time within the distribution system.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"nm" means nanometer (1/1,000,000~~th~~ of a meter).

"Non-community water system" or "NCWS" or "non-CWS" means a public water system (PWS) that is not a community water system (CWS). A non-community water system is either a "transient non-community water system (TWS)" or a "non-transient non-community water system (NTNCWS)."
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Non-transient non-community water system" or "NTNCWS" means a public water system (PWS) that is not a community water system (CWS) and that regularly serves at least 25 of the same persons over 6 months per year.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"NPDWR" means "national primary drinking water regulation".

"NTU" means "nephelometric turbidity units".

"Old MCL" means one of the inorganic maximum contaminant levels (MCLs), codified at Section 611.300, or organic MCLs, codified at Section 611.310, including any marked as "additional state requirements."
BOARD NOTE: Old MCLs are those derived prior to the implementation of the ~~U.S. EPA~~USEPA "Phase II" regulations. The Section 611.640 definition of this term, which applies only to Subpart O of this Part, differs from this definition in that the definition does not include the Section 611.300 inorganic MCLs.

"P-A Coliform Test" means "Presence-Absence Coliform Test".

"Paired sample" means two samples of water for Total Organic Carbon (TOC). One sample is of raw water taken prior to any treatment. The other sample is taken after the point of combined filter effluent and is representative of the treated water. These samples are taken at the same time. (See Section 611.382.)

"Performance evaluation sample" means a reference sample provided to a laboratory for the purpose of demonstrating that the laboratory can successfully analyze the sample within limits of performance specified by the Agency; or, for bacteriological laboratories, Public Health; or, for radiological laboratories, the Illinois Department of Nuclear Safety. The true value of the concentration of the reference material is unknown to the laboratory at the time of the analysis.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Person" means an individual, corporation, company, association, partnership, State, unit of local government, or federal agency.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Phase I" refers to that group of chemical contaminants and the accompanying regulations promulgated by USEPA on July 8, 1987, at 52 Fed. Reg. 25712.

"Phase II" refers to that group of chemical contaminants and the accompanying regulations promulgated by USEPA on January 30, 1991, at 56 Fed. Reg. 3578.

"Phase IIB" refers to that group of chemical contaminants and the accompanying regulations promulgated by USEPA on July 1, 1991, at 56 Fed. Reg. 30266.

"Phase V" refers to that group of chemical contaminants promulgated by USEPA on July 17, 1992, at 57 Fed. Reg. 31776.

"Picocurie" or "pCi" means the quantity of radioactive material producing 2.22 nuclear transformations per minute.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Point of disinfectant application" is the point at which the disinfectant is applied and downstream of which water is not subject to recontamination by surface water runoff.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Point-of-entry treatment device" is a treatment device applied to the drinking water entering a house or building for the purpose of reducing contaminants in the drinking water distributed throughout the house or building.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Point-of-use treatment device" is a treatment device applied to a single tap used for the purpose of reducing contaminants in drinking water at that one tap.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Public Health" means the Illinois Department of Public Health.
BOARD NOTE: The Department of Public Health ("Public Health") regulates non-community water supplies ("non-CWSs", including non-transient, non-community water supplies ("NTNCWSs") and transient non-community water supplies ("transient non-CWSs")). For the purposes of regulation of supplies by Public Health by reference to this Part, "Agency" shall mean Public Health.

"Public water system" or "PWS" means a system for the provision to the public of piped water for human consumption or other constructed conveyances, if such system has at least fifteen service connections or regularly serves an average of at least 25 individuals daily at least 60 days out of the year. A PWS is either a community water system (CWS) or a non-community water system (non-CWS). Such term includes:

Any collection, treatment, storage and distribution facilities under control of the operator of such system and used primarily in connection with such system; and

Any collection or pretreatment storage facilities not under such control that are used primarily in connection with such system.

BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Radioactive contaminants" refers to that group of contaminants designated "radioactive contaminants" in USEPA regulatory discussions and guidance documents. "Radioactive contaminants" include tritium, strontium-89, strontium-90, iodine-131, cesium-134, gross beta emitters, and other nuclides.
BOARD NOTE: Derived from 40 CFR 141.25(c) Table B (1998). These radioactive contaminants must be reported in Consumer Confidence Reports under Subpart U when they are detected above the levels indicated in Section 611.720(c)(3).

"Reliably and consistently" below a specified level for a contaminant means an Agency determination based on analytical results following the initial detection of a contaminant to determine the qualitative condition of water from an individual sampling point or source. The Agency shall base this determination on the consistency of analytical results, the degree below the MCL, the susceptibility of source water to variation, and other vulnerability factors pertinent to the contaminant detected that may influence the quality of water.
BOARD NOTE: Derived from 40 CFR 141.23(b)(9), 141.24(f)(11)(ii), and 141.24(f)(11)(iii) (1998).

"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 1/1000 of a rem.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Repeat compliance period" means a compliance period that begins after the initial compliance period.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Representative" means that a sample must reflect the quality of water that is delivered to consumers under conditions when all sources required to supply water under normal conditions are in use and all treatment is properly operating.

"Residual disinfectant concentration" ("RDC" or "C" in CT calculations) means the concentration of disinfectant measured in mg/L in a representative sample of water. For purposes of the requirement of Section 611.241(d) of maintaining a detectable RDC in the distribution system, "RDC" means a residual of free or combined chlorine.

BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Safe Drinking Water Act" or "SDWA" means the Public Health Service Act, as amended by the Safe Drinking Water Act, Pub. L. 93-523, 42 USC 300f et seq.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Sanitary survey" means an onsite review of the water source, facilities, equipment, operation and maintenance of a public water system (PWS) for the purpose of evaluating the adequacy of such source, facilities, equipment, operation and maintenance for producing and distributing safe drinking water.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Sedimentation" means a process for removal of solids before filtration by gravity or separation.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"SEP" means special exception permit (Section 611.110).

"Service connection," as used in the definition of public water system, does not include a connection to a system that delivers water by a constructed conveyance other than a pipe if any of the following is true:

The water is used exclusively for purposes other than residential use (consisting of drinking, bathing, and cooking, or other similar uses);

The Agency determines by issuing a SEP that alternative water for residential use or similar uses for drinking and cooking is provided to achieve the equivalent level of public health protection provided by the applicable national primary drinking water regulations; or

The Agency determines by issuing a SEP that the water provided for residential use or similar uses for drinking, cooking, and bathing is centrally treated or treated at the point of entry by the provider, a pass-through entity, or the user to achieve the equivalent level of protection provided by the applicable national primary drinking water regulations.

BOARD NOTE: Derived from 40 CFR 141.2 (1998). See sections 1401(4)(B)(i)(II) and (4)(B)(i)(III) of SDWA (42 USC 300f(4)(B)(i)(II) & (4)(B)(i)(III) (1996)).

"Slow sand filtration" means a process involving passage of raw water through a bed of sand at low velocity (generally less than 0.4 meters per hour (m/h)) resulting in substantial particulate removal by physical and biological mechanisms.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"SOC" or "Synthetic organic chemical contaminant" refers to that group of contaminants designated as "SOCs", or "synthetic organic chemicals" or "synthetic organic contaminants", in ~~U.S. EPA~~USEPA regulatory discussions and guidance documents. "SOCs" include alachlor, aldicarb, aldicarb sulfone, aldicarb sulfoxide, atrazine, benzo[a]pyrene, carbofuran, chlordane, dalapon, dibromoethylene (ethylene dibromide or EDB), dibromochloropropane (DBCP), di(2-ethylhexyl)-adipate, di(2-ethylhexyl)phthalate, dinoseb, diquat, endothall, endrin, glyphosate, heptachlor, heptachlor epoxide, hexachlorobenzene, hexachlorocyclopentadiene, lindane, methoxychlor, oxamyl, pentachlorophenol, picloram, simazine, toxaphene, polychlorinated biphenyls (PCBs), 2,4-D, 2,3,7,8-TCDD, and 2,4,5-TP.

"Source" means a well, reservoir, or other source of raw water.

"Special irrigation district" means an irrigation district in existence prior to May 18, 1994 that provides primarily agricultural service through a piped water system with only incidental residential use or similar use, where the system or the residential users or similar users of the system comply with either of the following exclusion conditions:

> The Agency determines by issuing a SEP that alternative water is provided for residential use or similar uses for drinking or cooking to achieve the equivalent level of public health protection provided by the applicable national primary drinking water regulations; or
>
> The Agency determines by issuing a SEP that the water provided for residential use or similar uses for drinking, cooking, and~~an~~ bathing is centrally treated or treated at the point of entry by the provider, a pass-through entity, or the user to achieve the equivalent level of protection provided by the applicable national primary drinking water regulations.

BOARD NOTE: Derived from 40 CFR 141.2 (1998) and sections 1401(4)(B)(i)(II) and (4)(B)(i)(III) of SDWA (42 USC 300f(4)(B)(i)(II) & (4)(B)(i)(III) (1996)).

"Standard sample" means the aliquot of finished drinking water that is examined for the presence of coliform bacteria.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Subpart B system" means a public water system that uses surface water or groundwater under the direct influence of surface water as a source and which is subject to the requirements of Subpart B and the analytical and monitoring requirements of Sections 611.531, 611.532, 611.533, 611.Appendix B, and 611.Appendix C of this Part.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Supplier of water" or "supplier" means any person who owns or operates a public water system (PWS). This term includes the "official custodian".
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Surface water" means all water that is open to the atmosphere and subject to surface runoff.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"SUVA" means specific ultraviolet absorption at 254 nanometers (nm), which is an indicator of the humic content of water. It is a calculated parameter obtained by dividing a sample's ultraviolet absorption at a wavelength of 254 nm (UV_{254}) (in m^{-1}) by its concentration of dissolved organic carbon (in mg/L).
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"SWS" means "surface water system", a public water supply (PWS) that uses only surface water sources, including "groundwater under the direct influence of surface water".
BOARD NOTE: Drawn from 40 CFR 141.23(b)(2) and 141.24(f)(2) note (1998).

"System with a single service connection" means a system that supplies drinking water to consumers via a single service line.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Too numerous to count" means that the total number of bacterial colonies exceeds 200 on a 47-mm diameter membrane filter used for coliform detection.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Total Organic Carbon" ("TOC") means total organic carbon (in mg/L) measured using heat, oxygen, ultraviolet irradiation, chemical oxidants, or combinations of these oxidants that convert organic carbon to carbon dioxide, rounded to two significant figures.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Total trihalomethanes" or "TTHM" means the sum of the concentration of trihalomethanes (THMs), in milligrams per liter (mg/L), rounded to two significant figures.
BOARD NOTE: Derived from the definition of "total trihalomethanes" in 40 CFR 141.2 (1998). (See the definition of THMs for a listing of the four compounds that USEPA considers TTHMs to comprise.)

"Transient, non-community water system" or "transient non-CWS" means a non-CWS that does not regularly serve at least 25 of the same persons over six months of the year.

BOARD NOTE: Derived from 40 CFR 141.2 (1998). The federal regulations apply to all "public water systems", which are defined as all systems having at least 15 service connections or regularly serving water to at least 25 persons. (See 42 USC 300f(4).) The Act mandates that the Board and the Agency regulate "public water supplies", which it defines as having at least 15 service connections or regularly serving 25 persons daily at least 60 days per year. (See Section 3.28 of the Act [415 ILCS 5/3.28].) The Department of Public Health regulates transient non-community water systems.

"Treatment" means any process that changes the physical, chemical, microbiological, or radiological properties of water, is under the control of the supplier, and is not a "point of use" or "point of entry treatment device" as defined in this Section. "Treatment" includes, but is not limited to, aeration, coagulation, sedimentation, filtration, activated carbon treatment, disinfection, and fluoridation.

"Trihalomethane" or "THM" means one of the family of organic compounds, named as derivatives of methane, in which three of the four hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure. The THMs are:

Trichloromethane (chloroform),

Dibromochloromethane,

Bromodichloromethane, and

Tribromomethane (bromoform)

BOARD NOTE: Derived from the definitions of "total trihalomethanes" and "trihalomethanes" in 40 CFR 141.2 (1998).

"µg" means micrograms (1/1,000,000~~th~~ of a gram).

"USEPA" or "U.S. EPA" means the U.S. Environmental Protection Agency.

"Uncovered finished water storage facility" is a tank, reservoir, or other facility that is open to the atmosphere and which is used to store water that will undergo no further treatment except residual disinfection.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Virus" means a virus of fecal origin that is infectious to humans by waterborne transmission.

"VOC" or "volatile organic chemical contaminant" refers to that group of contaminants designated as "VOCs", ~~or~~ "volatile organic chemicals", or "volatile

organic contaminants", in USEPA regulatory discussions and guidance documents. "VOCs" include benzene, dichloromethane, tetrachloromethane (carbon tetrachloride), trichloroethylene, vinyl chloride, 1,1,1-trichloroethane (methyl chloroform), 1,1-dichloroethylene, 1,2-dichloroethane, cis-1,2-dichloroethylene, ethylbenzene, monochlorobenzene, o-dichlorobenzene, styrene, 1,2,4-trichlorobenzene, 1,1,2-trichloroethane, tetrachloroethylene, toluene, trans-1,2-dichloroethylene, xylene, and 1,2-dichloropropane.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Waterborne disease outbreak" means the significant occurrence of acute infectious illness, epidemiologically associated with the ingestion of water from a public water system (PWS) that is deficient in treatment, as determined by the appropriate local or State agency.
BOARD NOTE: Derived from 40 CFR 141.2 (1998).

"Wellhead Protection Program" means the wellhead protection program for the State of Illinois, approved by USEPA under Section 1428 of the SDWA.
BOARD NOTE: Derived from 40 CFR 141.71(b) (1998). The wellhead protection program ~~will~~ includes the "groundwater protection needs assessment" under Section 17.1 of the Act, and ~~regulations to be adopted in~~ 35 Ill. Adm. Code 615 et seq.

(Source: Amended at 23 Ill. Reg. _____, effective _____)

Section 611.102 Incorporations by Reference

a) Abbreviations and short-name listing of references. The following names and abbreviated names, presented in alphabetical order, are used in this Part to refer to materials incorporated by reference:

"Amco-AEPA-1 Polymer" is available from Advanced Polymer Systems.

"ASTM Method" means a method published by and available from the American Society for Testing and Materials (ASTM).

"Colisure Test" means "Colisure Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia Coli in Drinking Water", available from Millipore Corporation, Technical Services Department.

"Dioxin and Furan Method 1613" means "Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope-Dilution HRGC/HRMS", available from NTIS.

"GLI Method 2" means GLI Method 2, "Turbidity", Nov. 2, 1992, available from Great Lakes Instruments, Inc.

"Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems Using Surface Water Sources", available from USEPA Science and Technology Branch.

"HASL Procedure Manual" means HASL Procedure Manual, HASL 300, available from ERDA Health and Safety Laboratory.

"Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure", NCRP Report Number 22, available from NCRP.

"NCRP" means "National Council on Radiation Protection".

"NTIS" means "National Technical Information Service".

"New Jersey Radium Method" means "Determination of Radium 228 in Drinking Water", available from the New Jersey Department of Environmental Protection.

"New York Radium Method" means "Determination of Ra-226 and Ra-228 (Ra-02)", available from the New York Department of Public Health.

"ONGP-MUG Test" (meaning "minimal medium ortho-nitrophenyl-beta-d-galactopyranoside-4-methyl-umbelliferyl-beta-d-glucuronide test"), also called the "Autoanalysis Colilert System", is Method 9223, available in "Standard Methods for the Examination of Water and Wastewater", 18th ed., from American Public Health Association.

"Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions", available from NTIS.

"Radiochemical Methods" means "Interim Radiochemical Methodology for Drinking Water", available from NTIS.

"Standard Methods", means "Standard Methods for the Examination of Water and Wastewater", available from the American Public Health Association or the American Waterworks Association.

"Technical Bulletin 601" means "Technical Bulletin 601, Standard Method of Testing for Nitrate in Drinking Water", July~~,~~ 1994, available from Analytical Technology, Inc.

"Technicon Methods" means "Fluoride in Water and Wastewater", available from Technicon.

"USDOE Manual" means "EML Procedures Manual", available from the United State Department of Energy.

"USEPA Asbestos Methods-100.1" means Method 100.1, "Analytical Method for Determination of Asbestos Fibers in Water", available from NTIS.

"USEPA Asbestos Methods-100.2" means Method 100.2, "Determination of Asbestos Structures over 10-mm in Length in Drinking Water", available from NTIS.

"USEPA Environmental Inorganics Methods" means "Methods for the Determination of Inorganic Substances in Environmental Samples", available from NTIS; "Methods for the Determination of Inorganic Substances in Environmental Samples", August 1993, for Method 300.0; "Determination of Inorganic Anions in Drinking Water by Ion Chromatography, Revision 1.0", 1997, for Method 300.1.

"USEPA Environmental Metals Methods" means "Methods for the Determination of Metals in Environmental Samples", available from NTIS.

"USEPA Organic Methods" means "Methods for the Determination of Organic Compounds in Drinking Water", July~~,~~ 1991, for Methods 502.2, 505, 507, 508, 508A, 515.1, and 531.1; "Methods for the Determination of Organic Compounds in Drinking Water--Supplement I", July~~,~~ 1990, for Methods 506, 547, 550, 550.1, and 551; and "Methods for the Determination of Organic Compounds in Drinking Water--Supplement II", August~~,~~ 1992, for Methods 515.2, 524.2, 548.1, 549.1, 552.1, and 555, available from NTIS. Methods 504.1, 508.1, and 525.2 are available from EPA EMSL; "Methods for the Determination of Organic Compounds" in Drinking Water-Supplement II, August 1992, for Method 552.1; "Methods for the Determination of Organic Compounds in Drinking Water-Supplement III", August 1995, for Methods 502.2, 524.2, 551.1, and 552.2.

"USEPA Interim Radiochemical Methods" means "Interim Radiochemical Methodology for Drinking Water", EPA 600/4-75-008 (revised), March 1976. Available from NTIS.

"USEPA Radioactivity Methods" means "Prescribed Procedures for Measurement of Radioactivity in Drinking Water", EPA 600/4-80-032, August 1980. Available from NTIS.

"USEPA Radiochemical Analyses" means "Radiochemical Analytical Procedures for Analysis of Environmental Samples", March 1979. Available from NTIS.

"USEPA Radiochemistry Methods" means "Radiochemistry Procedures Manual", EPA 520/5-84-006, December 1987. Available from NTIS.

"USEPA Technical Notes" means "Technical Notes on Drinking Water Methods", available from NTIS.

"USGS Methods" means "Methods of Analysis by the U.S. Geological Survey National Water Quality Laboratory--Determination of Inorganic and Organic Constituents in Water and Fluvial Sediments", available from NTIS and USGS.

"Waters Method B-1011" means "Waters Test Method for the Determination of Nitrite/Nitrate in Water Using Single Column Ion Chromatography", available from Millipore Corporation, Waters Chromatography Division.

b) The Board incorporates the following publications by reference:

Access Analytical Systems, Inc.~~,~~ (See Environetics, Inc.)

Advanced Polymer Systems, 3696 Haven Avenue, Redwood City, CA 94063 415-366-2626:

Amco-AEPA-1 Polymer. See 40 CFR 141.22(a) (199~~5~~8). Also, as referenced in ASTM D1889.

American Public Health Association, 1015 Fifteenth Street NW, Washington, DC 20005 800-645-5476:

"Standard Methods for the Examination of Water and Wastewater", 17th Edition 1989 (referred to as "Standard Methods, 17th ed.").

"Standard Methods for the Examination of Water and Wastewater", 18th Edition, 1992, including "Supplement to the 18th Edition of Standard Methods for the Examination of Water

and Wastewater", 1994 (collectively referred to as "Standard Methods, 18th ed."). See the methods listed separately for the same references under American Water Works Association.

"Standard Methods for the Examination of Water and Wastewater", 19th Edition, 1995 (referred to as "Standard Methods, 19th ed.").

American Waterworks Association et al., 6666 West Quincy Ave., Denver, CO 80235 303-794-7711:

Standard Methods for the Examination of Water and Wastewater, 13th Edition, 1971 (referred to as "Standard Methods, 13th ed.").

Method 302, Gross Alpha and Gross Beta Radioactivity in Water (Total, Suspended and Dissolved).

Method 303, Total Radioactive Strontium and Strontium 90 in Water.

Method 304, Radium in Water by Precipitation.

Method 305, Radium 226 by Radon in Water (Soluble, Suspended and Total).

Method 306, Tritium in Water.

Standard Methods for the Examination of Water and Wastewater, 18th Edition, 1992 (referred to as "Standard Methods, 18th ed."):

Method 2130 B, Turbidity, Nephelometric Method.

Method 2320 B, Alkalinity, Titration Method.

Method 2510 B, Conductivity, Laboratory Method.

Method 2550, Temperature, Laboratory and Field Methods.

Method 3111 B, Metals by Flame Atomic Absorption Spectrometry, Direct Air-Acetylene Flame Method.

Method 3111 D, Metals by Flame Atomic Absorption Spectrometry, Direct Nitrous Oxide-Acetylene Flame Method.

Method 3112 B, Metals by Cold-Vapor Atomic Absorption Spectrometry, Cold-Vapor Atomic Absorption Spectrometric Method.

Method 3113 B, Metals by Electrothermal Atomic Absorption Spectrometry, Electrothermal Atomic Absorption Spectrometric Method.

Method 3114 B, Metals by Hydride Generation/Atomic Absorption Spectrometry, Manual Hydride Generation/Atomic Absorption Spectrometric Method.

Method 3120 B, Metals by Plasma Emission Spectroscopy, Inductively Coupled Plasma (ICP) Method.

Method 3500-Ca D, Calcium, EDTA Titrimetric Method.

Method 4110 B, Determination of Anions by Ion Chromatography, Ion Chromatography with Chemical Suppression of Eluent Conductivity.

Method 4500-CN^- C, Cyanide, Total Cyanide after Distillation.

Method 4500-CN^- E, Cyanide, Colorimetric Method.

Method 4500-CN^- F, Cyanide, Cyanide-Selective Electrode Method.

Method 4500-CN^- G, Cyanide, Cyanides Amenable to Chlorination after Distillation.

~~Method 4500-Cl D, Chlorine (Residual), Amperometric Titration Method.~~

~~Method 4500-Cl E, Chlorine (Residual), Low-Level Amperometric Titration Method.~~

~~Method 4500-Cl F, Chlorine (Residual), DPD Ferrous Titrimetric Method.~~

~~Method 4500-Cl G, Chlorine (Residual), DPD Colorimetric Method.~~

~~Method 4500-Cl H, Chlorine (Residual), Syringaldazine (FACTS) Method.~~

~~Method 4500-Cl I, Chlorine (Residual), Iodometric Electrode Technique.~~

Method 4500-ClO_2 C, Chlorine Dioxide, Amperometric Method I.

~~Method 4500-ClO_2 D, Chlorine Dioxide, DPD Method.~~

~~Method 4500-ClO_2 E, Chlorine Dioxide, Amperometric Method II (Proposed).~~

Method 4500-F^- B, Fluoride, Preliminary Distillation Step.

Method 4500-F^- C, Fluoride, Ion-Selective Electrode Method.

Method 4500-F^- D, Fluoride, SPADNS Method.

Method 4500-F^- E, Fluoride, Complexone Method.

Method 4500-H^+ B, pH Value, Electrometric Method.

Method 4500-NO_2^- B, Nitrogen (Nitrite), Colorimetric Method.

Method 4500-NO_3^- D, Nitrogen (Nitrate), Nitrate Electrode Method.

Method 4500-NO_3^- E, Nitrogen (Nitrate), Cadmium Reduction Method.

Method 4500-NO_3^- F, Nitrogen (Nitrate), Automated Cadmium Reduction Method.

Method 4500-O_3 B, Ozone (Residual) (Proposed), Indigo Colorimetric Method.

Method 4500-P E, Phosphorus, Ascorbic Acid Method.

Method 4500-P F, Phosphorus, Automated Ascorbic Acid Reduction Method.

Method 4500-Si D, Silica, Molybdosilicate Method.

Method 4500-Si E, Silica, Heteropoly Blue Method.

Method 4500-Si F, Silica, Automated Method for Molybdate-Reactive Silica.

Method 4500-SO_4^{2-} C, Sulfate, Gravimetric Method with Ignition of Residue.

Method 4500-SO_4^{2-} D, Sulfate, Gravimetric Method with Drying of Residue.

Method 4500-SO_4^{2-} F, Sulfate, Automated Methylthymol Blue Method.

Method 6610, Carbamate Pesticide Method.

Method 6651, Glyphosate Herbicide (Proposed).

Method 7110 B, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Evaporation Method for Gross Alpha-Beta.

Method 7110 C, Gross Alpha and Beta Radioactivity (Total, Suspended, and Dissolved), Coprecipitation Method for Gross Alpha Radioactivity in Drinking Water (Proposed).

Method 7500-Cs B, Radioactive Cesium, Precipitation Method.

Method 7500-3H, B, Tritium, Liquid Scintillation Spectrometric Method.

Method 7500-I B, Radioactive Iodine, Precipitation Method.

Method 7500-I C, Radioactive Iodine, Ion-Exchange Method.

Method 7500-I D, Radioactive Iodine, Distillation Method.

Method 7500-Ra B, Radium, Precipitation Method.

Method 7500-Ra C, Radium, Emanation Method.

Method 7500-Ra D, Radium, Sequential Precipitation Method (Proposed).

Method 7500-U B, Uranium, Radiochemical Method (Proposed).

Method 7500-U C, Uranium, Isotopic Method (Proposed).

Method 9215 B, Heterotrophic Plate Count, Pour Plate Method.

Method 9221 A, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Introduction.

Method 9221 B, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Standard Total Coliform Fermentation Technique.

Method 9221 C, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Estimation of Bacterial Density.

Method 9221 D, Multiple-Tube Fermentation Technique for Members of the Coliform Group, Presence-Absence (P-A) Coliform Test.

Method 9222 A, Membrane Filter Technique for Members of the Coliform Group, Introduction.

Method 9222 B, Membrane Filter Technique for Members of the Coliform Group, Standard Total Coliform Membrane Filter Procedure.

Method 9222 C, Membrane Filter Technique for Members of the Coliform Group, Delayed-Incubation Total Coliform Procedure.

Method 9223, Chromogenic Substrate Coliform Test (Proposed).

Standard Methods for the Examination of Water and Wastewater, 19th Edition, 1995 (referred to as "Standard Methods, 19th ed."):

Method 7120-B, Gamma Spectrometric Method.

Method 7500-U C, Uranium, Isotopic Method.

Method 4500-Cl D, Chlorine (Residual), Amperometric Titration Method.

Method 4500-Cl E, Chlorine (Residual), Low-Level Amperometric Titration Method.

Method 4500-Cl F, Chlorine (Residual), DPD Ferrous Titrimetric Method.

Method 4500-Cl G, Chlorine (Residual), DPD Colorimetric Method.

Method 4500-Cl H, Chlorine (Residual), Syringaldazine (FACTS) Method.

Method 4500-Cl I, Chlorine (Residual), Iodometric Electrode Technique.

Method 4500-ClO_2 D, Chlorine Dioxide, DPD Method.

Method 4500-ClO_2 E, Chlorine Dioxide, Amperometric Method II.

Method 6251 B, Disinfection Byproducts: Haloacetic Acids and Trichlorophenol, Micro Liquid-Liquid Extraction Gas Chromatographic Method.

Method 5910 B, UV Absorbing Organic Constituents, Ultraviolet Absorption Method.

Supplement to the 19th Edition of Standard Methods for the Examination of Water and Wastewater, American Public Health Association, 1996:

Method 5310 B, TOC, Combustion-Infrared Method.

Method 5310 C, TOC, Persulfate-Ultraviolet Oxidation Method.

Method 5310 D, TOC, Wet-Oxidation Method.

Analytical Technology, Inc. ATI Orion, 529 Main Street, Boston, MA 02129:

Technical Bulletin 601, "Standard Method of Testing for Nitrate in Drinking Water", July, 1994, PN 221890-001 (referred to as "Technical Bulletin 601").

ASTM. American Society for Testing and Materials, 1976 Race Street, Philadelphia, PA 19103 215-299-5585:

ASTM Method D511-93 A and B, "Standard Test Methods for Calcium and Magnesium in Water", "Test Method A--complexometric Titration" & "Test Method B--Atomic Absorption Spectrophotometric", approved 1993.

ASTM Method D515-88 A, "Standard Test Methods for Phosphorus in Water", "Test Method A--Colorimetric Ascorbic Acid Reduction", approved August 19, 1988.

ASTM Method D859-88, "Standard Test Method for Silica in Water", approved August 19, 1988.

ASTM Method D1067-92 B, "Standard Test Methods for Acidity or Alkalinity in Water", "Test Method B--Electrometric or Color-Change Titration", approved May 15, 1992.

ASTM Method D1125-91 A, "Standard Test Methods for Electrical Conductivity and Resistivity of Water", "Test Method A--Field and Routine Laboratory Measurement of Static (Non-Flowing) Samples", approved June 15, 1991.

ASTM Method D1179-93 B "Standard Test Methods for Fluoride in Water", "Test Method B--Ion Selective Electrode", approved 1993.

ASTM Method D1293-84 "Standard Test Methods for pH of Water", "Test Method A--Precise Laboratory Measurement" &

"Test Method B--Routine or Continuous Measurement", approved October 26, 1984.

ASTM Method D1688-90 A or C, "Standard Test Methods for Copper in Water", "Test Method A--Atomic Absorption, Direct" & "Test Method C--Atomic Absorption~~Absorbtion~~, Graphite Furnace", approved March 15, 1990.

ASTM Method D2036-91 A or B, "Standard Test Methods for Cyanide in Water", "Test Method A--Total Cyanides after Distillation" & "Test Method B--Cyanides Amenable to Chlorination by Difference", approved September 15, 1991.

ASTM Method D2459-72, "Standard Test Method for Gamma Spectrometry in Water," approved July 28, 1972, discontinued 1988.

ASTM Method D2460-90, "Standard Test Method for Radionuclides of Radium in Water", approved 1990.

ASTM Method D2907-91, "Standard Test Methods for Microquantities of Uranium in Water by Fluorometry", "Test Method A--Direct Fluorometric" & "Test Method B—Extraction", approved June 15, 1991.

ASTM Method D2972-93 B or C, "Standard Test Methods for Arsenic in Water", "Test Method B--Atomic Absorption, Hydride Generation" & "Test Method C--Atomic Absorption, Graphite Furnace", approved 1993.

ASTM Method D3223-91, "Standard Test Method for Total Mercury in Water", approved September 23, 1991.

ASTM Method D3454-91, "Standard Test Method for Radium-226 in Water", approved 1991.

ASTM Method D3559-90 D, "Standard Test Methods for Lead in Water", "Test Method D--Atomic Absorption, Graphite Furnace", approved August 6, 1990.

ASTM Method D3645-93 B, "Standard Test Methods for Beryllium in Water", "Method B--Atomic Absorption, Graphite Furnace", approved 1993.

ASTM Method D3649-91, “Standard Test Method for High-Resolution Gamma-Ray Spectrometry of Water”, approved 1991.

ASTM Method D3697-92, “Standard Test Method for Antimony in Water”, approved June 15, 1992.

ASTM Method D3859-93 A, “Standard Test Methods for Selenium in Water”, “Method A--Atomic Absorption, Hydride Method”, approved 1993.

ASTM Method D3867-90 A and B, “Standard Test Methods for Nitrite-Nitrate in Water”, “Test Method A--Automated Cadmium Reduction” & “Test Method B--Manual Cadmium Reduction”, approved January 10, 1990.

ASTM Method D3972-90, “Standard Test Method for Isotopic Uranium in Water by Radiochemistry”, approved 1990.

ASTM Method D4107-91, “Standard Test Method for Tritium in Drinking Water”, approved 1991.

ASTM Method D4327-91, “Standard Test Method for Anions in Water by Ion Chromatography”, approved October 15, 1991.

ASTM Method D4785-88, “Standard Test Method for Low-Level Iodine-131 in Water”, approved 1988.

ASTM Method D5174-91, “Standard Test Method for Trace Uranium in Water by Pulsed-Laser Phosphorimetry”, approved 1991.

ASTM Method D 1253-86, “Standard Test Method for Residual Chlorine in Water,” reapproved 1992.

ERDA Health and Safety Laboratory, New York, NY:

HASL Procedure Manual, HASL 300, 1973. See 40 CFR 141.25(b)(2) (1995~~5~~8).

Great Lakes Instruments, Inc., 8855 North 55th Street, Milwaukee, WI 53223:

GLI Method 2, “Turbidity”, Nov. 2, 1992.

Millipore Corporation, Technical Services Department, 80 Ashby Road, Milford, MA 01730 800-654-5476:

Colisure Presence/Absence Test for Detection and Identification of Coliform Bacteria and Escherichia Coli in Drinking Water, February 28, 1994 (referred to as "Colisure Test").

Millipore Corporation, Waters Chromatography Division, 34 Maple St., Milford, MA 01757 800-252-4752:

Waters Test Method for the Determination of Nitrite/Nitrate in Water Using Single Column Ion Chromatography, Method B-1011 (referred to as "Waters Method B-1011").

NCRP. National Council on Radiation Protection, 7910 Woodmont Ave., Bethesda, MD 301-657-2652:

"Maximum Permissible Body Burdens and Maximum Permissible Concentrations of Radionuclides in Air and in Water for Occupational Exposure", NCRP Report Number 22, June 5, 1959.

NSF. National Sanitation Foundation International, 3475 Plymouth Road, PO Box 130140, Ann Arbor, Michigan 48113-0140, ~~(telephone: 734-769-8010)~~:

NSF Standard 61, section 9, November 1998.

NTIS. National Technical Information Service, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161, ~~(703-)~~ 487-4600 or 800-553-6847:

"Interim Radiochemical Methodology for Drinking Water", EPA 600/4-75-008 (revised), March 1976 (referred to as "USEPA Interim Radiochemical Methods"). (Pages 1, 4, 6, 9, 13, 16, 24, 29, 34)

Method 100.1, "Analytical Method for Determination of Asbestos Fibers in Water", EPA-600/4-83-043, September, 1983, Doc. No. PB83-260471 (referred to as "USEPA Asbestos Methods-100.1").

Method 100.2, "Determination of Asbestos Structures over 10-mm in Length in Drinking Water", EPA-600/4-83-043, June, 1994, Doc. No. PB94-201902 (Referred to as "USEPA Asbestos Methods-100.2").

"Methods for Chemical Analysis of Water and Wastes", March, 1983, Doc. No. PB84-128677 (referred to as "USEPA Inorganic Methods"). (Methods 150.1, 150.2, and 245.2, which formerly appeared in this reference, are available from USEPA EMSL.)

"Methods for the Determination of Metals in Environmental Samples", June, 1991, Doc. No. PB91-231498 (referred to as "USEPA Environmental Metals Methods").

"Methods for the Determination of Organic Compounds in Drinking Water", December, 1988, revised July, 1991, EPA-600/4-88/039 (referred to as "USEPA Organic Methods"). (For methods 502.2, 505, 507, 508, 508A, 515.1, and 531.1.)

"Methods for the Determination of Organic Compounds in Drinking Water--Supplement I", July, 1990, EPA-600-4-90-020 (referred to as "USEPA Organic Methods"). (For methods 506, 547, 550, 550.1, and 551.)

"Methods for the Determination of Organic Compounds in Drinking Water--Supplement II", August, 1992, EPA-600/R-92-129 (referred to as "USEPA Organic Methods"). (For methods 515.2, 524.2, 548.1, 549.1, 552.1, and 555.)

"Prescribed Procedures for Measurement of Radioactivity in Drinking Water", EPA 600/4-80-032, August 1980 (referred to as "USEPA Radioactivity Methods"). (Methods 900, 901, 901.1, 902, 903, 903.1, 904, 905, 906, 908, 908.1)

"Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions", H.L. Krieger and S. Gold, EPA-R4-73-014, May, 1973, Doc. No. PB222-154/7BA.

"Radiochemical Analytical Procedures for Analysis of Environmental Samples", March, 1979, Doc. No. EMSL LV 053917 (referred to as "USEPA Radiochemical Analyses"). (Pages 1, 19, 33, 65, 87, 92)

"Radiochemistry Procedures Manual", EPA-520/5-84-006, December, 1987, Doc. No. PB-84-215581 (referred to as "USEPA Radiochemistry Methods"). (Methods 00-01, 00-02, 00-07, H-02, Ra-03, Ra-04, Ra-05, Sr-04)

"Technical Notes on Drinking Water Methods", EPA-600/R-94-173, October, 1994, Doc. No. PB-104766 (referred to as "USEPA Technical Notes").

BOARD NOTE: USEPA made the following assertion with regard to this reference at 40 CFR 141.23(k)(1) and 141.24(e) and (n)(11) (1995): "This document contains other analytical test procedures and approved analytical methods that remain available for compliance monitoring until July 1, 1996."

"Tetra- through Octa- Chlorinated Dioxins and Furans by Isotope Dilution HRGC/HRMS", October, 1994, EPA-821-B-94-005 (referred to as "Dioxin and Furan Method 1613").

New Jersey Department of Environment, Division of Environmental Quality, Bureau of Radiation and Inorganic Analytical Services, 9 Ewing Street, Trenton, NJ 08625:

"Determination of Radium 228 in Drinking Water", August 1990.

New York Department of Health, Radiological Sciences Institute, Center for Laboratories and Research, Empire State Plaza, Albany, NY 12201:

"Determination of Ra-226 and Ra-228 (Ra-02)", January 1980, Revised June 1982.

Technicon Industrial Systems, Tarrytown, NY 10591:

"Fluoride in Water and Wastewater", Industrial Method #129-71W, December, 1972 (referred to as "Technicon Methods: Method #129-71W"). See 40 CFR 141.23(k)(1), footnote 11 (1995).

"Fluoride in Water and Wastewater", #380-75WE, February, 1976 (referred to as "Technicon Methods: Method #380-75WE"). See 40 CFR 141.23(k)(1), footnote 11 (1995).

United States Department of Energy, available at the Environmental Measurements Laboratory, U.S. Department of Energy, 376 Hudson Street, New York, NY 10014-3621:

"EML Procedures Manual", 27th Edition, Volume 1, 1990.

United States Environmental Protection Agency, EMSL, Cincinnati, OH 45268 513-569-7586:

"Interim Radiochemical Methodology for Drinking Water", EPA-600/4-75-008 (referred to as "Radiochemical Methods"). (Revised) March, 1976.

"Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Source Water" (referred to as "USEPA Organic Methods"). (For methods 504.1, 508.1, and 525.2 only). See NTIS.

"Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions". See NTIS.

USEPA, Science and Technology Branch, Criteria and Standards Division, Office of Drinking Water, Washington D.C. 20460:

"Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems using Surface Water Sources", October, 1989.

USGS. Books and Open-File Reports Section, United States Geological Survey, Federal Center, Box 25425, Denver, CO 80225-0425:

Methods available upon request by method number from "Methods of 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 or Book 5, Chapter A-1, "Methods for Determination of Inorganic Substances in Water and Fluvial Sediments", 3d ed., Open-File Report 85-495, 1989, as appropriate (referred to as "USGS Methods").

I-1030-85

I-1062-85

I-1601-85

I-1700-85

I-2598-85

I-2601-90

I-2700-85

I-3300-85

Methods available upon request by method number from ""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", 1997.

R-1110-76

R-1111-76

R-1120-76

R-1140-76

R-1141-76

R-1142-76

R-1160-76

R-1171-76

R-1180-76

R-1181-76

R-1182-76

c) The Board incorporates the following federal regulations by reference:

40 CFR 136, Appendix B and C (1998).

d) This Part incorporates no later amendments or editions.

(Source: Amended at 23 Ill. Reg. _____, effective _____)

Section 611.111 Relief Equivalent to SDWA Section 1415(a) Variances

This Section is intended to describe how the Board grants State relief ~~as a State~~ equivalent to that available from USEPA under ~~of~~ Section 1415(a)(1)(A) and (B) of the SDWA. SDWA

Section 1415 variances do not require ultimate compliance within five years in every situation. Variances under Sections 35-37 of the Act do require compliance within five years in every case. Consequently, a PWS may have the option of seeking State regulatory relief equivalent to a SDWA Section 1415 variance through one of three procedural mechanisms: a variance under Sections 35-37 of the Act and 35 Ill. Adm. Code 104; a site-specific rule under Sections 27-28 of the Act and 35 Ill. Adm. Code 102; or an adjusted standard under Section 28.1 of the Act and 35 Ill. Adm. Code 106.

a) The Board will~~may~~ grant a PWS~~supplier~~ a variance, a site-specific rule or an adjusted standard from ~~a~~an MCL or a treatment technique pursuant to this Section~~NPDWR in this Part~~.

1) The PWS~~supplier~~ shall file a ~~variance~~ petition pursuant to 35 Ill. Adm. Code 102, 104, or 106, as applicable ~~except as modified or supplemented by this Section~~.

2) If a State requirement does not have a federal counterpart, the ~~The~~ Board may grant relief~~a variance~~ from the ~~additional~~ State requirements ~~in this Part~~ without following this Section.

b) Relief from an MCL.

1) As part of the justification for relief from an MCL under this Section,~~showing of arbitrary or unreasonable hardship,~~ the PWS~~supplier~~ shall demonstrate the following ~~that~~:

A) Because of characteristics of the raw water sources and alternative sources that are reasonably available to the system, the PWS ~~supplier~~ cannot meet the MCL~~or other requirement~~; and

B) The PWS will install or has installed the best available technology (BAT) (as identified in Subpart F of this Part), treatment technique, or other means which the Agency finds available. ~~The system has applied BAT as identified in Subpart G of this Part.~~BAT may vary depending on:

i) The number of persons served by the system;

ii) Physical conditions related to engineering feasibility; and

iii) Costs of compliance; and

C) The variance will not result in an unreasonable risk to health~~, as defined in subsection (g) below~~.

2) In any order granting relief under this subsection, the~~The~~ Board will prescribe a schedule for:

A) Compliance, including increments of progress, by the PWS~~supplier~~, with each MCL ~~or other requirement~~ with respect to which the relief ~~variance~~ was granted, and

B) Implementation by the PWS~~supplier~~ of each additional control measure for each MCL with respect to which the relief is granted~~or other requirement~~, during the period ending on the date compliance with such requirement is required.

3) Schedule of compliance for relief from an MCL.~~A schedule of compliance will require compliance with each MCL or other requirement with respect to which the variance was granted as expeditiously as practicable.~~

A) A schedule of compliance will require compliance with each MCL with respect to which the relief was granted as expeditiously as practicable.

B) If the Board prescribes a schedule requiring compliance with an MCL for which the relief is granted later than five years from the date of issuance of the relief, the Board will:

i) Document its rationale for the extended compliance schedule;

ii) Discuss the rationale for the extended compliance schedule in the required public notice and opportunity for public hearing; and

iii) Provide the shortest practicable time schedule feasible under the circumstances.

c) Relief from a treatment technique requirement.

1) As part of the justification for relief from a treatment technique requirement under this Section, the PWS shall demonstrate that the treatment technique is not necessary to protect the health of persons served because of the nature of the raw water source.

2) The Board may prescribe monitoring and other requirements as a condition for relief from a treatment technique requirement.

d) The Board will hold at least one~~provide notice and opportunity for a~~ public hearing. In addition the Board will accept comments as appropriate pursuant to ~~as provided in~~ 35 Ill. Adm. Code 102, 104, or 106.

e) The Board will not grant relief ~~a variance~~:

1) From the MCL for total coliforms. H~~; provided, h~~owever, ~~that~~ the Board may grant a variance from the total coliform MCL of Section 611.325 for PWSs that prove~~demonstrate~~ that the violation of the total coliform MCL is due to persistent growth of total coliform~~s~~ in the distribution system, rather than from fecal or pathogenic contamination, from a treatment lapse or deficiency, or from a problem in the operation or maintenance of the distribution system.

2) From~~Or, from~~ any of the treatment technique requirements of Subpart B of this Part.

3) From the residual disinfectant concentration (RDC) requirements of Sections 611.241(c) and 611.242(b).

f) The Agency shall promptly send USEPA the Opinion and Order of the Board granting relief pursuant to this Section. The Board may reconsider and modify a grant of relief, or relief conditions, if USEPA notifies the Board of a finding pursuant to Section 1415 of the SDWA.~~As used in this Section and Section 611.112, "unreasonable risk to health level" ("URTH level") means the concentration of a contaminant that will cause a serious health effect within the period of time specified in the variance or exemption requested by a supplier seeking to come into compliance by installing the treatment required to reduce the contaminant to the MCL. URTH level determinations are made on the basis of the individual contaminant, taking into account: the degree by which the level exceeds the MCL; duration of exposure; historical data; and population exposed. A risk to health is assumed to be unreasonable unless the supplier demonstrates that there are costs involved that clearly exceed the health benefits to be derived.~~

g) In addition to the requirements of this Section, the~~The~~ provisions of Section 611.130 or 611.131 may apply to relief granted~~determinations made~~ pursuant to this Section.

BOARD NOTE: Derived from 40 CFR 141.4 (~~1994~~1998), from Section 1415(a)(1)(A) and (B) of the SDWA and from the "Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems using Surface Water Sources", incorporated by reference in Section 611.102. USEPA~~U.S. EPA~~ has reserved the discretion to review and modify or nullify Board determinations made pursuant to this Section at 40 CFR 142.23 (~~1994~~1998).

(Source: Amended at __ Ill. Reg. _____, effective _____)

Section 611.112 Relief Equivalent to SDWA Section 1416 Exemptions~~Variances~~

This Section is intended to describe how the Board grants State relief~~as a State~~equivalent to that available from USEPA under ~~of~~ Section 1416 of the SDWA. SDWA Section 1416 exemptions do not require ultimate compliance within five years in every situation. Variances under Sections 35-37 of the Act do require compliance within five years in every case. Consequently, a PWS may have the option of seeking State regulatory relief equivalent to a SDWA Section 1416 exemption through one of three procedural mechanisms: a variance under Sections 35-37 of the Act and 35 Ill. Adm. Code 104; a site-specific rule under Sections 27-28 of the Act and 35 Ill. Adm. Code 102; or an adjusted standard under Section 28.1 of the Act and 35 Ill. Adm. Code 106.

a) The Board will~~may~~ grant a PWS~~supplier~~ a variance, a site-specific rule, or an adjusted standard from~~ any requirement respecting~~ an MCL or treatment technique requirement, or from both, pursuant to this Section~~ requirement of an NPDWR in this Part~~.

1) The PWS~~supplier~~ shall file a ~~variance~~ petition pursuant to 35 Ill. Adm. Code 102, 104, or 106, as applicable~~ except as modified or supplemented by this Section~~.

2) If a State requirement does not have a federal counterpart, the~~The~~ Board may grant relief~~a variance~~ from the ~~additional~~ State requirements~~ in this Part~~ without following this Section.

b) As part of the justification for relief under this Section,~~showing of arbitrary or unreasonable hardship,~~ the PWS~~supplier~~ shall demonstrate the following~~that~~:

1) Due to compelling factors (which may include economic factors), the PWS~~supplier~~ is unable to comply with the MCL or treatment technique requirement, or to implement measures to develop an alternative source of water supply;

2) The PWS~~supplier~~ was:

A) In operation on the effective date of the MCL or treatment technique requirement; or

B) Not in operation on the effective date of the MCL or treatment technique requirement and no reasonable alternative source of drinking water is available to the PWS~~supplier~~; ~~and~~

3) The relief ~~variance~~ will not result in an unreasonable risk to health; and~~.~~

4) Management or restructuring changes cannot reasonably be made that will result in compliance with the NPDWR or, if compliance cannot be achieved, improve the quality of the drinking water.

BOARD NOTE: In determining that management or restructuring changes cannot reasonably be made that will result in compliance with the NPDWR, the Board will consider the factors required by USEPA under 40 CFR 142.20(b)(1).

c) In any order granting relief under this Section, the~~The~~ Board will prescribe a schedule for:

1) Compliance, including increments of progress, by the PWS~~supplier~~, with each MCL and treatment technique requirement with respect to which the relief~~variance~~ was granted; and

2) Implementation by the PWS~~supplier~~, ~~during the period ending on the date when compliance is required,~~ of each additional control measure for each contaminant subject to the MCL or treatment technique requirement, with respect to which relief is granted.

d) Schedule of compliance. A schedule of compliance will require compliance with each MCL or treatment technique ~~other~~ requirement with respect to which relief~~the variance~~ was granted as expeditiously as practicable~~; but no schedule shall extend more than 12 months after the date of the relief and relief may not be requested~~ but not later than three years after the otherwise applicable compliance date established in Section 1412(b)(10) of the SDWA, except as follows:

1) No relief may be granted unless ~~The Board may extend the date for a period not to exceed three years beyond the date of the variance if~~ the PWS~~supplier~~ establishes~~:~~ that it is taking all practicable steps to meet the NPDWR~~standard~~; and~~:~~

A) The PWSsupplier cannot meet the NPDWRstandard without capital improvements that cannot be completed within 12 months;

B) In the case of a PWS supplier that needs financial assistance for the necessary improvements, the PWSsupplier has entered into an agreement to obtain such financial assistance; or

C) The PWSsupplier has entered into an enforceable agreement to become a part of a regional PWS; and.

2) In the case of a PWS which serves 3,300 or fewer personswith 500 or fewer service connections that needs financial assistance for the necessary improvements, relief a variance under subsections (d)(1)(A) or (d)(1)(B) above may be renewed for one or more additional two year periods, not to exceed a total of six years, if the PWSsupplier establishes that it is taking all practicable steps to meet the final date for compliance.

3) A PWS may not receive relief under this Section if the PWS was granted relief under Section 611.111 or 611.131.

e) The Board will hold at least one provide notice and opportunity for a public hearing. In addition the Board will accept comments as appropriate pursuant to as provided in 35 Ill. Adm. Code 102, 104, or 106.

f) The Agency shall promptly send U.S. EPAUSEPA the Opinion and Order of the Board granting a reliefvariance pursuant to this Section. The Board may reconsider and modify a grant of reliefvariance, or reliefvariance conditions, if U.S. EPAUSEPA notifies the Board of a finding pursuant to Section 1416 of the SDWA.

BOARD NOTE: Derived from Section 1416 of the SDWA.

g) The Board will not grant reliefa variance:

1) From the MCL for total coliforms. H; provided, however, that the Board may grant reliefa variance from the total coliform MCL of Section 611.325 for PWSs that provedemonstrate that the violation of the total coliform MCL is due to persistent growth of total coliforms in the distribution system, rather than from fecal or pathogenic contamination, from a treatment lapse or deficiency, or from a problem in the operation or maintenance of the distribution system.

2) From any of the treatment technique requirements of Subpart B of this Part.

3) From the residual disinfectant concentration (RDC) requirements of Sections 611.241(c) and 611.242(b).

h) In addition to the requirements of this Section, the~~The~~ provisions of Section 611.130 or 611.131 may apply to relief granted~~determinations made~~ pursuant to this Section.

BOARD NOTE: Derived from 40 CFR 141.4 (~~1994~~1998). ~~U.S. EPA~~USEPA has reserved the discretion to review and modify or nullify Board determinations made pursuant to this Section at 40 CFR 142.23 (~~1994~~1998).

(Source: Amended at 23 Ill. Reg. _____, effective _____)

Section 611.131 Relief Equivalent to SDWA Section 1415(e) Small System Variance

This Section is intended as a State equivalent of Section 1415(e) of the SDWA.

a) Variances may be obtained from the requirement to comply with an MCL or treatment technique to a PWS serving fewer than 10,000 persons in this Section. The PWS shall file a variance petition pursuant to 35 Ill. Adm. Code 104, except as modified or supplemented by this Section.

b) The Board will grant a small system variance to a PWS serving fewer than 3,300 persons. The Board will grant a small system variance to a PWS serving more than 3,300 persons but fewer than 10,000 persons with the approval of the USEPA. In determining the number of persons served by the PWS, the Board will include persons served by consecutive systems. A small system variance granted to a PWS also applies to any consecutive system served by it.

c) Availability of a variance.

1) A small system variance is not available under this Section for an NPDWR for a microbial contaminant (including a bacterium, virus, or other organism) or an indicator or treatment technique for a microbial contaminant.

2) A small system variance under this Section is available for compliance with a requirement specifying an MCL or treatment technique for a contaminant with respect to which:

A) An NPDWR was promulgated on or after January 1, 1986; and

B) The USEPA has published a small system variance technology pursuant to Section 1412(b)(15) of the SDWA.

BOARD NOTE: Small system variances are not available for PWSs above the pre-1986 MCL even if subsequently revised. If the USEPA revises a pre-1986 MCL and makes it more stringent, then a variance would be available for that contaminant, but only up to the pre-1986 maximum contaminant level.

d) No small system variance will be in effect until the later of the following:

1) 90 days after the Board proposes to grant the small system variance;

2) If the Board is proposing to grant a small system variance to a PWS serving fewer than 3,300 persons and the USEPA objects to the small system variance, the date on which the Board makes the recommended modifications or responds in writing to each objection; or

3) If the Board is proposing to grant a small system variance to a PWS serving a population of more than 3,300 and fewer than 10,000 persons, the date the USEPA approves the small system variance.

e) As part of the showing of arbitrary or unreasonable hardship, the PWS shall prove and document the following to the Board:

1) The PWS is eligible for a small system variance pursuant to subsection (c) of this Section;

2) The PWS cannot afford to comply with the NPDWR for which a small system variance is sought, including by:

A) Treatment;

B) Alternative sources of water supply;

C) Restructuring or consolidation changes, including ownership change or physical consolidation with another PWS; or

D) Obtaining financial assistance pursuant to Section 1452 of the SDWA or any other federal or State program;

3) The PWS meets the source water quality requirements for installing the small system variance technology developed pursuant to guidance published under Section 1412(b)(15) of the SDWA;

4) The PWS is financially and technically capable of installing, operating, and maintaining the applicable small system variance technology; and

5) The terms and conditions of the small system variance ensure adequate protection of human health, considering the following:

A) The quality of the source water for the PWS; and

B) Removal efficiencies and expected useful life of the small system variance technology.

f) Terms and Conditions.

1) The Board will set the terms and conditions of a small system variance issued under this Section and will include, at a minimum, the following requirements:

A) Proper and effective installation, operation, and maintenance of the applicable small system variance technology in accordance with guidance published by the USEPA, taking into consideration any relevant source water characteristics and any other site-specific conditions that may affect proper and effective operation and maintenance of the technology;

B) Monitoring requirements, for the contaminant for which a small system variance is sought; and

C) Any other terms or conditions that are necessary to ensure adequate protection of public health, which may include:

i) Public education requirements; and

ii) Source water protection requirements.

2) The Board will establish a schedule for the PWS to comply with the terms and conditions of the small system variance that will include, at a minimum, the following requirements:

A) Increments of progress, such as milestone dates for the PWS to apply for financial assistance and begin capital improvements;

B) Quarterly reporting to the Agency of the PWSs compliance with the terms and conditions of the small system variance;

C) Schedule for the Board to review the small system variance; and

BOARD NOTE: Corresponding 40 CFR 142.307(d) provides that the states must review variances no less frequently than every five years. Section 36 of the Act provides that 5 years is the maximum terms of a variance.

D) Compliance with the terms and conditions of the small system variance as soon as practicable, but not later than three years after the date on which the small system variance is granted. The Board may allow up to two additional years if the Board determines that additional time is necessary for the PWS to:

i) Complete necessary capital improvements to comply with the small system variance technology, secure an alternative source of water, or restructure or consolidate; or

ii) Obtain financial assistance provided pursuant to Section 1452 of the SDWA or any other federal or State program.

g) The Board will provide notice and opportunity for a public hearing as provided in 35 Ill. Adm. Code 104, except as modified or supplemented by this Section.

1) At least 30 days before the public hearing to discuss the proposed small system variance, the PWS shall provide notice to all persons served by the PWS. For billed customers, this notice must include the information listed in subsection (g)(2) of this Section. For other persons regularly served by the PWS, notice must provide sufficient information to alert readers to the proposed variance and direct them to where to receive additional information, and must be as provided in subsection (g)(1)(B) of this Section. Notice must be by:

A) Direct mail or other home delivery to billed customers or other service connections, and

B) Any other method reasonably calculated to notify, in a brief and concise manner, other persons regularly served by the PWS. Such methods may include publication in a local newspaper, posting in public places or delivery to community organizations.

2) The notice in subsection (g)(1)(A) of this Section must include, at a minimum, the following:

A) Identification of the contaminant(s) for which a small system variance is sought;

B) A brief statement of the health effects associated with the contaminant(s) for which a small system variance is sought using language in Appendix H of this Part;

C) The address and telephone number at which interested persons may obtain further information concerning the contaminant and the small system variance;

D) A brief summary, in easily understandable terms, of the terms and conditions of the small system variance;

E) A description of the consumer petition process under subsection (h) of this Section and information on contacting the USEPA Regional Office;

F) A brief statement announcing the public meeting required under subsection (g)(3) of this Section, including a statement of the purpose of the meeting, information regarding the time and location for the meeting, and the address and telephone number at which interested persons may obtain further information concerning the meeting; and

G) In communities with a large proportion of non-English-speaking residents, as determined by the Board, information in the appropriate language regarding the content and importance of the notice.

3) The Board will provide for at least one public hearing on the small system variance. The PWS shall provide notice in the manner required under subsection (g)(1) of this Section at least 30 days prior to the public hearing.

4) Prior to promulgating the final variance, the Board will respond in writing to all significant public comments received relating to the small system variance. Response to public comment and any other documentation supporting the issuance of a variance will be made available to the public after final promulgation.

h) Any person served by the PWS may petition the USEPA to object to the granting of a small system variance within 30 days after the Board proposes to grant a small system variance for the PWS.

i) The Agency shall promptly send the USEPA the Opinion and Order of the Board granting the proposed small system variance. The Board will make the recommended modifications, respond in writing to each objection, or withdraw the proposal to grant the small system variance if USEPA notifies the Board of a finding pursuant to Section 1415 of the SDWA.

j) In addition to the requirements of this Section, the provisions of Section 611.111, 611.112, or 611.130 may apply to relief granted pursuant to this Section.

BOARD NOTE: Derived from 40 CFR 142, Subpart K (1998).

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.160 Composite Correction Program

a) The Agency may require in writing that a PWS conduct a Composite Correction Program (CCP). The CCP shall consist of two elements: a Comprehensive Performance Evaluation (CPE) and a Comprehensive Technical Assistance (CTA).

1) A CPE is a thorough review and analysis of a plant's performance-based capabilities and associated administrative, operation, and maintenance practices. It must identify factors that may be adversely impacting a plant's capability to achieve compliance and emphasize approaches that can be implemented without significant capital improvements.

2) For purposes of compliance with Subpart R of this Part, the comprehensive performance evaluation must consist of at least the following components: Assessment of plant performance; evaluation of major unit processes; identification and prioritization of performance limiting factors; assessment of the applicability of comprehensive technical assistance; and preparation of the CPE report.

3) A CTA is the performance improvement phase that is implemented if the CPE results indicate improved performance potential. During the CTA phase, the PWS shall identify and systematically address plant-specific factors. The CTA is a combination of utilizing CPE results as a basis for followup, implementing process control priority-setting techniques and maintaining long-term involvement to systematically train staff and administrators.

b) A PWS shall implement any followup recommendations made in writing by the Agency that result as part of the CCP.

c) A PWS may appeal to the Board, pursuant to Section 40 of the Act, any Agency requirement that it conduct a CCP or any followup recommendations made in writing by the Agency that result as part of the CCP, except when a CPE is required under Section 611.745(b)(4).

BOARD NOTE: Derived from 40 CFR 142.16 (1998).

(Source: Added at 23 Ill. Reg. _____, effective _____)

SUBPART B: FILTRATION AND DISINFECTION

Section 611.212 Groundwater under Direct Influence of Surface Water

The Agency shall, pursuant to Section 611.201, require all CWSs to demonstrate whether they are using "groundwater under the direct influence of surface water". The Agency shall determine with information provided by the supplier whether a PWS uses "groundwater under the direct influence of surface water" on an individual basis. The Agency shall determine that a groundwater source is under the direct influence of surface water based upon:

a) Physical characteristics of the source: whether the source is obviously a surface water source, such as a lake or stream. Other sources which may be subject to influence from surface waters include: springs, infiltration galleries, wells, or other collectors in subsurface aquifers.

b) Well construction characteristics and geology with field evaluation.

1) The Agency may use the wellhead protection program's requirements, which include delineation of wellhead protection areas, assessment of sources of contamination and implementation of management control systems, to determine if the wellhead is under the influence of surface water.

2) Wells less than or equal to 50 feet in depth are likely to be under the influence of surface water.

3) Wells greater than 50 feet in depth are likely to be under the influence of surface water, unless they include:

A) A surface sanitary seal using bentonite clay, concrete, or similar material,

B) A well casing that penetrates consolidated (slowly permeable) material, and

C) A well casing that is only perforated or screened below consolidated (slowly permeable) material.

4) A source which is less than 200 feet from any surface water is likely to be under the influence of surface water.

c) Any structural modifications to prevent the direct influence of surface water and eliminate the potential for Giardia lamblia cyst contamination.

d) Source water quality records. The following are indicative that a source is under the influence of surface water:

1) A record of total coliform or fecal coliform contamination in untreated samples collected over the past three years,

2) A history of turbidity problems associated with the source, or

3) A history of known or suspected outbreaks of Giardia lamblia, ~~or~~ Cryptosporidium or other pathogenic organisms associated with surface water ~~(e.g. cryptosporidium)~~ that has been attributed to that source.

e) Significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH.

1) A variation in turbidity of 0.5 NTU or more over one year is indicative of surface influence.

2) A variation in temperature of 9 Fahrenheit degrees or more over one year is indicative of surface influence.

f) Significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions are indicative of surface water influence.

1) Evidence of particulate matter associated with the surface water. or,

2) Turbidity or temperature data which correlates to that of a nearby surface water source.

g) Particulate analysis: Significant occurrence of insects or other macroorganisms, algae or large diameter pathogens such as Giardia lamblia is indicative of surface influence.

1) "Large diameter" particulates are those over 7 micrometers.

2) Particulates must be measured as specified in the "Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems using Surface Water Sources", incorporated by reference in Section 611.102.

h) The potential for contamination by small-diameter pathogens, such as bacteria or viruses, does not alone render the source "under the direct influence of surface water".

BOARD NOTE: Derived from the definition of "groundwater under the direct influence of surface water" in 40 CFR 141.2 (~~1995~~1998); from the Preamble at 54 Fed. Reg. 27489 (June 29, 1989); and from the USEPA "Guidance Manual for Compliance with the Filtration and Disinfection Requirements for Public Water Systems using Surface Water Sources", incorporated by reference in Section 611.102.

(Source: Amended at 23 Ill. Reg. _____, effective _____)

Section 611.220 General Requirements

a) The requirements of this Subpart constitute NPDWRs. This Subpart establishes criteria under which filtration is required as a treatment technique for PWSs supplied by a surface water source and PWSs supplied by a groundwater source under the direct influence of surface water. In addition, these regulations establish treatment technique requirements in lieu of MCLs for the following contaminants: Giardia lamblia, viruses, HPC bacteria, Legionella, and turbidity. Each supplier with a surface water source or a groundwater source under the direct influence of surface water shall provide treatment of that source water that complies with these treatment technique requirements. The treatment technique requirements consist of installing and properly operating water treatment processes which reliably achieve:

1) At least 99.9 percent (3-log) removal or inactivation of Giardia lamblia cysts between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer; and

2) At least 99.99 percent (4-log) removal or inactivation of viruses between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer.

b) A supplier using a surface water source or a groundwater source under the direct influence of surface water is considered to be in compliance with the requirements of subsection (a) if:

1) It meets the requirements for avoiding filtration in Sections 611.230 through 611.232 and the disinfection requirements in Section 611.241; or

2) It meets the filtration requirements in Section 611.250 and the disinfection requirements in Section 611.242.

c) Each supplier using a surface water source or a groundwater source under the direct influence of surface water shall have a certified operator pursuant to 35 Ill. Adm. Code 603.103 and the Public Water Supply Operations Act [415 ILCS 45].

d) Additional requirements for PWSs serving 10,000 or more persons. In addition to complying with requirements in this Subpart, PWSs serving 10,000 or more persons must also comply with the requirements in Subpart R of this Part.

BOARD NOTE: Derived from 40 CFR 141.70 (~~1995~~1998). The Public Water Supply Operations Act applies only to CWSs, which are regulated by the Agency. It does not apply to non-CWSs, which are regulated by Public Health. Public Health has its own requirements for personnel operating water supplies that it regulates, e.g., 77 Ill. Adm. Code 900.40(e).

(Source: Amended at 23 Ill. Reg. _____, effective _____)

Section 611.232 Site-specific Conditions

The Agency shall consider the following site specific criteria in determining whether to require filtration pursuant to Section 611.211:

a) Disinfection.

1) The supplier shall meet the requirements of Section 611.241(a) at least 11 of the 12 previous months that the system served water to the public, on an ongoing basis, unless the system fails to meet the requirements during 2 of the 12 previous months that the system served water to the public, and the Agency determines that at least one of these failures was caused by circumstances that were unusual and unpredictable.

2) The supplier shall meet the following requirements at the times specified for each:

A) The requirements of Section 611.241(b)(1), at all times the system serves water to the public; and

B) The requirements of Section 611.241(b)(2) at all times the system serves water to the public, unless the Agency determines that any such failure was caused by circumstances that were unusual and unpredictable.

3) The supplier shall meet the requirements of Section 611.241(c) at all times the system serves water to the public unless the Agency determines that any such failure was caused by circumstances that were unusual and unpredictable.

4) The supplier shall meet the requirements of Section 611.241(d) on an ongoing basis unless the Agency determines that failure to meet these requirements was not caused by a deficiency in treatment of the source water.

b) Watershed control program. The supplier shall maintain a watershed control program which minimizes the potential for contamination by Giardia lamblia cysts and viruses in the source water.

1) The Agency shall determine whether the watershed control program is adequate to meet this goal. The Agency shall determine the adequacy of a watershed control program based on:

A) The comprehensiveness of the watershed review;

B) The effectiveness of the system's program to monitor and control detrimental activities occurring in the watershed; and

C) The extent to which the water system has maximized land ownership or controlled the land use within the watershed. At a minimum, the watershed control program must:

i) Characterize the watershed hydrology and land ownership;

ii) Identify watershed characteristics and activities which may have an adverse effect on source water quality; and

iii) Monitor the occurrence of activities which may have an adverse effect on source water quality.

2) The supplier shall demonstrate through ownership or written agreements with landowners within the watershed that it can control all human activities which may have an adverse impact on the microbiological quality of the source water. The supplier shall submit an annual report to the Agency that identifies any special concerns about the watershed and how they are being handled; describes activities in the watershed that affect water quality; and projects what adverse activities are expected to occur in the future and describes how the supplier expects to address them. For systems using a groundwater source under the direct influence of surface water, an approved wellhead protection program may be used, if appropriate, to meet these requirements.

c) On-site inspection. The supplier shall be subject to an annual on-site inspection to assess the watershed control program and disinfection treatment process. The Agency shall conduct the inspection. A report of the on-site inspection summarizing all findings must be prepared every year. The on-site inspection must demonstrate that the watershed control program and disinfection treatment process are adequately designed and maintained. The on-site inspection must include:

1) A review of the effectiveness of the watershed control program;

2) A review of the physical condition of the source intake and how well it is protected;

3) A review of the system's equipment maintenance program to ensure there is low probability for failure of the disinfection process;

4) An inspection of the disinfection equipment for physical deterioration;

5) A review of operating procedures;

6) A review of data records to ensure that all required tests are being conducted and recorded and disinfection is effectively practiced; and

7) Identification of any improvements which are needed in the equipment, system maintenance, and operation or data collection.

d) Absence of waterborne disease outbreaks. The PWS must not have been identified as a source of a waterborne disease outbreak, or if it has been so

identified, the system must have been modified sufficiently to prevent another such occurrence.

e) Total coliform~~Coliform~~ MCL. The supplier shall comply with the MCL for total coliforms in Section 611.325 at least 11 months of the 12 previous months that the system served water to the public, on an ongoing basis, unless the Agency determines that failure to meet this requirement was not caused by a deficiency in treatment of the source water.

f) TTHM MCL. The supplier shall comply with the MCL for TTHM in Section 611.310. The PWS shall comply with the requirements for trihalomethanes until December 31, 2001. After December 31, 2001, the system shall comply with the requirements for total trihalomethanes, haloacetic acids (five), bromate, chlorite, chlorine, chloramines, and chlorine dioxide in Subpart I of this Part.

BOARD NOTE: Derived from 40 CFR 141.71(b) (~~1991~~1998).

(Source: Amended at 23 Ill. Reg. _____, effective _____)

Section 611.250 Filtration

A supplier that uses a surface water source or a groundwater source under the direct influence of surface water, and does not meet all of the criteria in Section 611.231 and 611.232 for avoiding filtration, shall provide treatment consisting of both disinfection, as specified in Section 611.242, and filtration treatment which complies with the requirements of subsection (a), (b), (c), (d) or (e) by June 29, 1993, or within 18 months after~~of~~ the failure to meet any one of the criteria for avoiding filtration in Section 611.231 and 611.232, whichever is later. Failure to meet any requirement after the date specified in this introductory paragraph is a treatment technique violation.

a) Conventional filtration treatment or direct filtration.

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 0.5 NTU in at least 95 percent of the measurements taken each month, except that, if the Agency determines, by special exception permit, that the system is capable of achieving at least 99.9 percent removal or inactivation of Giardia lamblia cysts at some turbidity level higher than 0.5 NTU in at least 95 percent of the measurements taken each month, the Agency shall substitute this higher turbidity limit for that system. However, in no case may the Agency approve a turbidity limit that allows more than 1 NTU in more than 5 percent of the samples taken each month.

2) The turbidity level of representative samples of a system's filtered water must at no time exceed 5 NTU.

b) Slow sand filtration.

1) 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 1 NTU in at least 95 percent of the measurements taken each month, except that if the Agency determines, by special exception permit, that there is no significant interference with disinfection at a higher level, the Agency shall substitute the higher turbidity limit for that system.

2) The turbidity level of representative samples of a system's filtered water must at no time exceed 5 NTU.

c) Diatomaceous earth filtration.

1) For systems using diatomaceous earth filtration, the turbidity level of representative samples of a system's filtered water must be less than or equal to 1 NTU in at least 95 percent of the measurements taken each month.

2) The turbidity level of representative samples of a system's filtered water must at no time exceed NTU.

d) Other filtration technologies. A supplier may use a filtration technology not listed in subsections (a) through (c) if it demonstrates, by special exception permit application, to the Agency, using pilot plant studies or other means, that the alternative filtration technology, in combination with disinfection treatment that meets the requirements of Section 611.242, consistently achieves 99.9 percent removal or inactivation of Giardia lamblia cysts and 99.99 percent removal or inactivation of viruses. For a system that makes this demonstration, the requirements of subsection (b) apply. Beginning January 1, 2002, systems serving 10,000 or more persons shall meet the requirements for other filtration technologies in Section 611.743(b).

e) Turbidity is measured as specified in Sections 611.531(d) and 611.533(a). Beginning January 1, 2002, systems serving 10,000 or more persons shall meet the turbidity requirements in Section 611.743(a).

BOARD NOTE: Derived from 40 CFR 141.73 (~~1991~~1998).

(Source: Amended at 23 Ill. Reg. _____, effective _____)

SUBPART F: MAXIMUM CONTAMINANT LEVELS (MCL's) AND MAXIMUM RESIDUAL DISINFECTANT LEVELS (MRDLs)

Section 611.310 Old Maximum Contaminant Levels (MCLs) for Organic Chemicals

The following are the MCLs for organic chemicals. The MCLs for organic chemicals in subsections (a) and (b) apply to all CWSs. Compliance with the MCLs in subsections (a) and (b) is calculated pursuant to Section 611.641 et seq. Compliance with the MCL for TTHM is calculated pursuant to Subpart P.

	Contaminant	Level mg/L	Additional State Requirement (*)
a)	Chlorinated hydrocarbons		
	Aldrin	0.001	*
	DDT	0.05	*
	Dieldrin	0.001	*
	Heptachlor	0.0001	*
	Heptachlor epoxide	0.0001	*

BOARD NOTE: Originally derived from 40 CFR 141.12(a)(1994), ~~U.S. EPA~~USEPA removed the last entry in this subsection and marked it reserved at 57 Fed. Reg. 31838 (July 17, 1992). ~~U.S. EPA~~USEPA added another listing of organic MCLs at 40 CFR 141.61 (1994). Heptachlor, heptachlor epoxide, and 2,4-D appear in both this Section and in Section 611.311, with a different MCL in each Section. The heptachlor, heptachlor epoxide, and 2,4-D MCLs in this Section are Illinois limitations that are more stringent than the federal requirements. However, detection of these contaminants or violation of their federally-derived revised Section 611.311 MCLs imposes more stringent monitoring, reporting, and notice requirements.

b)	Chlorophenoxys:		
	2,4-D	0.01	*

BOARD NOTE: Originally derived from 40 CFR 141.12(b) (1994), ~~U.S. EPA~~USEPA removed the last entry in this subsection and marked it reserved at 56 Fed. Reg. 3578 (Jan. 30, 1991). See the preceding Board Note regarding the dual listing of MCLs for 2,4-D.

c)	TTHM	0.10	*

1) The MCL of 0.10 mg/L for TTHM applies to a Subpart B community water system that serves 10,000 or more persons, until December 31, 2001.

2) The MCL of 0.10 mg/L for TTHM applies to community water systems that use only groundwater not under the direct influence of surface water and serve 10,000 or more persons, until December 31, 2003.

3) After December 31, 2003, the MCL for TTHM in this Section is no longer applicable.

BOARD NOTE: Derived in part from 40 CFR 141.12(c) (~~1994~~8). This is an additional State requirement to the extent it applies to supplies other than CWSs that add a disinfectant at any part of treatment and which provide water to 10,000 or more persons ~~individuals~~. Also derived from 40 CFR 141.12 (1998). The new MCL for TTHM is listed in Section 611.312.

(Source: Amended at 23 Ill. Reg. _____, effective _____)

Section 611.312 Maximum Contaminant Levels (MCLs) for Disinfection Byproducts (DBPs)

a) The maximum contaminant levels (MCLs) for disinfection byproducts (DBPs) are as follows:

Disinfection byproduct	MCL (mg/L)
Total trihalomethanes (TTHM)	0.080
Haloacetic acids (five) (HAA5)	0.060
Bromate	0.010
Chlorite	1.0

b) Compliance dates.

1) CWSs and NTNCWSs. A Subpart B system serving 10,000 or more persons shall comply with this Section beginning January 1, 2002. A Subpart B system serving fewer than 10,000 persons and systems using only groundwater not under the direct influence of surface water shall comply with this Section beginning January 1, 2004.

2) A PWS that is installing GAC or membrane technology to comply with this Section may apply to the Board for an extension of up to 24 months past the dates in subsection (b)(1) of this Section, but not beyond December 31, 2003. The Board shall grant the extension, and shall set a schedule for compliance and may specify any interim measures that the PWS must take. Failure to meet the schedule or interim treatment requirements constitutes a violation of an NPDWR.

c) The following are identified as the best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for disinfection byproducts (DBPs) identified in subsection (a) of this Section.

Disinfection byproduct (DBP)	Best available technology (BAT)
TTHM	Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant
HAA5	Enhanced coagulation or enhanced softening or GAC10, with chlorine as the primary and residual disinfectant
Bromate	Control of ozone treatment process to reduce production of bromate
Chlorite	Control of treatment processes to reduce disinfectant demand and control of disinfection treatment processes to reduce disinfectant levels

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.313 Maximum Residual Disinfectant Levels (MRDLs)

a) Maximum residual disinfectant levels (MRDLs) are as follows:

Disinfectant residual	MRDL (mg/L)
Chlorine	4.0 (as Cl_2)
Chloramines	4.0 (as Cl_2)
Chlorine dioxide	0.8 (as ClO_2)

b) Compliance dates.

1) CWSs and NTNCWSs. A Subpart B system serving 10,000 or more persons shall comply with this Section beginning January 1, 2002. A Subpart B system serving fewer than 10,000 persons and systems using only groundwater not under the direct influence of surface water shall comply with this Section beginning January 1, 2004.

2) Transient NCWSs. A Subpart B system serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant shall comply with the chlorine dioxide MRDL beginning January 1, 2002. A Subpart B system serving fewer than 10,000 persons and using chlorine dioxide as a disinfectant or oxidant and systems using only groundwater not under the direct influence of surface water and using chlorine dioxide as a disinfectant

or oxidant shall comply with the chlorine dioxide MRDL beginning January 1, 2004.

c) The following are identified as the best technology, treatment techniques, or other means available for achieving compliance with the maximum residual disinfectant levels identified in subsection (a): control of treatment processes to reduce disinfectant demand and control of disinfection treatment processes to reduce disinfectant levels.

(Source: Added at 23 Ill. Reg. _____, effective _____)

SUBPART I: DISINFECTANT RESIDUALS, DISINFECTION BYPRODUCTS, AND DISINFECTION BYPRODUCT PRECURSORS

Section 611.380 General Requirements

a) The requirements of this Subpart constitute NPDWRs.

1) The regulations in this Subpart establish standards under which community water systems (CWSs) and non-transient, non-community water systems (NTNCWSs) that add a chemical disinfectant to the water in any part of the drinking water treatment process or which provide water that contains a chemical disinfectant must modify their practices to meet MCLs and MRDLs in Sections 611.312 and 611.313, respectively, and must meet the treatment technique requirements for DBP precursors in Section 611.385.

2) The regulations in this Subpart establish standards under which transient non-community water systems (transient non-CWSs) that use chlorine dioxide as a disinfectant or oxidant must modify their practices to meet the MRDL for chlorine dioxide in Section 611.313.

3) The Board has established MCLs for TTHM and HAA5 and treatment technique requirements for DBP precursors to limit the levels of known and unknown DBPs which may have adverse health effects. These DBPs may include chloroform, bromodichloromethane, dibromochloromethane, bromoform, dichloroacetic acid, and trichloroaecetic acid.

b) Compliance dates.

1) CWSs and NTNCWSs. Unless otherwise noted, systems must comply with the requirements of this Subpart as follows. A Subpart B system serving 10,000 or more persons shall comply with this Subpart beginning January 1, 2002. A Subpart B system serving fewer than 10,000 persons

and systems using only groundwater not under the direct influence of surface water must comply with this Subpart beginning January 1, 2004.

2) Transient non-CWSs. A Subpart B system serving 10,000 or more persons and using chlorine dioxide as a disinfectant or oxidant shall comply with any requirements for chlorine dioxide in this Subpart beginning January 1, 2002. A Subpart B system serving fewer than 10,000 persons and using chlorine dioxide as a disinfectant or oxidant and systems using only groundwater not under the direct influence of surface water and using chlorine dioxide as a disinfectant or oxidant shall comply with any requirements for chlorine dioxide in this Subpart beginning January 1, 2004.

c) Each CWS and NTNCWS regulated under subsection (a) of this Section must be operated by qualified personnel who meet the requirements specified in 35 Ill. Adm. Code 680.

d) Control of disinfectant residuals. Notwithstanding the MRDLs in Section 611.313, systems may increase residual disinfectant levels in the distribution system of chlorine or chloramines (but not chlorine dioxide) to a level and for a time necessary to protect public health, to address specific microbiological contamination problems caused by circumstances such as, but not limited to, distribution line breaks, storm run-off events, source water contamination events, or cross-connection events.

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.381 Analytical Requirements

a) Systems shall use only the analytical method(s) specified in this Section to demonstrate compliance with the requirements of this Subpart.

b) Disinfection byproducts (DBPs).

1) Systems shall measure disinfection byproducts (DBPs) by the methods (as modified by the footnotes) listed in the following table:

Approved Methods for Disinfection Byproduct (DBP) Compliance Monitoring

			Byproduct Measured[1]			
Methodology[2]	EPA method	Standard method	TTHM	HAA5	Chlorite[4]	Bromate
P&T/GC/ElCD	[3]502.2		X			

& PID						
P&T/GC/MS	524.2		X			
LLE/GC/ECD	551.1		X			
LLE/GC/ECD		6251 B		X		
SPE/GC/ECD	552.1			X		
LLE/GC/ECD	552.2			X		
Amperometric		4500-Cl			X	
Titration		O_2 E				
IC	300.0				X	
IC	300.1				X	X

[1] X indicates method is approved for measuring specified disinfection byproduct.
[2] P&T = purge and trap; GC = gas chromatography; ElCD = electrolytic conductivity detector; PID = photoionization detector; MS = mass spectrometer; LLE = liquid/liquid extraction; ECD = electron capture detector; SPE = solid phase extractor; IC = ion chromatography.
[3] If TTHMs are the only analytes being measured in the sample, then a PID is not required.
[4] Amperometric titration may be used for routine daily monitoring of chlorite at the entrance to the distribution system, as prescribed in Section 611.382(b)(2)(A)(i). Ion chromatography must be used for routine monthly monitoring of chlorite and additional monitoring of chlorite in the distribution system, as prescribed in Sections 611.382(b)(2)(A)(ii) and (b)(2)(B).

BOARD NOTE: Derived from 40 CFR 141.131(b) (1998).

2) Analysis under this Section for DBPs shall be conducted by laboratories that have received certification by USEPA or the Agency except as specified under subsection (b)(3) of this Section. To receive certification to conduct analyses for the contaminants in Section 611.312, the laboratory must carry out annual analyses of performance evaluation (PE) samples approved by USEPA or the Agency. In these analyses of PE samples, the laboratory must achieve quantitative results within the acceptance limit on a minimum of 80% of the analytes included in each PE sample. The acceptance limit is defined as the 95% confidence interval calculated around the mean of the PE study data between a maximum and minimum acceptance limit of +/-50% and +/-15% of the study mean.

3) A party approved by USEPA or the Agency must measure daily chlorite samples at the entrance to the distribution system.

c) Disinfectant residuals.

1) Systems shall measure residual disinfectant concentrations for free chlorine, combined chlorine (chloramines), and chlorine dioxide by the methods (as modified by the footnotes) listed in the following table:

Approved Methods for Disinfectant Residual Compliance Monitoring

			Residual Measured[1]			
Methodology	Standard method	ASTM method	Free chlorine	Combined chlorine	Total chlorine	Chlorine dioxide
Amperometric Titration	4500-Cl D	D 1253-86	X	X	X	
Low Level Amperometric Titration	4500-Cl E				X	
DPD Ferrous Titrimetric	4500-Cl F		X	X	X	
DPD Colorimetric	4500-Cl G		X	X	X	
Syringaldazine (FACTS)	4500-Cl H		X			
Iodometric Electrode	4500-Cl I				X	
DPD	4500-ClO_2 D					X
Amperometric Method II	4500-ClO_2 E					X

[1] X indicates method is approved for measuring specified disinfectant residual.

BOARD NOTE: Derived from 40 CFR 141.131(c) (1998).

2) If approved by the Agency, systems may also measure residual disinfectant concentrations for chlorine, chloramines, and chlorine dioxide by using DPD colorimetric test kits.

3) A party approved by USEPA or the Agency shall measure residual disinfectant concentration.

d) Systems required to analyze parameters not included in subsections (b) and (c) of this Section shall use the methods listed below. A party approved by USEPA or the Agency shall measure these parameters.

1) Alkalinity. All methods allowed in Section 611.611 (a) (21) for measuring alkalinity,

2) Bromide. USEPA Method 300.0 or USEPA Method 300.1,

3) Total Organic Carbon (TOC). Standard Method 5310 B (High-Temperature Combustion Method), Standard Method 5310 C (Persulfate-Ultraviolet or Heated-Persulfate Oxidation Method), or Standard Method 5310 D (Wet-Oxidation Method). TOC samples may not be filtered prior to analysis. TOC samples must either be analyzed or must be acidified to achieve pH less than 2.0 by minimal addition of phosphoric or sulfuric acid as soon as practical after sampling, not to exceed 24 hours. Acidified TOC samples must be analyzed within 28 days,

4) Specific Ultraviolet Absorbance (SUVA). SUVA is equal to the UV absorption at 254nm (UV_{254}) (measured in m^{-1}) divided by the dissolved organic carbon (DOC) concentration (measured as mg/L). In order to determine SUVA, it is necessary to separately measure UV_{254} and DOC. When determining SUVA, systems must use the methods stipulated in subsection (d)(4)(A) of this Section to measure DOC and the method stipulated in subsection (d)(4)(B) of this Section to measure UV_{254}. SUVA must be determined on water prior to the addition of disinfectants/oxidants by the system. DOC and UV_{254} samples used to determine a SUVA value must be taken at the same time and at the same location,

A) Dissolved Organic Carbon (DOC). Standard Method 5310 B (High-Temperature Combustion Method), Standard Method 5310 C (Persulfate-Ultraviolet or Heated-Persulfate Oxidation Method), or Standard Method 5310 D (Wet-Oxidation Method). Prior to analysis, DOC samples must be filtered through a 0.45 µm pore-diameter filter. Water passed through the filter prior to filtration of the sample must serve as the filtered blank. This filtered blank must be analyzed using procedures identical to those used for analysis of the samples and must meet the following standards: DOC < 0.5 mg/L. DOC samples must be filtered through the 0.45 µm pore-diameter filter prior to acidification. DOC samples must either be analyzed or must be acidified to achieve pH less than 2.0 by minimal addition of phosphoric or sulfuric acid as soon as practical after sampling, not to exceed 48 hours. Acidified DOC samples must be analyzed within 28 days, and

B) Ultraviolet Absorption at 254 nm (UV_{254}). Method 5910 B (Ultraviolet Absorption Method). UV absorption must be measured at 253.7 nm (may be rounded off to 254 nm). Prior to analysis, UV_{254} samples must be filtered through a 0.45 µm pore-diameter filter. The pH of UV_{254} samples may not be adjusted. Samples must be analyzed as soon as practical after sampling, not to exceed 48 hours, and

5) pH. All methods allowed in Section 611.611 (a) (17) for measuring pH.

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.382 Monitoring Requirements

a) General requirements.

1) Systems shall take all samples during normal operating conditions.

2) Systems may consider multiple wells drawing water from a single aquifer as one treatment plant for determining the minimum number of TTHM and HAA5 samples required with Agency approval.

3) Failure to monitor in accordance with the monitoring plan required under subsection (f) of this Section is a monitoring violation.

4) Where compliance is based on a running annual average of monthly or quarterly samples or averages and the system's failure to monitor makes it impossible to determine compliance with MCLs or MRDLs, this failure to monitor will be treated as a violation for the entire period covered by the annual average.

5) Systems shall use only data collected under the provisions of this Subpart or under the Information Collection Rule (40 CFR 141 Subpart M) to qualify for reduced monitoring.

b) Monitoring requirements for disinfection byproducts (DBPs).

1) TTHMs and HAA5.

A) Routine monitoring. Systems shall monitor at the frequency indicated in the following table:

Routine Monitoring Frequency for TTHM and HAA5

Type of system	Minimum monitoring frequency	Sample location in the distribution system
Subpart B system serving 10,000 or more persons.	Four water samples per quarter per treatment plant.	At least 25 percent of all samples collected each quarter at locations representing maximum residence time.

		Remaining samples taken at locations representative of at least average residence time in the distribution system and representing the entire distribution system, taking into account number of persons served, different sources of water, and different treatment methods.[1]
Subpart B system serving from 500 to 9,999 persons.	One water sample per quarter per treatment plant.	Locations representing maximum residence time.[1]
Subpart B system serving fewer than 500 persons.	One sample per year per treatment plant during month of warmest water temperature.	Locations representing maximum residence time.[1] If the sample (or average of annual samples, if more than one sample is taken) exceeds MCL, system must increase monitoring to one sample per treatment plant per quarter, taken at a point reflecting the maximum residence time in the distribution system, until system meets reduced monitoring standards in Section 611.382(b)(1)(D).
System using only groundwater not under direct influence of surface water using chemical disinfectant and serving 10,000 or more persons.	One water sample per quarter per treatment plant[2].	Locations representing maximum residence time.[1]
System using only groundwater not under direct influence of surface water using chemical disinfectant and serving fewer than 10,000 persons.	One sample per year per treatment plant[2] during month of warmest water temperature.	Locations representing maximum residence time.[1] If the sample (or average of annual samples, if more than one sample is taken) exceeds MCL, system must increase monitoring to one sample per treatment plant per quarter, taken at a point reflecting the

		maximum residence time in the distribution system, until system meets standards in Section 611.382(b)(1)(D) for reduced monitoring.

[1] If a system elects to sample more frequently than the minimum required, at least 25 percent of all samples collected each quarter (including those taken in excess of the required frequency) must be taken at locations that represent the maximum residence time of the water in the distribution system. The remaining samples must be taken at locations representative of at least average residence time in the distribution system.

[2] Multiple wells drawing water from a single aquifer may be considered one treatment plant for determining the minimum number of samples required with Agency approval.

BOARD NOTE: Derived from 40 CFR 141.132(b) (1998).

B) Systems may reduce monitoring, except as otherwise provided, in accordance with the following table:

Reduced Monitoring Frequency for TTHM and HAA5

If you are a . . .	You may reduce monitoring if you have monitored at least one year and your . . .	To this level
Subpart B system serving 10,000 or more persons which has a source water annual average TOC level, before any treatment, ó4.0 mg/L.	TTHM annual average ó0.040 mg/L and HAA5 annual average ó0.030 mg/L.	One sample per treatment plant per quarter at distribution system location reflecting maximum residence time.
Subpart B system serving from 500 to 9,999 persons which has a source water annual average TOC level, before any treatment, ó4.0 mg/L.	TTHM annual average ó0.040 mg/L and HAA5 annual average ó0.030 mg/L.	One sample per treatment plant per year at distribution system location reflecting maximum residence time during month of warmest water temperature. NOTE: Any Subpart B system serving fewer than 500 persons may not reduce its monitoring to less than one sample per treatment plant per year.

System using only groundwater not under direct influence of surface water using chemical disinfectant and serving 10,000 or more persons.	TTHM annual average ó0.040 mg/L and HAA5 annual average ó0.030 mg/L.	One sample per treatment plant per year at distribution system location reflecting maximum residence time during month of warmest water temperature.
System using only groundwater not under direct influence of surface water using chemical disinfectant and serving fewer than 10,000 persons.	TTHM annual average ó0.040 mg/L and HAA5 annual average ó0.030 mg/L for two consecutive years OR TTHM annual average ó0.020 mg/L and HAA5 annual average ó0.015 mg/L for one year.	One sample per treatment plant per three year monitoring cycle at distribution system location reflecting maximum residence time during month of warmest water temperature, with the three-year cycle beginning on January 1 following quarter in which system qualifies for reduced monitoring.

BOARD NOTE: Derived from 40 CFR 132(c) (1998).

C) Systems on a reduced monitoring schedule may remain on that reduced schedule as long as the average of all samples taken in the year (for systems which must monitor quarterly) or the result of the sample (for systems which must monitor no more frequently than annually) is no more than 0.060 mg/L and 0.045 mg/L for TTHMs and HAA5, respectively. Systems that do not meet these levels shall resume monitoring at the frequency identified in subsection (b)(1)(A) of this Section in the quarter immediately following the quarter in which the system exceeds 0.060 mg/L and 0.045 mg/L for TTHMs and HAA5, respectively. For systems using only groundwater not under the direct influence of surface water and serving fewer than 10,000 persons, if either the TTHM annual average is ≥0.080 mg/L or the HAA5 annual average is ≥0.060 mg/L, the system must go to increased monitoring identified in subsection (b)(1)(A) of this Section.

D) Systems on increased monitoring may return to routine monitoring if the TTHM annual average is ≤0.040 mg/L and the HAA5 annual average is ≤0.030 mg/L.

E) The Agency may return a system to routine monitoring.

2) Chlorite. Community and nontransient noncommunity water systems using chlorine dioxide, for disinfection or oxidation, shall conduct monitoring for chlorite.

A) Routine monitoring.

i) Daily monitoring. Systems shall take daily samples at the entrance to the distribution system. For any daily sample that exceeds the chlorite MCL, the system shall take additional samples in the distribution system the following day at the locations required by subsection (b)(2)(B) of this Section, in addition to the sample required at the entrance to the distribution system.

ii) Monthly monitoring. Systems shall take a three-sample set each month in the distribution system. The system must take one sample at each of the following locations: near the first customer, at a location representative of average residence time, and at a location reflecting maximum residence time in the distribution system. Any additional routine sampling must be conducted in the same manner (as three-sample sets, at the specified locations). The system may use the results of additional monitoring conducted under subsection (b)(2)(B) of this Section to meet the requirement for monitoring in this subsection (b) (2) (A) (ii).

B) Additional monitoring. On each day following a routine sample monitoring result that exceeds the chlorite MCL at the entrance to the distribution system, the system shall take three chlorite distribution system samples at the following locations: as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the distribution system as possible (reflecting maximum residence time in the distribution system).

C) Reduced monitoring.

i) Chlorite monitoring at the entrance to the distribution system required by subsection (b)(2)(A)(i) of this Section may not be reduced.

ii) Chlorite monitoring in the distribution system required by subsection (b)(2)(A)(ii) of this Section may be reduced to

one three-sample set per quarter after one year of monitoring where no individual chlorite sample taken in the distribution system under subsection (b)(2)(A)(ii) of this Section has exceeded the chlorite MCL and the system has not been required to conduct monitoring under subsection (b)(2)(B) of this Section. The system may remain on the reduced monitoring schedule until either any of the three individual chlorite samples taken quarterly in the distribution system under subsection (b)(2)(A)(ii) of this Section exceeds the chlorite MCL or the system is required to conduct monitoring under subsection (b)(2)(B) of this Section, at which time the system shall revert to routine monitoring.

3) Bromate.

A) Routine monitoring. Community and nontransient noncommunity systems using ozone, for disinfection or oxidation, shall take one sample per month for each treatment plant in the system using ozone. Systems shall take samples monthly at the entrance to the distribution system while the ozonation system is operating under normal conditions.

B) Reduced monitoring. Systems required to analyze for bromate may reduce monitoring from monthly to once per quarter, if the system demonstrates that the average source water bromide concentration is less than 0.05 mg/L based upon representative monthly bromide measurements for one year. The system may remain on reduced bromate monitoring until the running annual average source water bromide concentration, computed quarterly, is equal to or greater than 0.05 mg/L based upon representative monthly measurements. If the running annual average source water bromide concentration is equal to or greater than 0.05 mg/L, the system shall resume routine monitoring required by subsection (b)(3)(A) of this Section.

c) Monitoring requirements for disinfectant residuals.

1) Chlorine and chloramines.

A) Routine monitoring. Community and nontransient noncommunity water systems that use chlorine or chloramines shall measure the residual disinfectant level at the same points in the distribution system and at the same time as total coliforms are sampled, as specified in Section 611.521. A Subpart B system may use the

results of residual disinfectant concentration sampling conducted under Section 611.532 for unfiltered systems or Section 611.533 for systems that filter, in lieu of taking separate samples.

B) Reduced monitoring. Monitoring may not be reduced.

2) Chlorine dioxide.

A) Routine monitoring. Community, nontransient noncommunity, and transient noncommunity water systems that use chlorine dioxide for disinfection or oxidation shall take daily samples at the entrance to the distribution system. For any daily sample that exceeds the MRDL, the system shall take samples in the distribution system the following day at the locations required by subsection (c)(2)(B) of this Section, in addition to the sample required at the entrance to the distribution system.

B) Additional monitoring. On each day following a routine sample monitoring result that exceeds the MRDL, the system shall take three chlorine dioxide distribution system samples. If chlorine dioxide or chloramines are used to maintain a disinfectant residual in the distribution system, or if chlorine is used to maintain a disinfectant residual in the distribution system and there are no disinfection addition points after the entrance to the distribution system (i.e., no booster chlorination), the system shall take three samples as close to the first customer as possible, at intervals of at least six hours. If chlorine is used to maintain a disinfectant residual in the distribution system and there are one or more disinfection addition points after the entrance to the distribution system (i.e., booster chlorination), the system shall take one sample at each of the following locations: as close to the first customer as possible, in a location representative of average residence time, and as close to the end of the distribution system as possible (reflecting maximum residence time in the distribution system).

C) Reduced monitoring. Monitoring may not be reduced.

d) Monitoring requirements for disinfection byproduct (DBP) precursors.

1) Routine monitoring. A Subpart B system that uses conventional filtration treatment (as defined in Section 611.101) shall monitor each treatment plant for TOC not past the point of combined filter effluent turbidity monitoring and representative of the treated water. All systems required to monitor under this subsection (d)(1) shall also monitor for TOC in the

source water prior to any treatment at the same time as monitoring for TOC in the treated water. These samples (source water and treated water) are referred to as paired samples. At the same time as the source water sample is taken, all systems shall monitor for alkalinity in the source water prior to any treatment. Systems shall take one paired sample and one source water alkalinity sample per month per plant at a time representative of normal operating conditions and influent water quality.

2) Reduced monitoring. A Subpart B system with an average treated water TOC of less than 2.0 mg/L for two consecutive years, or less than 1.0 mg/L for one year, may reduce monitoring for both TOC and alkalinity to one paired sample and one source water alkalinity sample per plant per quarter. The system shall revert to routine monitoring in the month following the quarter when the annual average treated water TOC ò 2.0 mg/L.

e) Bromide. Systems required to analyze for bromate may reduce bromate monitoring from monthly to once per quarter, if the system demonstrates that the average source water bromide concentration is less than 0.05 mg/L based upon representative monthly measurements for one year. The system shall continue bromide monitoring to remain on reduced bromate monitoring.

f) Monitoring plans. Each system required to monitor under this Subpart shall develop and implement a monitoring plan. The system shall maintain the plan and make it available for inspection by the Agency and the general public no later than 30 days following the applicable compliance dates in Section 611.380(b). A Subpart B system serving more than 3,300 persons shall submit a copy of the monitoring plan to the Agency no later than the date of the first report required under Section 611.384. After review, the Agency may require changes in any plan elements. The plan must include at least the following elements:

1) Specific locations and schedules for collecting samples for any parameters included in this Subpart;

2) How the system will calculate compliance with MCLs, MRDLs, and treatment techniques; and

3) If approved for monitoring as a consecutive system, or if providing water to a consecutive system, under the provisions of Section 611.500, the sampling plan must reflect the entire distribution system.

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.383 Compliance Requirements

a) General requirements.

1) Where compliance is based on a running annual average of monthly or quarterly samples or averages and the system fails to monitor for TTHM, HAA5, or bromate, this failure to monitor will be treated as a monitoring violation for the entire period covered by the annual average. Where compliance is based on a running annual average of monthly or quarterly samples or averages and the system's failure to monitor makes it impossible to determine compliance with the MRDL for chlorine or chloramines, this failure to monitor will be treated as a monitoring violation for the entire period covered by the annual average.

2) All samples taken and analyzed under the provisions of this Subpart must be included in determining compliance, even if that number is greater than the minimum required.

3) If, during the first year of monitoring under Section 611.382, any individual quarter's average will cause the running annual average of that system to exceed the MCL, the system is out of compliance at the end of that quarter.

b) Disinfection byproducts (DBPs).

1) TTHMs and HAA5.

A) For systems monitoring quarterly, compliance with MCLs in Section 611.312 must be based on a running annual arithmetic average, computed quarterly, of quarterly arithmetic averages of all samples collected by the system as prescribed by Section 611.382(b)(1).

B) For systems monitoring less frequently than quarterly, systems demonstrate MCL compliance if the average of samples taken that year under the provisions of Section 611.382(b)(1) does not exceed the MCLs in Section 611.312. If the average of these samples exceed the MCL, the system shall increase monitoring to once per quarter per treatment plant and is not in violation of the MCL until it has completed one year of quarterly monitoring, unless the result of fewer than four quarters of monitoring will cause the running annual average to exceed the MCL, in which case the system is in violation at the end of that quarter. Systems required to increase to quarterly monitoring must calculate compliance by including the sample which triggered the increased monitoring plus the following three quarters of monitoring.

C) If the running annual arithmetic average of quarterly averages covering any consecutive four-quarter period exceeds the MCL, the system is in violation of the MCL and must notify the public pursuant to Section 611.851 in addition to reporting to the Agency pursuant to Section 611.384.

D) If a PWS fails to complete four consecutive quarter's monitoring, compliance with the MCL for the last four-quarter compliance period must be based on an average of the available data.

2) Bromate. Compliance must be based on a running annual arithmetic average, computed quarterly, of monthly samples (or, for months in which the system takes more than one sample, the average of all samples taken during the month) collected by the system as prescribed by Section 611382(b)(3). If the average of samples covering any consecutive four-quarter period exceeds the MCL, the system is in violation of the MCL and shall notify the public pursuant to Section 611.851, in addition to reporting to the Agency pursuant to Section 611.384. If a PWS fails to complete twelve consecutive months' monitoring, compliance with the MCL for the last four-quarter compliance period must be based on an average of the available data.

3) Chlorite. Compliance must be based on an arithmetic average of each three sample set taken in the distribution system as prescribed by Section 611.382(b)(2)(A)(ii) and Section 611.382(b)(2)(B). If the arithmetic average of any three sample set exceeds the MCL, the system is in violation of the MCL and shall notify the public pursuant to Section 611.851, in addition to reporting to the Agency pursuant to Section 611.384.

c) Disinfectant residuals.

1) Chlorine and chloramines.

A) Compliance must be based on a running annual arithmetic average, computed quarterly, of monthly averages of all samples collected by the system under Section 611.382(c)(1). If the average of quarterly averages covering any consecutive four-quarter period exceeds the MRDL, the system is in violation of the MRDL and shall notify the public pursuant to Section 611.851, in addition to reporting to the Agency pursuant to Section 611.384.

B) In cases where systems switch between the use of chlorine and chloramines for residual disinfection during the year, compliance

must be determined by including together all monitoring results of both chlorine and chloramines in calculating compliance. Reports submitted pursuant to Section 611.384 must clearly indicate which residual disinfectant was analyzed for each sample.

2) Chlorine dioxide.

A) Acute violations. Compliance must be based on consecutive daily samples collected by the system under Section 611.382(c)(2). If any daily sample taken at the entrance to the distribution system exceeds the MRDL, and on the following day one (or more) of the three samples taken in the distribution system exceeds the MRDL, the system is in violation of the MRDL and shall take immediate corrective action to lower the level of chlorine dioxide below the MRDL and shall notify the public pursuant to the procedures for acute health risks in Section 611.851(a)(3) in addition to reporting to the Agency pursuant to Section 611.384. Failure to take samples in the distribution system the day following an exceedence of the chlorine dioxide MRDL at the entrance to the distribution system will also be considered an MRDL violation and the system shall notify the public of the violation in accordance with the provisions for acute violations under Section 611.851(a)(3) in addition to reporting to the Agency pursuant to Section 611.384.

B) Nonacute violations. Compliance must be based on consecutive daily samples collected by the system under Section 611.382(c)(2). If any two consecutive daily samples taken at the entrance to the distribution system exceed the MRDL and all distribution system samples taken are below the MRDL, the system is in violation of the MRDL and shall take corrective action to lower the level of chlorine dioxide below the MRDL at the point of sampling and shall notify the public pursuant to the procedures for nonacute health risks in Section 611.852 in addition to reporting to the Agency pursuant to Section 611.384. Failure to monitor at the entrance to the distribution system the day following an exceedence of the chlorine dioxide MRDL at the entrance to the distribution system is also an MRDL violation and the system shall notify the public of the violation in accordance with the provisions for nonacute violations under Section 611.852 in addition to reporting to the Agency pursuant to Section 611.384.

d) Disinfection byproduct (DBP) precursors. Compliance must be determined as specified by Section 611.385(c). Systems may begin monitoring to determine whether Step 1 TOC removals can be met twelve months prior to the compliance

date for the system. This monitoring is not required and failure to monitor during this period is not a violation. However, any system that does not monitor during this period, and then determines in the first twelve months after the compliance date that it is not able to meet the Step 1 requirements in Section 611.141(b)(2) and must therefore apply for alternate minimum TOC removal (Step 2) requirements, is not eligible for retroactive approval of alternate minimum TOC removal (Step 2) requirements as allowed pursuant to Section 611.385(b)(3) and is in violation of an NPDWR. Systems may apply for alternate minimum TOC removal (Step 2) requirements any time after the compliance date. For systems required to meet Step 1 TOC removals, if the value calculated under Section 611.385(c)(1)(D) is less than 1.00, the system is in violation of the treatment technique requirements and must notify the public pursuant to Section 611.851, in addition to reporting to the Agency pursuant to Section 611.384.

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.384 Reporting and Recordkeeping Requirements

a) Systems required to sample quarterly or more frequently shall report to the Agency within ten days after the end of each quarter in which samples were collected, notwithstanding the provisions of Section 611.840. Systems required to sample less frequently than quarterly shall report to the Agency within ten days after the end of each monitoring period in which samples were collected.

b) Disinfection byproducts (DBPs). Systems shall report the information specified in the following table:

If you are a . . .	You must report...[1]
System monitoring for TTHMs and HAA5 under the requirements of Section 611.382(b) on a quarterly or more frequent basis.	(1) The number of samples taken during the last quarter. (2) The location, date, and result of each sample taken during the last quarter. (3) The arithmetic average of all samples taken in the last quarter. (4) The annual arithmetic average of the quarterly arithmetic averages of this Section for the last four quarters. (5) Whether the MCL was exceeded.
System monitoring for TTHMs and HAA5 under the requirements of Section 611.382(b) less frequently than	(1) The number of samples taken during the last year. (2) The location, date, and result of

quarterly (but at least annually).	each sample taken during the last monitoring period. (3) The arithmetic average of all samples taken over the last year. (4) Whether the MCL was exceeded.
System monitoring for TTHMs and HAA5 under the requirements of Section 611.382(b) less frequently than annually.	(1) The location, date, and result of the last sample taken. (2) Whether the MCL was exceeded.
System monitoring for chlorite under the requirements of Section 611.382(b).	(1) The number of samples taken each month for the last three months. (2) The location, date, and result of each sample taken during the last quarter. (3) For each month in the reporting period, the arithmetic average of all samples taken in the month. (4) Whether the MCL was exceeded, and in which month it was exceeded.
System monitoring for bromate under the requirements of Section 611.382(b).	(1) The number of samples taken during the last quarter. (2) The location, date, and result of each sample taken during the last quarter. (3) The arithmetic average of the monthly arithmetic averages of all samples taken in the last year. (4) Whether the MCL was exceeded.

[1] The Agency may choose to perform calculations and determine whether the MCL was exceeded, in lieu of having the system report that information.

BOARD NOTE: Derived from 40 CFR 141.134(b) (1998).

c) Disinfectants. Systems shall report the information specified in the following table:

If you are a. . .	You must report...[1]
System monitoring for chlorine or chloramines under the requirements of Section 611.382(c).	(1) The number of samples taken during each month of the last quarter. (2) The monthly arithmetic average of all samples taken in each month for the last

	twelve months. (3) The arithmetic average of all monthly averages for the last twelve months. (4) Whether the MRDL was exceeded.
System monitoring for chlorine dioxide under the requirements of Section 611.382(c).	(1) The dates, results, and locations of samples taken during the last quarter. (2) Whether the MRDL was exceeded. (3) Whether the MRDL was exceeded in any two consecutive daily samples and whether the resulting violation was acute or nonacute.

[1] The Agency may choose to perform calculations and determine whether the MRDL was exceeded, in lieu of having the system report that information.

BOARD NOTE: Derived from 40 CFR 141.134(c) (1998).

d) Disinfection byproduct (DBP) precursors and enhanced coagulation or enhanced softening. Systems shall report the information specified in the following table:

If you are a . . .	You must report . . .[1]
System monitoring monthly or quarterly for TOC under the requirements of Section 611.382(d) and required to meet the enhanced coagulation or enhanced softening requirements in Section 611.385(b)(2) or (3).	(1) The number of paired (source water and treated water, prior to continuous disinfection) samples taken during the last quarter. (2) The location, date, and result of each paired sample and associated alkalinity taken during the last quarter. (3) For each month in the reporting period that paired samples were taken, the arithmetic average of the percent reduction of TOC for each paired sample and the required TOC percent removal. (4) Calculations for determining compliance with the TOC percent removal requirements, as provided in Section 611.385(c)(1). (5) Whether the system is in compliance with the enhanced coagulation or enhanced softening percent removal requirements in Section 611.385(b) for

System monitoring monthly or quarterly for TOC under the requirements of Section 611.382(d) and meeting one or more of the alternative compliance standards in Section 611.385(a)(2) or (3).	the last four quarters. (1) The alternative compliance criterion that the system is using. (2) The number of paired samples taken during the last quarter. (3) The location, date, and result of each paired sample and associated alkalinity taken during the last quarter. (4) The running annual arithmetic average based on monthly averages (or quarterly samples) of source water TOC for systems meeting a criterion in Section 611.385(a)(2)(A) or (C) or of treated water TOC for systems meeting the criterion in Section 611.385(a)(2)(B). (5) The running annual arithmetic average based on monthly averages (or quarterly samples) of source water SUVA for systems meeting the criterion in Section 611.385(a)(2)(E) or of treated water SUVA for systems meeting the criterion in Section 611.385(a)(2)(F). (6) The running annual average of source water alkalinity for systems meeting the criterion in Section 611.385(a)(2)(C) and of treated water alkalinity for systems meeting the criterion in Section 611.385(a)(3)(A). (7) The running annual average for both TTHM and HAA5 for systems meeting the criterion in Section 611.385(a)(2)(C) or (D). (8) The running annual average of the amount of magnesium hardness removal (as $CaCO_3$ in mg/L) for systems meeting the criterion in Section 611.385(a)(3)(B). (9) Whether the system is in compliance with the particular alternative compliance criterion in Section 611.385(a)(2) or (3).

[1] The Agency may choose to perform calculations and determine whether the treatment technique was met, in lieu of having the system report that information.

BOARD NOTE: Derived from 40 CFR 141.134(d) (1998).

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.385 Treatment Technique for Control of Disinfection Byproduct (DBP) Precursors

a) Applicability.

1) A Subpart B system using conventional filtration treatment (as defined in Section 611.101) shall operate with enhanced coagulation or enhanced softening to achieve the TOC percent removal levels specified in subsection (b) of this Section unless the system meets at least one of the alternative compliance standards listed in subsection (a)(2) or (a)(3) of this Section.

2) Alternative compliance standards for enhanced coagulation and enhanced softening systems. A Subpart B system using conventional filtration treatment may use the alternative compliance standards in subsections (a)(2)(A) through (F) of this Section to comply with this Section in lieu of complying with subsection (b). Systems shall comply with monitoring requirements in Section 611.382(d) of this Part.

A) The system's source water TOC level, measured according to Section 611.381(d)(3), is less than 2.0 mg/L, calculated quarterly as a running annual average.

B) The system's treated water TOC level, measured according to Section 611.381(d)(3), is less than 2.0 mg/L, calculated quarterly as a running annual average.

C) The system's source water TOC level, measured as required by Section 611.381(d)(3), is less than 4.0 mg/L, calculated quarterly as a running annual average; the source water alkalinity, measured according to Section 611.381(d)(1), is greater than 60 mg/L (as $CaCO_3$), calculated quarterly as a running annual average; and either the TTHM and HAA5 running annual averages are no greater than 0.040 mg/L and 0.030 mg/L, respectively; or prior to the effective date for compliance in Section 611.380(b), the system has made a clear and irrevocable financial commitment, not later than the effective date for compliance in Section 611.380(b), to use technologies that will limit the levels of TTHMs and HAA5 to no

more than 0.040 mg/L and 0.030 mg/L, respectively. Systems shall submit evidence of a clear and irrevocable financial commitment, in addition to a schedule containing milestones and periodic progress reports for installation and operation of appropriate technologies, to the Agency for approval not later than the effective date for compliance in Section 611.380(b). These technologies must be installed and operating not later than June 30, 2005. Failure to install and operate these technologies by the date in the approved schedule will constitute a violation of a NPDWR.

D) The TTHM and HAA5 running annual averages are no greater than 0.040 mg/L and 0.030 mg/L, respectively, and the system uses only chlorine for primary disinfection and maintenance of a residual in the distribution system.

E) The system's source water SUVA, prior to any treatment and measured monthly according to Section 611.381(d)(4), is less than or equal to 2.0 L/mg-m, calculated quarterly as a running annual average.

F) The system's finished water SUVA, measured monthly according to Section 611.381(d)(4), is less than or equal to 2.0 L/mg-m, calculated quarterly as a running annual average.

3) Additional alternative compliance standards for softening systems. Systems practicing enhanced softening that cannot achieve the TOC removals required by subsection (b)(2) of this Section may use the alternative compliance standards in subsections (a)(3)(A) and (B) of this Section in lieu of complying with subsection (b) of this Section. Systems shall comply with monitoring requirements in Section 611.382(d).

A) Softening that results in lowering the treated water alkalinity to less than 60 mg/L (as $CaCO_3$), measured monthly according to Section 611.381(d)(1) and calculated quarterly as a running annual average.

B) Softening that results in removing at least 10 mg/L of magnesium hardness (as $CaCO_3$), measured monthly and calculated quarterly as an annual running average.

b) Enhanced coagulation and enhanced softening performance requirements.

1) Systems shall achieve the percent reduction of TOC specified in subsection (b)(2) of this Section between the source water and the combined filter effluent, unless the Agency approves a system's request for alternate

minimum TOC removal (Step 2) requirements under subsection (b)(3) of this Section.

2) Required Step 1 TOC reductions, indicated in the following table, are based upon specified source water parameters measured in accordance with Section 611.381(d). Systems practicing softening shall meet the Step 1 TOC reductions in the far-right column (source water alkalinity >120 mg/L) for the specified source water TOC:

Step 1 Required Removal of TOC by Enhanced Coagulation and Enhanced Softening for a Subpart B System Using Conventional Treatment[1,2]

Source-water TOC, mg/L	Source-water alkalinity, mg/L as $CaCO_3$		
	0-60	>60-120	>120[3]
>2.0-4.0	35.0%	25.0%	15.0%
>4.0-8.0	45.0%	35.0%	25.0%
>8.0	50.0%	40.0%	30.0%

[1] Systems meeting at least one of the conditions in subsections (a)(2)(A) through (F) of this Section are not required to operate with enhanced coagulation.

[2] Softening systems meeting one of the alternative compliance standards in subsection (a)(3) of this Section are not required to operate with enhanced softening.

[3] Systems practicing softening shall meet the TOC removal requirements in this column.

3) A Subpart B conventional treatment system that cannot achieve the Step 1 TOC removals required by subsection (b)(2) of this Section due to water quality parameters or operational constraints must apply to the Agency, within three months after failure to achieve the TOC removals required by subsection (b)(2) of this Section, for approval of alternative minimum TOC (Step 2) removal requirements submitted by the system. If the PWS cannot achieve the Step 1 TOC removal requirement due to water quality parameters or operational constraints, the Agency shall approve the use of the Step 2 TOC removal requirement. If the Agency approves the alternative minimum TOC removal (Step 2) requirements, the Agency may make those requirements retroactive for the purposes of determining compliance. Until the Agency approves the alternate minimum TOC removal (Step 2) requirements, the system shall meet the Step 1 TOC removals contained in subsection (b)(2) of this Section.

4) Alternate minimum TOC removal (Step 2) requirements. Applications made to the Agency by enhanced coagulation systems for approval of alternative minimum TOC removal (Step 2) requirements under subsection (b)(3) of this Section must include, at a minimum, results of bench- or pilot-scale testing conducted under subsection (b)(4)(B) of this Section and used to determine the alternate enhanced coagulation level.

A) For the purposes of this Subpart, "Alternate enhanced coagulation level" is defined as coagulation at a coagulant dose and pH as determined by the method described in subsections (b)(4)(A) through (E) of this Section such that an incremental addition of 10 mg/L of alum (or equivalent amount of ferric salt) results in a TOC removal of ó0.3 mg/L. The percent removal of TOC at this point on the "TOC removal versus coagulant dose" curve is then defined as the minimum TOC removal required for the system. Once approved by the Agency, this minimum requirement supersedes the minimum TOC removal required by the table in subsection (b)(2) of this Section. This requirement will be effective until such time as the Agency approves a new value based on the results of a new bench- and pilot-scale test. Failure to achieve alternative minimum TOC removal levels is a violation of National Primary Drinking Water Regulations.

B) Bench- or pilot-scale testing of enhanced coagulation must be conducted by using representative water samples and adding 10 mg/L increments of alum (or equivalent amounts of ferric salt) until the pH is reduced to a level less than or equal to the enhanced coagulation Step 2 target pH shown in the following table:

Enhanced Coagulation Step 2 Target pH

Alkalinity (mg/L as $CaCO_3$)	Target pH
0-60	5.5
>60-120	6.3
>120-240	7.0
>240	7.5

C) For waters with alkalinities of less than 60 mg/L for which addition of small amounts of alum or equivalent addition of iron coagulant drives the pH below 5.5 before significant TOC removal occurs, the system shall add necessary chemicals to maintain the pH between 5.3 and 5.7 in samples until the TOC removal of 0.3 mg/L per 10

mg/L alum added (or equivalent addition of iron coagulant) is reached.

D) The system may operate at any coagulant dose or pH necessary (consistent with other NPDWRs) to achieve the minimum TOC percent removal approved under subsection (b)(3) of this Section.

E) If the TOC removal is consistently less than 0.3 mg/L of TOC per 10 mg/L of incremental alum dose at all dosages of alum (or equivalent addition of iron coagulant), the water is deemed to contain TOC not amenable to enhanced coagulation. The system may then apply to the Agency for a waiver of enhanced coagulation requirements. If the TOC removal is consistently less than 0.3 mg/L of TOC per 10 mg/L of incremental alum dose at all dosages of alum (or equivalent addition of iron coagulant), the Agency shall grant the waiver of enhanced coagulation requirements.

c) Compliance calculations.

1) A Subpart B system other than those identified in subsection (a)(2) or (a)(3) of this Section shall comply with requirements contained in subsection (b)(2) of this Section. Systems shall calculate compliance quarterly, beginning after the system has collected 12 months of data, by determining an annual average using the following method:

A) Determine actual monthly TOC percent removal, equal to:

$$\left(1-\left(\frac{\text{treatedwaterTOC}}{\text{sourcewaterTOC}}\right)\right)\times 100$$

B) Determine the required monthly TOC percent removal.

C) Divide the value in subsection (c)(1)(A) of this Section by the value in subsection (c)(1)(B) of this Section.

D) Add together the results of subsection (c)(1)(C) of this Section for the last twelve months and divide by twelve.

E) If the value calculated in subsection (c)(1)(D) of this Section is less than 1.00, the system is not in compliance with the TOC percent removal requirements.

2) Systems may use the provisions in subsections (c)(2)(A) through (E) of this Section in lieu of the calculations in subsection (c)(1)(A) through (E) of

this Section to determine compliance with TOC percent removal requirements.

A) In any month that the system's treated or source water TOC level, measured according to Section 611.381(d)(3), is less than 2.0 mg/L, the system may assign a monthly value of 1.0 (in lieu of the value calculated in subsection (c)(1)(C) of this Section) when calculating compliance under the provisions of subsection (c)(1) of this Section.

B) In any month that a system practicing softening removes at least 10 mg/L of magnesium hardness (as $CaCO_3$), the system may assign a monthly value of 1.0 (in lieu of the value calculated in subsection (c)(1(C) of this Section) when calculating compliance under the provisions of subsection (c)(1) of this Section.

C) In any month that the system's source water SUVA, prior to any treatment and measured according to Section 611.381(d)(4), is ó2.0 L/mg-m, the system may assign a monthly value of 1.0 (in lieu of the value calculated in subsection (c)(1)(C) of this Section) when calculating compliance under the provisions of subsection (c)(1) of this Section.

D) In any month that the system's finished water SUVA, measured according to Section 611.381(d)(4), is ó2.0 L/mg-m, the system may assign a monthly value of 1.0 (in lieu of the value calculated in subsection (c)(1)(C) of this Section) when calculating compliance under the provisions of subsection (c)(1) of this Section.

E) In any month that a system practicing enhanced softening lowers alkalinity below 60 mg/L (as $CaCO_3$), the system may assign a monthly value of 1.0 (in lieu of the value calculated in subsection (c)(1)(C) of this Section) when calculating compliance under the provisions of subsection (c)(1) of this Section.

3) A Subpart B system using conventional treatment may also comply with the requirements of this Section by meeting the standards in subsection (a)(2) or (3) of this Section.

d) Treatment technique requirements for disinfection byproduct (DBP) precursors. Treatment techniques to control the level of disinfection byproduct (DBP) precursors in drinking water treatment and distribution systems, for a Subpart B system using conventional treatment, are enhanced coagulation or enhanced softening.

(Source: Added at 23 Ill. Reg. _____, effective _____)

SUBPART P: THM MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.684 Averaging

Compliance with Section 611.310(c) or 611.312(a) is determined based on a running annual average of quarterly samples collected by the PWS, ~~supplier~~ as prescribed in Section 611.680(b)(1) or (2). If the average of samples covering any 12 month period exceeds the MCL, the PWS ~~CWS supplier~~ shall report to the Agency and notify the public pursuant to Subpart T. Monitoring after public notification must be at a frequency designated by the Agency and must continue until a monitoring schedule as a condition to a variance, adjusted standard, or enforcement action becomes effective.

BOARD NOTE: Derived from 40 CFR 141.30(d) (1994).

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.685 Analytical Methods

Sampling and analyses made pursuant to this Subpart must be conducted by one of the total trihalomethanes (TTHM) methods, as directed in Section 611.645 and in USEPA Technical Notes, incorporated by reference in Section 611.102 or Section 611.381(b). Samples for TTHM must be dechlorinated upon collection to prevent further production of t~~T~~rihalomethanes~~,~~ according to the procedures described in the methods, except acidification is not required if only THMs or TTHMs are to be determined. Samples for maximum TTHM potential must not be dechlorinated or acidified, and should be held for seven days at 25° C (or above) prior to analysis.

BOARD NOTE: Derived from 40 CFR 141.30(e) (199~~5~~8).

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.688 Applicability Dates

The requirements in Sections 611.680 through 611.686 apply to a Subpart B community water system that serves 10,000 or more persons until December 31, 2001. The requirements in Sections 611.680 through 611.686 apply to a community water system that uses only groundwater not under the direct influence of surface water which adds a disinfectant (oxidant) in any part of the treatment process and serves 10,000 or more persons until December 31, 2003. After December 31, 2003, Sections 611.680 through 611.688 are no longer applicable.

(Source: Added at 23 Ill. Reg. _____, effective _____)

SUBPART Q: RADIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.720 Analytical Methods

a) The methods specified below, incorporated by reference in Section 611.102, are to be used to determine compliance with Sections 611.330 and 611.331, except in cases where alternative methods have been approved in accordance with Section 611.480.

1) Gross Alpha and Beta:

A) ASTM Method 302;

B) Standard Methods:

i) Method 302; or

ii) Method 7110 B;

C) USEPA Interim Radiochemical Methods: page 1;

D) USEPA Radioactivity Methods: Method 900;

E) USEPA Radiochemical Analyses: page 1;

F) USEPA Radiochemistry Methods: Method 00-01; or

G) USGS Methods: Method R-1120-76.

2) Gross Alpha:

A) Standard Methods: Method 7110 C; or

B) USEPA Radiochemistry Methods: Method 00-02.

3) Radium-226:

A) ASTM Methods:

i) Method D 2460-90; or

ii) Method D 3454-91;

B) New York Radium Method;

C) Standard Methods:

i) Method 304;

ii) Method 305;

iii) Method 7500-Ra B; or

iv) Method 7500-Ra C;

D) USDOE Methods: Method Ra-05;

E) USEPA Interim Radiochemical Methods: pages 13 and 16;

F) USEPA Radioactivity Methods: Methods 903, 903.1;

G) USEPA Radiochemical Analyses: page 19;

H) USEPA Radiochemistry Methods: Methods Ra-03, Ra-04; or

I) USGS Methods:

i) Method R-1140-76; or

ii) Method R-1141-76.

4) Radium-228:

A) Standard Methods:

i) Method 304; or

ii) Method 7500-Ra D;

B) New York Radium Method;

C) USEPA Interim Radiochemical Methods: page 24;

D) USEPA Radioactivity Methods: Method 904;

E) USEPA Radiochemical Analyses: page 19;

F) USEPA Radiochemistry Methods: Method Ra-05;

G) USGS Methods: Method R-1142-76; or

H) New Jersey Radium Method.

5) Uranium:

A) ASTM Methods:

i) Method D-2907;

ii) Method D-2907-91;

iii) Method D 3972-90; or

iv) Method D 5174-91;

B) USEPA Radioactivity Methods: Methods 908, 908.1;

C) USEPA Radiochemical Analyses: page 33;

D) USEPA Radiochemistry Methods: Method 00-07; or

E) USGS Methods:

i) Method R-1180-76;

ii) Method R-1181-76; or

iii) Method R-1182-76.

6) Cesium:

A) ASTM Methods:

i) Method D 2459-72; or

ii) Method D 3649-91;

B) Standard Methods:

i) Method 7120 (19th ed.); or

ii) Method 7500-Cs B;

C) USDOE Methods: Method 4.5.2.3;

D) USEPA Interim Radiochemical Methods: page 4;

E) USEPA Radioactivity Methods: Methods 901, 901.1;

F) USEPA Radiochemical Analyses: page 92; or

G) USGS Methods:

i) Method R-1110-76; or

ii) Method R-1111-76.

7) Iodine:

A) ASTM Methods:

i) D 3649-91; or

ii) D 4785-88;

B) Standard Methods:

i) Method 7120 (19th ed.);

ii) Method 7500-I B;

iii) Method 7500-I C; or

iv) Method 7500-I D;

C) USDOE Methods: Method 4.5.2.3;

D) USEPA Interim Radiochemical Methods: pages 6, 9;

E) USEPA Radiochemical Analyses: page 92; or

F) USEPA Radioactivity Methods: Methods 901.1, 902.

8) Strontium-89 & 90:

A) Standard Methods:

i) Method 303; or

ii) Method 7500-Sr B;

B) USDOE Methods:

i) Method Sr-01; or

ii) Method Sr-02;

C) USEPA Interim Radiochemical Methods: page 29;

D) USEPA Radioactivity Methods: Method 905;

E) USEPA Radiochemical Analyses: page 65;

F) USEPA Radiochemistry Methods: Method Sr-04; or

G) USGS Methods: Method R-1160-76.

9) Tritium:

A) ASTM Methods: Method D 4107-91;

B) Standard Methods:

i) Method 306; or

ii) Method 7500-3H B;

C) USEPA Interim Radiochemical Methods: page 34;

D) USEPA Radioactivity Methods: Method 906;

E) USEPA Radiochemical Analyses: page 87;

F) USEPA Radiochemistry Methods: Method H-02; or

G) USGS Methods: Method R-1171-76.

10) Gamma Emitters:

A) ASTM Methods:

i) Method D 3649-91; or

ii) Method D 4785-88;

B) Standard Methods:

i) Method 7120 (19th ed.);

ii) Method 7500-Cs B; or

iii) Method 7500-I B;

C) USDOE Method: Method 4.5.2.3;

D) USEPA Radioactivity Methods: Methods 901, 901.1, 902;

E) USEPA Radiochemical Analyses: page 92; or

F) USGS Methods: Method R-1110-76.

b) When the identification and measurement of radionuclides other than those listed in subsection (a) are required, the following methods, incorporated by reference in Section 611.102, are to be used, except in cases where alternative methods have been approved in accordance with Section 611.480:

1) "Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions", available from NTIS.

2) HASL Procedure Manual, HASL 300.

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 must be that concentration which can be counted with a precision of plus or minus 100 percent at the 95 percent confidence level (1.96 sigma where sigma is the standard deviation of the net counting rate of the sample).

1) To determine compliance with Section 611.330(a) the detection limit must not exceed 1 pCi/L. To determine compliance with Section 611.330(b) the detection limit must not exceed 3 pCi/L.

2) To determine compliance with Section 611.331 the detection limits must not exceed the concentrations listed in that Section.

3) The detection limits for man-made beta particle and photon emitters to determine the applicability of Section 611.881 are listed in the following table:

Radionuclide	Detection Limit
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 applicable limit

BOARD NOTE: Derived from 40 CFR 141.25(c) Table B (1998).

d) To judge compliance with the MCLs listed in Sections 611.330 and 611.331, averages of data must be used and must be rounded to the same number of significant figures as the MCL for the substance in question.

BOARD NOTE: Derived from 40 CFR 141.25 (~~1995~~1998).

(Source: Amended at 23 Ill. Reg. _____, effective _____)

SUBPART R: ENHANCED FILTRATION AND DISINFECTION

Section 611.740 General Requirements

a) The requirements of this Subpart R are National Primary Drinking Water Regulations. These regulations establish requirements for filtration and disinfection that are in addition to standards under which filtration and disinfection are required under Subpart B of this part. The requirements of this Subpart are applicable to a Subpart B system serving 10,000 or more persons, beginning January 1, 2002, unless otherwise specified in this Subpart. The regulations in this Subpart establish or extend treatment technique requirements in lieu of maximum contaminant levels (MCLs) for the following contaminants: Giardia lamblia, viruses, heterotrophic plate count bacteria, Legionella, Cryptosporidium, and turbidity. Each Subpart B system serving 10,000 or more persons shall provide treatment of its source water that complies with these treatment technique requirements and are in addition to those identified in Section 611.220. The treatment technique requirements consist of installing and properly operating water treatment processes that reliably achieve:

1) At least 99 percent (2-log) removal of Cryptosporidium between a point where the raw water is not subject to recontamination by surface water runoff and a point downstream before or at the first customer for filtered systems, or Cryptosporidium control under the watershed control plan for unfiltered systems; and

2) Compliance with the profiling and benchmark requirements under the provisions of Section 611.742.

b) A public water system subject to the requirements of this Subpart is considered to be in compliance with the requirements of subsection (a) of this Section if:

1) It meets the requirements for avoiding filtration in Sections 611.232 and 611.741, and the disinfection requirements in Sections 611.240 and 611.742; or

2) It meets the applicable filtration requirements in either Section 611.250 or Section 611.743, and the disinfection requirements in Sections 611.240 and 611.742.

c) Systems shall not begin construction of uncovered finished water storage facilities after February 16, 1999.

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.741 Standards for Avoiding Filtration

In addition to the requirements of Section 611.232, a public water system subject to the requirements of this Subpart that does not provide filtration shall meet all of the conditions of subsections (a) and (b) of this Section.

a) Site-specific conditions. In addition to site-specific conditions in Section 611.232, systems shall maintain the watershed control program under Section 611.232(b) to minimize the potential for contamination by Cryptosporidium oocysts in the source water. The watershed control program must, for Cryptosporidium:

1) Identify watershed characteristics and activities which may have an adverse effect on source water quality; and

2) Monitor the occurrence of activities which may have an adverse effect on source water quality.

b) During the onsite inspection conducted under the provisions of Section 611.232(c), the Agency shall determine whether the watershed control program established under Section 611.232(b) is adequate to limit potential contamination by Cryptosporidium oocysts. The adequacy of the program must be based on the comprehensiveness of the watershed review; the effectiveness of the system's program to monitor and control detrimental activities occurring in the watershed; and the extent to which the water system has maximized land ownership or controlled land use within the watershed.

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.742 Disinfection Profiling and Benchmarking

a) Determination of systems required to profile. A public water system subject to the requirements of this Subpart shall determine its TTHM annual average using the procedure in subsection (a)(1) of this Section and its HAA5 annual average using the procedure in subsection (a)(2) of this Section. The annual average is the arithmetic average of the quarterly averages of four consecutive quarters of monitoring.

1) The TTHM annual average that is used must be the annual average during the same period as the HAA5 annual average.

A) Those systems that collected data under the provisions of 40 CFR 141 Subpart M (Information Collection Rule) shall use the results of the samples collected during the last four quarters of required monitoring under Section 611.382.

B) Those systems that use "grandfathered" HAA5 occurrence data that meet the provisions of subsection (a)(2)(B) of this Section shall use TTHM data collected at the same time under the provisions of Section 611.680.

C) Those systems that use HAA5 occurrence data that meet the provisions of subsection (a)(2)(C)(i) of this Section shall use TTHM data collected at the same time under the provisions of Sections 611.310 and 611.680.

2) The HAA5 annual average that is used must be the annual average during the same period as the TTHM annual average.

A) Those systems that collected data under the provisions of 40 CFR 141 Subpart M (Information Collection Rule) shall use the results

of the samples collected during the last four quarters of required monitoring under Section 611.382.

B) Those systems that have collected four quarters of HAA5 occurrence data that meets the routine monitoring sample number and location requirements for TTHM in Section 611.680 and handling and analytical method requirements of Section 611.685 may use that data to determine whether the requirements of this Section apply.

C) Those systems that have not collected four quarters of HAA5 occurrence data that meets the provisions of either subsection (a)(2)(A) or (B) of this Section by March 31, 1999 shall either:

i) Conduct monitoring for HAA5 that meets the routine monitoring sample number and location requirements for TTHM in Section 611.680 and handling and analytical method requirements of Section 611.685 to determine the HAA5 annual average and whether the requirements of subsection (b) of this Section apply. 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) of this Section.

3) The system may request that the Agency approve a more representative annual data set than the data set determined under subsection (a)(1) or (2) of this Section for the purpose of determining applicability of the requirements of this Section.

4) The Agency may require that a system use a more representative annual data set than the data set determined under subsection (a)(1) or (2) of this Section for the purpose of determining the applicability of the requirements of this Section.

5) The system shall submit data to the Agency on the schedule in subsections (a)(5)(A) through (D) of this Section.

A) Those systems that collected TTHM and HAA5 date under the provisions of 40 CFR Subpart M (Information Collection Rule), as required by subsection (a)(1)(A) and (a)(2)(A) of this Section, shall submit the results of the samples collected during the last twelve

months of required monitoring under Section 611.685 not later than December 31, 1999.

B) Those systems that have collected four consecutive quarters of HAA5 occurrence data that meets the routine monitoring sample number and location for TTHM in Section 611.382 and handling and analytical method requirements of Section 611.685, as allowed by subsections (a)(1)(B) and (a)(2)(B) of this Section, were required under corresponding 40 CFR 141.172 to submit that data to the Agency not later than April 30, 1999. Until the Agency has approved the data, the system shall conduct monitoring for HAA5 using the monitoring requirements specified under subsection (a)(2)(C) of this Section.

C) Those systems that conduct monitoring for HAA5 using the monitoring requirements specified by subsections (a)(1)(C) and (a)(2)(C)(i) of this Section, 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 subsection (a)(2)(C)(ii) of this Section, shall notify the Agency in writing of their election not later than December 31, 1999.

E) If the system elects to request that the Agency approve a more representative data set than the data set determined under subsection (a)(2)(A) of this Section, the system shall submit this request in writing not later than December 31, 1999.

6) Any system having either a TTHM annual average $\geq$ 0.064 mg/L or an HAA5 annual average $\geq$ 0.048 mg/L during the period identified in subsections (a)(1) and (2) of this Section shall comply with subsection (b) of this Section.

b) Disinfection profiling.

1) Any system that meets the standards in subsection (a)(6) of this Section shall develop a disinfection profile of its disinfection practice for a period of up to three years. The Agency shall determine the period of the disinfection profile, with a minimum period of 1 year.

2) The system shall monitor daily for a period of twelve consecutive calendar months to determine the total logs of inactivation for each day of

operation, based on the $CT_{99.9}$ values in Appendix B of this Part, as appropriate, through the entire treatment plant. The system shall begin this monitoring not later than April 1, 2000. As a minimum, the system with a single point of disinfectant application prior to entrance to the distribution system shall conduct the monitoring in subsections (b)(2)(A) through (D) of this Section. A system with more than one point of disinfectant application shall conduct the monitoring in subsections (b)(2)(A) through (D) of this Section for each disinfection segment. The system shall monitor the parameters necessary to determine the total inactivation ratio, using analytical methods in Section 611.531, as follows:

A) The temperature of the disinfected water must be measured once 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 must be measured once per day at each chlorine residual disinfectant concentration sampling point during peak hourly flow.

C) The disinfectant contact time(s) ("T") must be determined for each day during peak hourly flow.

D) The residual disinfectant concentration(s) ("C") of the water before or at the first customer and prior to each additional point of disinfection must be measured each day during peak hourly flow.

3) In lieu of the monitoring conducted under the provisions of subsection (b)(2) of this Section to develop the disinfection profile, the system may elect to meet the requirements of subsection (b)(3)(A) of this Section. In addition to the monitoring conducted under the provisions of subsection (b)(2) of this Section to develop the disinfection profile, the system may elect to meet the requirements of subsection (b)(3)(B) of this Section.

A) A PWS that has three years of existing operational data may submit that data, a profile generated using that data, and a request that the Agency approve use of that data in lieu of monitoring under the provisions of subsection (b)(2) of this Section not later than April 1, 2000. The Agency shall determine whether the operational data is substantially equivalent to data collected under the provisions of subsection (b)(2) of this Section. The data must also be representative of Giardia lamblia inactivation through the entire treatment plant and not just of certain treatment segments. If the Agency determines that the operational data is substantially equivalent, the Agency shall approve the request. Until the Agency

approves this request, the system is required to conduct monitoring under the provisions of subsection (b)(2) of this Section.

B) In addition to the disinfection profile generated under subsection (b)(2) of this Section, a PWS that has existing operational data may use that data to develop a disinfection profile for additional years. The Agency shall determine whether the operational data is substantially equivalent to data collected under the provisions of subsection (b)(2) of this Section. The data must also be representative of inactivation through the entire treatment plant and not just of certain treatment segments. If the Agency determines that the operational data is substantially equivalent, such systems may use these additional yearly disinfection profiles to develop a benchmark under the provisions of subsection (c) of this Section.

4) The system shall calculate the total inactivation ratio as follows:

A) If the system uses only one point of disinfectant application, the system may determine the total inactivation ratio for the disinfection segment based on either of the methods in subsection (b)(4)(A)(i) or (b)(4)(A)(ii) of this Section.

i) Determine one inactivation ratio ($CTcalc/CT_{99.9}$) before or at the first customer during peak hourly flow.

ii) Determine successive $CTcalc/CT_{99.9}$ 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 shall calculate the total inactivation ratio by determining ($CTcalc/CT_{99.9}$) for each sequence and then adding the ($CTcalc/CT_{99.9}$) values together to determine (Σ ($CTcalc/CT_{99.9}$)).

B) If the system uses more than one point of disinfectant application before the first customer, the system 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 ($CTcalc/CT_{99.9}$) value of each segment and ($CTcalc/CT_{99.9}$) must be calculated using the method in subsection (b)(4)(A) of this Section.

C) The system shall determine the total logs of inactivation by multiplying the value calculated in subsection (b)(4)(A) or (B) of this Section by 3.0.

5) A system that uses either chloramines or ozone for primary disinfection shall also calculate the logs of inactivation for viruses using a method approved by the Agency.

6) The system shall retain disinfection profile data in graphic form, as a spreadsheet, or in some other format acceptable to the Agency for review as part of sanitary surveys conducted by the Agency.

c) Disinfection benchmarking.

1) Any system required to develop a disinfection profile under the provisions of subsections (a) and (b) of this Section and that decides to make a significant change to its disinfection practice shall consult with the Agency prior to making such change. Significant changes to disinfection practice are:

A) Changes to the point of disinfection;

B) Changes to the disinfectant(s) used in the treatment plant;

C) Changes to the disinfection process; and

D) Any other modification identified by the Agency.

2) Any system that is modifying its disinfection practice shall calculate its disinfection benchmark using the procedure specified in subsections (c)(2)(A) and (B) of this Section.

A) For each year of profiling data collected and calculated under subsection (b) of this Section, the system shall determine the lowest average monthly Giardia lamblia inactivation in each year of profiling data. 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 of inactivation by the number of values calculated for that month.

B) The disinfection benchmark is the lowest monthly average value (for systems with one year of profiling data) or average of lowest monthly average values (for systems with more than one year of

profiling data) of the monthly logs of Giardia lamblia inactivation in each year of profiling data.

3) A system that uses either chloramines or ozone for primary disinfection shall also calculate the disinfection benchmark for viruses using a method approved by the Agency.

4) The system shall submit information in subsections (c)(4)(A) through (C) of this Section to the Agency as part of its consultation process.

A) A description of the proposed change;

B) The disinfection profile for Giardia lamblia (and, if necessary, viruses) under subsection (b) of this Section and benchmark as required by subsection (c)(2) of this Section; and

C) An analysis of how the proposed change will affect the current levels of disinfection.

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.743 Filtration

A PWS subject to the requirements of this Subpart that does not meet all of the standards in this Subpart and Subpart B of this Part for avoiding filtration shall provide treatment consisting of both disinfection, as specified in Section 611.242, and filtration treatment which complies with the requirements of subsection (a) or (b) of this Section or Section 611.250 (b) or (c) by December 31, 2001.

a) Conventional filtration treatment or direct filtration.

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 0.3 NTU in at least 95 percent of the measurements taken each month, measured as specified in Sections 611.531 and 611.533.

2) The turbidity level of representative samples of a system's filtered water must at no time exceed 1 NTU, measured as specified in Sections 611.531 and 611.533.

3) A system that uses lime softening may acidify representative samples prior to analysis using a protocol approved by the Agency.

b) Filtration technologies other than conventional filtration treatment, direct filtration, slow sand filtration, or diatomaceous earth filtration. A PWS may use a filtration technology not listed in subsection (a) of this Section or in Section 611.250 (b) or (c) if it demonstrates to the Agency, using pilot plant studies or other means, that the alternative filtration technology, in combination with disinfection treatment that meets the requirements of Section 611.242(b), consistently achieves 99.9 percent removal or inactivation of Giardia lamblia cysts and 99.99 percent removal or inactivation of viruses, and 99 percent removal of Cryptosporidium oocysts, and the Agency approves the use of the filtration technology. For each approval, the Agency shall set turbidity performance requirements that the system shall meet at least 95 percent of the time and that the system shall not exceed at any time at a level that consistently achieves 99.9 percent removal or inactivation of Giardia lamblia cysts, 99.99 percent removal or inactivation of viruses, and 99 percent removal of Cryptosporidium oocysts.

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.744 Filtration Sampling Requirements

a) Monitoring requirements for systems using filtration treatment. In addition to monitoring required by Sections 611.531 and 611.533, a PWS subject to the requirements of this Subpart that provides conventional filtration treatment or direct filtration shall conduct continuous monitoring of turbidity for each individual filter using an approved method in Section 611.531(a) and shall calibrate turbidimeters using the procedure specified by the manufacturer. Systems shall record the results of individual filter monitoring every 15 minutes.

b) If there is a failure in the continuous turbidity monitoring equipment, the system shall conduct grab sampling every four hours in lieu of continuous monitoring, until the turbidimeter is back online. A system shall repair the equipment within a maximum of five working days after failure.

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.745 Reporting and Recordkeeping Requirements

In addition to the reporting and recordkeeping requirements in Sections 611.261 and 611.262, a public water system subject to the requirements of this Subpart that provides conventional filtration treatment or direct filtration shall report monthly to the Agency the information specified in subsections (a) and (b) of this Section beginning January 1, 2002. In addition to the reporting and recordkeeping requirements in Sections 611.261 and 611.262, a public water system subject to the requirements of this Subpart that provides filtration approved under Section 611.743(b) shall report monthly to the Agency the information specified in subsection (a) of this Section

beginning January 1, 2002. The reporting in subsection (a) of this Section is in lieu of the reporting specified in Section 611.262(a).

a) Turbidity measurements as required by Section 611.743 must be reported within ten days after the end of each month the system serves water to the public. Information that must be reported is:

1) The total number of filtered water turbidity measurements taken during the month.

2) The number and percentage of filtered water turbidity measurements taken during the month which are less than or equal to the turbidity limits specified in Section 611.743 (a) or (b).

3) The date and value of any turbidity measurements taken during the month that exceed 1 NTU for systems using conventional filtration treatment or direct filtration, or that exceed the maximum level under Section 611.743(b).

b) Systems shall maintain the results of individual filter monitoring taken under Section 611.744 for at least three years. Systems shall report that they have conducted individual filter turbidity monitoring under Section 611.744 within ten days after the end of each month the system serves water to the public. Systems shall report individual filter turbidity measurement results taken under Section 611.744 within ten days after the end of each month the system serves water to the public only if measurements demonstrate one or more of the conditions in subsections (b)(1) through (4) of this Section. Systems that use lime softening may apply to the Agency for alternative exceedence levels for the levels specified in subsections (b)(1) through (4) of this Section if they can demonstrate that higher turbidity levels in individual filters are due to lime carryover only and not due to degraded filter performance.

1) For any individual filter that has a measured turbidity level of greater than 1.0 NTU in two consecutive measurements taken 15 minutes apart, the system shall report the filter number, the turbidity measurement, and the date(s) on which the exceedence occurred. In addition, the system shall either produce a filter profile for the filter within seven days of the exceedence (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 exceedence.

2) For any individual filter that has a measured turbidity level of greater than 0.5 NTU in two consecutive measurements taken 15 minutes apart at the end of the first four hours of continuous filter operation after the filter has

been backwashed or otherwise taken offline, the system shall report the filter number, the turbidity, and the date(s) on which the exceedence occurred. In addition, the system shall either produce a filter profile for the filter within seven days after the exceedence (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 exceedence.

3) For any individual filter that has a measured turbidity level of greater than 1.0 NTU in two consecutive measurements taken 15 minutes apart at any time in each of three consecutive months, the system shall report the filter number, the turbidity measurement, and the date(s) on which the exceedence occurred. In addition, the system shall conduct a self-assessment of the filter within 14 days of the exceedence and report that the self-assessment was conducted. The self assessment must consist of at least the following components: assessment of filter performance; development of a filter profile; identification and prioritization of factors limiting filter performance; assessment of the applicability of corrections; and preparation of a filter self-assessment report.

4) For any individual filter that has a measured turbidity level of greater than 2.0 NTU in two consecutive measurements taken 15 minutes apart at any time in each of two consecutive months, the system shall report the filter number, the turbidity measurement, and the date(s) on which the exceedence occurred. In addition, the system shall arrange for the conduct of a comprehensive performance evaluation by the Agency or a third party approved by the Agency no later than 30 days following the exceedence and have the evaluation completed and submitted to the Agency no later than 90 days following the exceedence.

(Source: Added at 23 Ill. Reg. _____, effective _____)

SUBPART T: REPORTING, PUBLIC NOTIFICATION AND RECORDKEEPING

Section 611.851 Reporting MCL, MRDL, and other Violations

A ~~supplier~~PWS that fails to comply with an applicable MCL or treatment technique established by this Part or which fails to comply with the requirements of any schedule prescribed pursuant to a variance or adjusted standard shall notify persons served by the PWS as follows:

a) Except as provided in subsection (c), the supplier shall give notice:

1) By publication in a daily newspaper of general circulation in the area served by the PWS as soon as possible, but in no case later than 14 days

after the violation or failure. If the area served by a PWS is not served by a daily newspaper of general circulation, notice must instead be given by publication in a weekly newspaper of general circulation serving the area; and

2) By mail delivery (by direct mail or with the water bill), or by hand delivery, not later than 45 days after the violation or failure. This is not required if the Agency determines by SEP that the supplier in violation has corrected the violation or failure within the 45-day period; and

3) For violations of the MCLs of contaminants or MRDLs of disinfectants that pose an acute risk to human health, by furnishing a copy of the notice to the radio and television stations serving the area served by the PWS as soon as possible but in no case later than 72 hours after the violation. The following violations are acute violations:

A) Any violations posing an acute risk to human health, as specified in this Part or as determined by the Agency on a case-by-case basis.

B) Violation of the MCL for nitrate or nitrite in Section 611.301.

C) Violation of the MCL for total coliforms, when fecal coliforms or E. Coli are present in the water distribution system, as specified in Section 611.325(b).

D) Occurrence of a waterborne disease outbreak.

E) Violation of the MRDL for chlorine dioxide as defined in Section 611.313 and determined according to Section 611.383(c)(2).

b) Except as provided in subsection (c), following the initial notice given under subsection (a), the supplier shall give notice at least once every three months by mail delivery (by direct mail or with the water bill) or by hand delivery, for as long as the violation or failure exists.

c) Alternative methods of notice.

1) In lieu of the requirements of subsections (a) and (b), a CWS supplier in an area that is not served by a daily or weekly newspaper of general circulation shall give notice by hand delivery or by continuous posting in conspicuous places within the area served by the CWS. Notice by hand delivery or posting must begin as soon as possible, but no later than 72 hours after the violation or failure for acute violations (as defined in

subsection (a)(3)) or 14 days after the violation or failure (for any other violation). Posting must continue for as long as the violation or failure exists. Notice by hand delivery must be repeated at least every three months for as long as the violation or failure exists.

2) In lieu of the requirements of subsections (a) and (b), a non-CWS supplier may give notice by hand delivery or by continuous posting in conspicuous places within the area served by the non-CWS. Notice by hand delivery or posting must begin as soon as possible, but no later than 72 hours after the violation or failure for acute violations (as defined in subsection (a)(3)), or 14 days after the violation or failure (for any other violation). Posting must continue for as long as the violation or failure exists. Notice by hand delivery must be repeated at least every three months for as long as the violation or failure exists.

3) Where allowed, pursuant to Section 611.609(d), 611.646(o)(3), or 611.648(k)(3) because it has a separable system, a supplier may issue public notice only to persons on that portion of its system that is~~its~~ out of compliance.

BOARD NOTE: Generally derived from 40 CFR 141.32(a) (~~1993~~1998). Subsection (c)(3) derived from 40 CFR 141.23(i)(4) & 141.24(f)(15)(iii), (g)(9) & (h)(11)(iii) (1993).

(Source: Amended at 23 Ill. Reg. _____, effective _____)

Section 611.853 Notice to New Billing Units

A CWS supplier shall give a copy of the most recent public notice for any outstanding violation of any MCL, MRDL, treatment technique requirement or variance or adjusted standard schedule to all new billing units or new hookups prior to or at the time service begins.

BOARD NOTE: Derived from 40 CFR 141.32(c) (19~~89~~98) and 40 CFR 141.32(e) (1998).

(Source: Amended at 23 Ill. Reg. _____, effective _____)

SUBPART U: CONSUMER CONFIDENCE REPORTS

Section 611.881 Purpose and Applicability of this Subpart

a) This Subpart establishes the minimum requirements for the content of annual reports that community water systems (CWSs) must deliver to their customers. These reports must contain information on the quality of the water delivered by the

systems and characterize the risks (if any) from exposure to contaminants detected in the drinking water in an accurate and understandable manner.

b) Notwithstanding the provisions of Section 611.100(d), this Subpart only applies to CWSs.

c) For the purpose of this Subpart, "customers" are defined as billing units or service connections to which water is delivered by a CWS.

d) For the purpose of this Subpart, "detected" means: at or above the detection limit levels prescribed by Section 611.600(d) for inorganic contaminants, at or above the levels prescribed by Section 611.646 for Phase I, II, and V VOCs, at or above the levels prescribed by Section 611.648(r) for Phase II, IIB, and V SOCs, and at or above the levels prescribed by Section 611.720(c)(3) for radioactive contaminants.

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.882 Compliance Dates

a) Each existing CWS shall deliver its first report by October 19, 1999, its second report by July 1, 2000, and subsequent reports by July 1 annually thereafter. The first report must contain data collected during, or prior to, calendar year 1998 as prescribed in Section 611.883(d)(3). Each report thereafter must contain data collected during, or prior to, the previous calendar year.

b) A new CWS shall deliver its first report by July 1 of the year after its first full calendar year in operation and annually thereafter.

c) A community water system that sells water to another community water system must deliver the applicable information required in Section 611.883 to the buyer system:

1) No later than April 1, 2000, and by April 1 annually thereafter; or

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

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.883 Content of the Reports

a) Each CWS shall provide to its customers an annual report that contains the information specified in this Section and Section 611.884.

b) Information on the source of the water delivered:

1) Each report must identify the source(s) of the water delivered by the CWS by providing information on:

A) The type of the water: e.g., surface water, groundwater; and

B) The commonly used name (if any) and location of the body (or bodies) of water.

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

c) Definitions.

1) Each report must include the following definitions:

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

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

2) A report for a CWS operating under relief from an NPDWR issued under Sections 611.111, 611.112, 611.130, or 611.131 must include the following definition: Variances, Adjusted Standards, and Site-specific Rules: State permission not to meet an MCL or a treatment technique under certain conditions.

3) A report that contains data on a contaminant for which USEPA has set a treatment technique or an action level must include one or both of the following definitions as applicable:

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

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

d) Information on detected contaminants.

1) This subsection (d) specifies the requirements for information to be included in each report for contaminants subject to mandatory monitoring (except Cryptosporidium). It applies to:

A) Contaminants subject to an MCL, action level, or treatment technique (regulated contaminants);

B) Contaminants for which monitoring is required by Section 611.510 (unregulated contaminants); and

C) Disinfection byproducts or microbial contaminants for which monitoring is required by Section 611.382 and Subpart L, except as provided under subsection (e)(1) of this Section, and which are detected in the finished water.

2) The data relating to these contaminants must be displayed in one table or in several adjacent tables. Any additional monitoring results that a CWS chooses to include in its report must be displayed separately.

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

A) Where a system is allowed to monitor for regulated contaminants less often than once a year, the table(s) must include the date and results of the most recent sampling, and the report must include a brief statement indicating that the data presented in the report is from the most recent testing done in accordance with the regulations. No data older than five years need be included.

B) Results of monitoring in compliance with Section 611.382 and Subpart L need only be included for five years from the date of last sample or until any of the detected contaminants becomes regulated and subject to routine monitoring requirements, whichever comes first.

4) For detected regulated contaminants (listed in Appendix F of this Part), the table(s) must contain:

A) The MCL for that contaminant expressed as a number equal to or greater than 1.0 (as provided Appendix F of this Part);

B) The Maximum Contaminant Level Goal (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 must include the definitions for treatment technique or action level, as appropriate, specified in subsection (c)(3) of this Section;

D) For contaminants subject to an MCL, except turbidity and total coliforms, the highest contaminant level used to determine compliance with an NPDWR, 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;

BOARD NOTE to subsection (d)(4)(D): When rounding of results to determine compliance with the MCL is allowed by the regulations, rounding should be done prior to multiplying the results by the factor listed in Appendix F; derived from 40 CFR 153 (1998).

D) For turbidity:

i) When it is reported pursuant to Section 611.560: The highest average monthly value.

ii) When it is reported pursuant to the requirements of Section 611.211(b): The highest monthly value. The report must include an explanation of the reasons for measuring turbidity.

iii) When it is reported pursuant to Section 611.250 or 611.743: The highest single measurement and the lowest monthly percentage of samples meeting the turbidity limits specified in Section 611.250 or 611.743 for the filtration technology being used. The report must include an explanation of the reasons for measuring turbidity;

E) For lead and copper: the 90th percentile value of the most recent round of sampling and the number of sampling sites exceeding the action level;

F) For total coliform:

i) The highest monthly number of positive samples for systems collecting fewer than 40 samples per month; or

ii) The highest monthly percentage of positive samples for systems collecting at least 40 samples per month;

G) For fecal coliform: the total number of positive samples; and

H) The likely source(s) of detected contaminants to the best of the supplier's knowledge. Specific information regarding contaminants may be available in sanitary surveys and source water assessments, and must be used when available to the supplier. If the supplier lacks specific information on the likely source, the report must include one or more of the typical sources for that contaminant listed in Appendix G of this Part which are most applicable to the CWS.

5) If a CWS distributes water to its customers from multiple hydraulically independent distribution systems that are fed by different raw water sources, the table must contain a separate column for each service area and the report must identify each separate distribution system. Alternatively, a

CWS may produce separate reports tailored to include data for each service area.

6) The table(s) 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: the length of the violation, the potential adverse health effects, and actions taken by the CWS to address the violation. To describe the potential health effects, the CWS shall use the relevant language of Appendix H of this Part.

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

e) Information on Cryptosporidium, radon, and other contaminants:

1) If the CWS has performed any monitoring for Cryptosporidium, including monitoring performed to satisfy the requirements of Subpart L, that indicates that 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 CWS has performed any monitoring for radon which indicates that 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 CWS has performed additional monitoring that indicates the presence of other contaminants in the finished water, the report must include:

A) The results of the monitoring; and

B) An explanation of the significance of the results noting the existence of any health advisory or proposed regulation.

f) Compliance with an NPDWR. In addition to the requirements of subsection (d)(6) of this Section, the report must note any violation that occurred during the year covered by the report of a requirement listed below, and include a clear and readily

understandable explanation of the violation, any potential adverse health effects, and the steps the CWS has taken to correct the violation.

1) Monitoring and reporting of compliance data;

2) Filtration and disinfection prescribed by Subpart B of this Part. For CWSs that have failed to install adequate filtration or disinfection equipment or processes, or have had a failure of such equipment or processes which constitutes a violation, the report must include the following language as part of the explanation of potential adverse health effects: Inadequately treated water may contain disease-causing organisms. These organisms include bacteria, viruses, and parasites that can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.

3) Lead and copper control requirements prescribed by Subpart G of this Part. For systems that fail to take one or more actions prescribed by Sections 611.350(d), 611.351, 611.352, 611.353, or 611.354, the report must include the applicable language of Appendix H of this Part for lead, copper, or both.

4) Treatment techniques for acrylamide and epichlorohydrin prescribed by Section 611.296. For systems that violate the requirements of Section 611.296, the report must include the relevant language from 611.Appendix H.

5) Recordkeeping of compliance data.

6) Special monitoring requirements prescribed by Sections 611.510 and 611.630; and

7) Violation of the terms of a variance, adjusted standard, site-specific rule, or administrative or judicial order.

g) Variances, adjusted standards, and site-specific rules. If a system is operating under the terms of a variance, adjusted standard, or site-specific rule issued under Sections 611.111, 611.112, or 611.131, the report must contain:

1) An explanation of the reasons for the variance, adjusted standard, or site-specific rule;

2) The date on which the variance, adjusted standard, or site-specific rule was issued;

3) A brief status report on the steps the CWS is taking to install treatment, find alternative sources of water, or otherwise comply with the terms and schedules of the variance, adjusted standard, or site-specific rule; and

4) A notice of any opportunity for public input in the review, or renewal, of the variance, adjusted standard, or site-specific rule.

h) Additional information:

1) The report must contain 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 of subsections (h)(1)(A) through (C) of this Section or CWSs may use their own comparable language. The report also must include the language of subsection (h)(1)(D) of this Section.

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:

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

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

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

iv) Organic chemical contaminants, including synthetic and volatile organic chemicals, which are byproducts of industrial processes and petroleum production, and can also come from gas stations, urban stormwater runoff, and septic systems; and

v) Radioactive contaminants, which 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, USEPA prescribes regulations which limit the amount of certain contaminants in water provided by public water systems. United States Food and Drug Administration (USFDA) 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 water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the USEPA Safe Drinking Water Hotline (800-426-4791).

2) The report must include the telephone number of the owner, operator, or designee of the CWS as a source of additional information concerning the report.

3) In communities with a large proportion of non-English speaking residents, as determined by the Agency, the report must contain information in the appropriate language(s) regarding the importance of the report or contain a telephone number or address where such residents may contact the system to obtain a translated copy of the report or assistance in the appropriate language.

4) The report must include information about opportunities for public participation in decisions that may affect the quality of the water.

5) The CWS may include such additional information as it deems necessary for public education consistent with, and not detracting from, the purpose of the report.

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.884 Required Additional Health Information

a) All reports must prominently display the following language: Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons such as persons with cancer undergoing chemotherapy, persons who have undergone organ transplants, people with

HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. USEPA or Center for Disease Control guidelines on appropriate means to lessen the risk of infection by Cryptosporidium and other microbial contaminants are available from the USEPA Safe Drinking Water Hotline (800-426-4791).

b) A CWS that detects arsenic at levels above 25 µg/L, but below the MCL:

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

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

c) A CWS that detects nitrate at levels above 5 mg/L, but below the MCL:

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

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

d) A CWS that detects lead above the action level in more than 5%, and up to and including 10%, of homes sampled:

1) Shall include a short informational statement about the special impact of lead on children, using the following 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 30 seconds to 2 minutes before using tap water. Additional information is available from the USEPA Safe Drinking Water Hotline (800-426-4791); or

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

e) A CWS that detects TTHM above 0.080 mg/L, but below the MCL in Section 611.312, as an annual average, monitored and calculated under the provisions of Section 611.680, shall include the health effects language prescribed by Appendix H(73).

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.885 Report Delivery and Recordkeeping

a) Except as provided in subsection (g) of this Section, each CWS shall mail or otherwise directly deliver one copy of the report to each customer.

b) The CWS shall make a good faith effort to reach consumers who do not get water bills, using means recommended by the Agency. A good faith effort to reach consumers includes, but is not limited to, methods such as: posting the reports on the Internet, advertising the availability of the report in the news media, publication in a local newspaper, or delivery to community organizations.

c) No later than the date the CWS is required to distribute the report to its customers, each CWS shall mail a copy of the report to the Agency, followed within three months by a certification that the report has been distributed to customers, and that the information is correct and consistent with the compliance monitoring data previously submitted to the Agency.

d) No later than the date the CWS is required to distribute the report to its customers, each CWS shall deliver the report to any other agency or clearinghouse identified by the Agency.

e) Each CWS shall make its reports available to the public upon request.

f) Each CWS serving 100,000 or more persons shall post its current year's report to a publicly-accessible site on the Internet.

g) The Governor or his designee may waive the requirement of subsection (a) of this Section for a CWS serving fewer than 10,000 persons.

1) Such a CWS shall:

A) Publish the report in one or more local newspapers serving the county in which the CWS is located;

B) Inform the customers that the report will not be mailed, either in the newspapers in which the report is published or by other means approved by the Agency; and

C) Make the report available to the public upon request.

2) Systems serving fewer than 500 persons may forgo the requirements of subsections (g)(1)(A) and (B) of this Section if they provide notice at least once per year to their customers by mail, door-to-door delivery or by posting in a location approved by the Agency that the report is available upon request.

h) Any system subject to this Subpart shall retain copies of its consumer confidence report for no less than five years.

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.Appendix A Mandatory Health Effects Information

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

2) Carbon tetrachloride. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that carbon tetrachloride is a health concern at certain levels of exposure. This chemical was once a popular household cleaning fluid. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. USEPA has set the

enforceable drinking water standard for carbon tetrachloride at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

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

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

5) Benzene. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that benzene is a health concern at certain levels of exposure. This chemical is used as a solvent and degreaser of metals. It is also a major component of gasoline. Drinking water

contamination generally results from leaking underground gasoline and petroleum tanks or improper waste disposal. This chemical has been associated with significantly increased risks of leukemia among certain industrial workers who were exposed to relatively large amounts of this chemical during their working careers. This chemical has been shown to cause cancer in laboratory animals when the animals are exposed at high levels over their lifetimes. Chemicals that cause increased risk of cancer among exposed industrial workers and in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. USEPA has set the enforceable drinking water standard for benzene at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in humans and laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

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

7) Para-dichlorobenzene. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that para-dichlorobenzene is a health concern at certain levels of exposure. This chemical is a component of deodorizers, moth balls, and pesticides. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause liver and kidney damage in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals which cause adverse effects in laboratory animals also may cause adverse health effects in humans who are exposed at lower levels over long periods of time. USEPA has set the enforceable drinking water standard for para-dichlorobenzene at 0.075 parts per million (ppm) to reduce the risk of these adverse health effects which have been observed in laboratory animals. Drinking water which meets

this standard is associated with little to none of this risk and should be considered safe.

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

9) Fluoride. The U.S. Environmental Protection Agency requires that we send you this notice on the level of fluoride in your drinking water. The drinking water in your community has a fluoride concentration of [concentration to be provided by supplier] milligrams per liter (mg/L).

Federal regulations require that fluoride, which occurs naturally in your water supply, not exceed a concentration of 4.0 mg/L in drinking water. This is an enforceable standard called a Maximum Contaminant Level (MCL), and it has been established to protect the public health. Exposure to drinking water levels above 4.0 mg/L for many years may result in some cases of crippling skeletal fluorosis, which is a serious bone disorder.

Federal law also requires that we notify you when monitoring indicates that the fluoride in your drinking water exceeds 2.0 mg/L. This is intended to alert families about dental problems that might affect children under nine years of age. The fluoride concentration of your water exceeds this federal guideline.

Fluoride in children's drinking water at levels of approximately 1 mg/L reduces the number of dental cavities. However, some children exposed to levels of fluoride greater than about 2.0 mg/L may develop dental fluorosis. Dental fluorosis, in its moderate and severe forms, is a brown staining ~~and/~~or pitting of the permanent teeth.

Because dental fluorosis occurs only when developing teeth (before they erupt from the gums) are exposed to elevated fluoride levels, households without children are not expected to be affected by this level of fluoride. Families with children under the age of nine are encouraged to seek other sources of drinking water for their children to avoid the possibility of staining and pitting.

Your water supplier can lower the concentration of fluoride in your water so that you will still receive the benefits of cavity prevention while the possibility of stained and pitted teeth is minimized. Removal of fluoride may increase your water costs. Treatment systems are also commercially available for home use. Information on such systems is available at the address given below. Low fluoride bottled drinking water that would meet all standards is also commercially available.

For further information, contact [name of contact person to be provided by supplier] at your water system.

BOARD NOTE: Derived from 40 CFR 141.32(e)(9) and 143.5 (1995~~5~~8).

10) Microbiological contaminants (for use when there is a violation of the treatment technique requirements for filtration and disinfection in Subpart B or Subpart R of this Part). The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that the presence of microbiological contaminants are a health concern at certain levels of exposure. If water is inadequately treated, microbiological contaminants in that water may cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and any associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water, but also may be caused by a number of factors other than your drinking water. USEPA has set enforceable requirements for treating drinking water to reduce the risk of these adverse health effects. Treatment such as filtering and disinfecting the water removes or destroys microbiological contaminants. Drinking water which is treated to meet USEPA requirements is associated with little to none of this risk and should be considered safe.

11) Total coliforms. (To be used when there is a violation of Section 611.325(a) and not a violation of Section 611.325(b)). The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that the presence of total coliforms is a possible health concern. Total coliforms are common in the environment and are generally not harmful themselves. The presence of these bacteria in drinking water, however, generally is a result of a problem with water treatment or the pipes which distribute the water and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly

jaundice, and any associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water, but also may be caused by a number of factors other than your drinking water. USEPA has set an enforceable drinking water standard for total coliforms to reduce the risk of these adverse health effects. Under this standard, no more than 5.0 percent of the samples collected during a month can contain these bacteria, except that systems collecting fewer than 40 samples/month that have one total coliform-positive sample per month are not violating the standard. Drinking water which meets this standard is usually not associated with a health risk from disease-causing bacteria and should be considered safe.

12) Fecal Coliforms/E. coli. (To be used when there is a violation of Section 611.325(b) or both Section 611.325(a) and (b).) The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that the presence of fecal coliforms or E. coli is a serious health concern. Fecal coliforms and E. coli are generally not harmful themselves, but their presence in drinking water is serious because they usually are associated with sewage or animal wastes. The presence of these bacteria in drinking water is generally a result of a problem with water treatment or the pipes which distribute the water and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water, but also may be caused by a number of factors other than your drinking water. USEPA has set an enforceable drinking water standard for fecal coliforms and E. coli to reduce the risk of these adverse health effects. Under this standard all drinking water samples must be free of these bacteria. Drinking water which meets this standard is associated with little or none of this risk and should be considered safe. State and local health authorities recommend that consumers take the following precautions: [To be inserted by the public water system, according to instruction from State or local authorities].

13) Lead. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that lead is a health concern at certain exposure levels. Materials that contain lead have frequently been used in the construction of water supply distribution systems, and plumbing systems in private homes and other buildings. The most commonly found materials include service lines, pipes, brass and bronze fixtures, and solders and fluxes. Lead in these materials can contaminate drinking water as a result of the corrosion that takes place when water comes into contact with those materials. Lead can cause a variety of adverse health effects in humans. At relatively low levels of exposure, these effects may include interference with red blood cell chemistry, delays in normal physical and mental development in babies and

young children, slight deficits in the attention span, hearing, and learning abilities of children, and slight increases in the blood pressure of some adults. USEPA's national primary drinking water regulation requires all public water systems to optimize corrosion control to minimize lead contamination resulting from the corrosion of plumbing materials. Public water systems serving 50,000 people or fewer that have lead concentrations below 15 parts per billion (ppb) in more than 90% of tap water samples (the USEPA "action level") have optimized their corrosion control treatment. Any water system that exceeds the action level must also monitor their source water to determine whether treatment to remove lead in source water is needed. Any water system that continues to exceed the action level after installation of corrosion control ~~and/~~or source water treatment must eventually replace all lead service lines contributing in excess of 15 ppb of lead to drinking water. Any water system that exceeds the action level must also undertake a public education program to inform consumers of ways they can reduce their exposure to potentially high levels of lead in drinking water.

14) Copper. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that copper is a health concern at certain exposure levels. Copper, a reddish-brown metal, is often used to plumb residential and commercial structures that are connected to water distribution systems. Copper contaminating drinking water as a corrosion byproduct occurs as the result of the corrosion of copper pipes that remain in contact with water for a prolonged period of time. Copper is an essential nutrient, but at high doses it has been shown to cause stomach and intestinal distress, liver and kidney damage, and anemia. Persons with Wilson's disease may be at a higher risk of health effects due to copper than the general public. USEPA's national primary drinking water regulation requires all public water systems to install optimal corrosion control to minimize copper contamination resulting from the corrosion of plumbing materials. Public water systems serving 50,000 people or fewer that have copper concentrations below 1.3 parts per million (ppm) in more than 90% of tap water samples (the USEPA "action level") are not required to install or improve their treatment. Any water system that exceeds the action level must also monitor their source water to determine whether treatment to remove copper in source water is needed.

15) Asbestos. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that asbestos fibers greater than 10 micrometers in length are a health concern at certain levels of exposure. Asbestos is a naturally occurring mineral. Most asbestos fibers in drinking water are less than 10 micrometers in length and occur in drinking water from natural sources and from corroded asbestos-cement pipes in the distribution system. The major uses of asbestos were in the production of cements, floor tiles, paper products, paint, and caulking; in transportation-related applications;

and in the production of textiles and plastics. Asbestos was once a popular insulating and fire retardant material. Inhalation studies have shown that various forms of asbestos have produced lung tumors in laboratory animals. The available information on the risk of developing gastrointestinal tract cancer associated with the ingestion of asbestos from drinking water is limited. Ingestion of intermediate-range chrysolite asbestos fibers greater than 10 micrometers in length is associated with causing benign tumors in male rats. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. USEPA has set the drinking water standard for asbestos at 7 million long fibers per liter to reduce the potential risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets the USEPA standard is associated with little to none of this risk and should be considered safe with respect to asbestos.

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

17) Cadmium. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that cadmium is a health concern at certain levels of exposure. Food and the smoking of tobacco are common sources of general exposure. This inorganic metal is a contaminant in the metals used to galvanize pipe. It generally gets into water by corrosion of galvanized pipes or by improper waste disposal. This chemical has been shown to damage the kidney in animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during working careers also suffered damage to the kidney. USEPA has set the drinking water standard for cadmium at 0.005 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the USEPA standard is associated with little to none of this risk and is considered safe with respect to cadmium.

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

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

20) Nitrate. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that nitrate poses an acute health concern at certain levels of exposure. Nitrate is used in fertilizer and is found in sewage and wastes from human ~~and/~~or farm animals and generally gets into drinking water from those activities. Excessive levels of nitrate in drinking water have caused serious illness and sometimes death in infants under six months of age. The serious illness in infants is caused because nitrate is converted to nitrite in the body. Nitrite interferes with the oxygen carrying capacity of the child's blood. This is an acute disease in that symptoms can develop rapidly in infants. In most cases, health deteriorates over a period of days. Symptoms include shortness of breath and blueness of the skin. Clearly, expert medical advice should be sought immediately if these symptoms occur. The purpose of this notice is to encourage parents and other responsible parties to provide infants with an alternate source of drinking water. Local and State health authorities are the best source for information concerning alternate sources of drinking water for infants. USEPA has set the drinking water standard at 10 parts per million (ppm) for nitrate to protect against the risk of

these adverse effects. USEPA has also set a drinking water standard for nitrite at 1 ppm. To allow for the fact that the toxicity of nitrate and nitrite are additive, USEPA has also established a standard for the sum of nitrate and nitrite at 10 ppm. Drinking water that meets the USEPA standard is associated with little to none of this risk and is considered safe with respect to nitrate.

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

22) Selenium. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that selenium is a health concern at certain high levels of exposure. Selenium is also an essential nutrient at low levels of exposure. This inorganic chemical is found naturally in food and soils and is used in electronics, photocopy operations, the manufacture of glass, chemicals, drugs, and as a fungicide and a feed additive. In humans, exposure to high levels of selenium over a long period of time has resulted in a number of adverse health effects, including a loss of feeling and control in the arms and legs. USEPA has set the drinking water standard for selenium at 0.05 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the USEPA standard is associated with little to none of this risk and is considered safe with respect to selenium.

23) Acrylamide. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that acrylamide is a health

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

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

25) Aldicarb. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that aldicarb is a health concern at certain levels of exposure. Aldicarb is a widely used pesticide. Under certain soil and climatic conditions (e.g., sandy soil and high rainfall), aldicarb may leach into groundwater after normal agricultural applications to crops such as potatoes or peanuts or may enter drinking water supplies as a result of surface runoff. This chemical has been shown to damage the nervous system in laboratory animals such as rats and dogs exposed to high levels. USEPA has set the drinking water standard for aldicarb at 0.003 parts per million (ppm) to reduce the risk of adverse health effects. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to aldicarb.

26) Aldicarb sulfoxide. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that aldicarb sulfoxide is a health concern at certain levels of exposure. Aldicarb is a widely used pesticide. Aldicarb sulfoxide in groundwater is primarily a breakdown product of aldicarb. Under certain soil and climatic conditions (e.g., sandy soil and high rainfall), aldicarb sulfoxide may leach into groundwater after normal agricultural applications to crops such as potatoes or peanuts or may enter drinking water supplies as a result of surface runoff. This chemical has been shown to damage the nervous system in laboratory animals such as rats and dogs exposed to high levels. USEPA has set the drinking water standard for aldicarb sulfoxide at 0.004 parts per million (ppm) to reduce the risk of adverse health effects. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to aldicarb sulfoxide.

27) Aldicarb sulfone. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that aldicarb sulfone is a health concern at certain levels of exposure. Aldicarb is a widely used pesticide. Aldicarb sulfone in groundwater is primarily a breakdown product of aldicarb. Under certain soil and climatic conditions (e.g., sandy soil and high rainfall), aldicarb sulfone may leach into groundwater after normal agricultural applications to crops such as potatoes or peanuts or may enter drinking water supplies as a result of surface runoff. This chemical has been shown to damage the nervous system in laboratory animals such as rats and dogs exposed to high levels. USEPA has set the drinking water standard for aldicarb sulfone at 0.002 parts per million (ppm) to reduce the risk of adverse health effects. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to aldicarb sulfone.

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

29) Carbofuran. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that carbofuran is a health concern at certain levels of exposure. This organic chemical is a pesticide. When soil and climatic conditions are favorable, carbofuran may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical

has been shown to damage the nervous and reproductive systems of laboratory animals such as rats and mice exposed at high levels over their lifetimes. Some humans who were exposed to relatively large amounts of this chemical during their working careers also suffered damage to the nervous system. Effects on the nervous system are generally rapidly reversible. USEPA has set the drinking water standard for carbofuran at 0.04 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the USEPA standard is associated with little to none of this risk and is considered safe with respect to carbofuran.

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

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

32) o-Dichlorobenzene. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that o-dichlorobenzene is a health concern at certain levels of exposure. This organic chemical is used as a solvent in the production of pesticides and dyes.

It generally gets into water by improper waste disposal. This chemical has been shown to damage the liver, kidney, and the blood cells of laboratory animals such as rats and mice exposed to high levels during their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during working careers also suffered damage to the liver, nervous system, and circulatory system. USEPA has set the drinking water standard for o-dichlorobenzene at 0.6 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the USEPA standard is associated with little to none of this risk and is considered safe with respect to o-dichlorobenzene.

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

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

35) 1,2-Dichloropropane. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that 1,2-dichloropropane is a health concern at certain levels of exposure. This organic chemical is used as a solvent and pesticide. When soil and climatic

conditions are favorable, 1,2-dichloropropane may get into drinking water by runoff into surface water or by leaching into groundwater. It may also get into drinking water through improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. USEPA has set the drinking water standard for 1,2-dichloropropane at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets the USEPA standard is associated with little to none of this risk and is considered safe with respect to 1,2-dichloropropane.

36) 2,4-D. This contaminant is subject to an "additional State requirement". The supplier shall give the following notice if the level exceeds the Section 611.311 MCL. If the level exceeds the Section 611.310 MCL, but not that of Section 611.311, the supplier shall give a general notice under Section 611.854.

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

37) Epichlorohydrin. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that epichlorohydrin is a health concern at certain levels of exposure. Polymers made from epichlorohydrin are sometimes used in the treatment of water supplies as a flocculent to remove particulates. Epichlorohydrin generally gets into drinking water by improper use of these polymers. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. USEPA has set the drinking water standard for epichlorohydrin using a treatment technique to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. This treatment technique limits the amount of epichlorohydrin in the polymer

and the amount of the polymer which may be added to drinking water as a flocculent to remove particulates. Drinking water systems which comply with this treatment technique have little to no risk and are considered safe with respect to epichlorohydrin.

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

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

40) Heptachlor. This contaminant is subject to an “additional State requirement”. The supplier shall give the following notice if the level exceeds the Section 611.311 MCL. If the level exceeds the Section 611.310 MCL, but not that of Section 611.311, the supplier shall give a general notice under Section 611.854.

The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that heptachlor is a health concern at certain levels of exposure. This organic chemical was once a popular pesticide. When soil and climatic conditions are favorable, heptachlor may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes.

Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. USEPA has set the drinking water standards for heptachlor at 0.0004 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to heptachlor.

41) Heptachlor epoxide. This contaminant is subject to an "additional State requirement". The supplier shall give the following notice if the level exceeds the Section 611.311 MCL. If the level exceeds the Section 611.310 MCL, but not that of Section 611.311, the supplier shall give a general notice under Section 611.854.

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

42) Lindane. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that lindane is a health concern at certain levels of exposure. This organic chemical is used as a pesticide. When soil and climatic conditions are favorable, lindane may get into drinking water by runoff into surface water or by leaching into groundwater. This chemical has been shown to damage the liver, kidney, nervous system, and immune system of laboratory animals such as rats, mice and dogs exposed at high levels during their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the nervous system and circulatory system. USEPA has established the drinking water standard for lindane at 0.0002 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the USEPA standard is associated with little to none of this risk and is considered safe with respect to lindane.

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

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

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

46) Pentachlorophenol. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that pentachloro-

phenol is a health concern at certain levels of exposure. This organic chemical is widely used as a wood preservative, herbicide, disinfectant, and defoliant. It generally gets into drinking water by runoff into surface water or leaching into groundwater. This chemical has been shown to produce adverse reproductive effects and to damage the liver and kidneys of laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Some humans who were exposed to relatively large amounts of this chemical also suffered damage to the liver and kidneys. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. USEPA has set the drinking water standard for pentachlorophenol at 0.001 parts per million (ppm) to reduce the risk of adverse health effects. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to pentachlorophenol.

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

48) Tetrachloroethylene. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that tetrachloroethylene is a health concern at certain levels of exposure. This organic chemical has been a popular solvent, particularly for dry cleaning. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. USEPA has set the drinking water standard for tetrachloroethylene at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water that meets this standard is associated with little to none of this risk and is considered safe with respect to tetrachloroethylene.

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

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

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

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

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

54) Beryllium. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that beryllium is a health concern at certain levels of exposure. This inorganic chemical occurs naturally in soils, groundwater, and surface water and is often used in electrical equipment and electrical components. It generally gets into water from runoff from mining operations, discharge from processing plants, and improper waste disposal. Beryllium compounds have been associated with damage to the bones and lungs and induction of cancer in laboratory animals such as rats and mice when the animals are exposed to high levels during their lifetimes. There is limited evidence to suggest that beryllium may pose a cancer risk via drinking water exposure. Therefore, USEPA based the health assessment on noncancer effects with and extra uncertainty factor to account for possible carcinogenicity. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. USEPA has set the drinking water standard for beryllium at 0.004 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that

meets the USEPA standard is associated with little to none of this risk and is considered safe with respect to beryllium.

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

56) Nickel. This subsection corresponds with 40 CFR 141.32(e)(56) marked "reserved" by USEPA. This statement maintains structural consistency with USEPA rules.

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

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

59) Dalapon. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that dalapon is a health concern at

certain levels of exposure. This organic chemical is a widely used herbicide. It may get into drinking water after application to control grasses in crops, drainage ditches, and along railroads. This chemical has been associated with damage to the kidney and liver in laboratory animals when the animals are exposed to high levels during their lifetimes. USEPA has set the drinking water standard for dalapon at 0.2 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the USEPA standard is associated with little to none of this risk and is considered safe with respect to dalapon.

60) Dichloromethane. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that dichloromethane (methylene chloride) is a health concern at certain levels of exposure. This organic chemical is a widely used solvent. It is used in the manufacture of paint remover, as a metal degreaser, and as an aerosol propellant. It generally gets into water after improper discharge of waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed to high levels during their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed over long periods of time. USEPA has set the drinking water standard for dichloromethane at 0.005 parts per million (ppm) to protect against the risk of cancer or other adverse health effects. Drinking water that meets the USEPA standard is associated with little to none of this risk and is considered safe with respect to dichloromethane.

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

62) Di(2-ethylhexyl)phthalate. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that di(2-ethylhexyl)phthalate is a health concern at certain levels of exposure. Di(2-ethylhexyl)phthalate is a widely used plasticizer, which is primarily used in the production of polyvinyl chloride (PVC) resins. It may get into drinking water after improper waste disposal. This chemical has been shown to cause cancer in

laboratory animals such as rats and mice when the animals are exposed to high levels during their lifetimes. USEPA has set the drinking water standard for di-(2-ethylhexyl)phthalate at 0.006 parts per million (ppm) to protect against the risk of cancer or other adverse health effects which have been oabserved in laboratory animals. Drinking water that meets the USEPA standard is associated with little to none of this risk and is considered safe with respect to di(2-ethylhexyl)phthalate.

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

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

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

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

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

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

69) Hexachlorocyclopentadiene. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that hexachlorocyclopentadiene is a health concern at certain levels of exposure. This organic chemical is a used as an intermediate in the manufacture of pesticides and flame retardants. It may get into water by discharge from production facilities. This chemical has been shown to damage the kidney and the stomach

of laboratory animals when exposed to high levels during their lifetimes. USEPA has set the drinking water standard for hexachlorocyclopentadiene at 0.05 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the USEPA standard is associated with little to none of this risk and is considered safe with respect to hexachlorocyclopentadiene.

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

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

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

73) 1,2,4-Trichlorobenzene. The United States Environmental Protection Agency (USEPA) sets drinking water standards and has determined that 1,2,4-trichlorobenzene is a health concern at certain levels of exposure. This organic chemical is used as a dye carrier and as a precursor in herbicide manufacture. It generally gets into drinking water by discharges from industrial activities. This chemical has been shown to cause damage to several organs, including the adrenal glands. USEPA has set the drinking water standard for 1,2,4-trichlorobenzene at 0.07 parts per million (ppm) to protect against the risk of these adverse health effects. Drinking water that meets the USEPA standard is associated with little to none of this risk and is considered safe with respect to 1,2,4-trichlorobenzene.

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

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

76) Chlorine. The USEPA sets drinking water standards and has determined that chlorine is a health concern at certain levels of exposure. Chlorine is added to drinking water as a disinfectant to kill bacteria and other disease-causing microorganisms and is also added to provide continuous disinfection throughout the distribution system. Disinfection is required for surface water systems. However, at high doses for extended periods of time, chlorine has been shown to

affect blood and the liver in laboratory animals. USEPA has set a drinking water standard for chlorine to protect against the risk of these adverse effects. Drinking water which meets this USEPA standard is associated with little to none of this risk and should be considered safe with respect to chlorine.

77) Chloramines. The USEPA sets drinking water standards and has determined that chloramines are a health concern at certain levels of exposure. Chloramines are added to drinking water as a disinfectant to kill bacteria and other disease-causing microorganisms and are also added to provide continuous disinfection throughout the distribution system. Disinfection is required for surface water systems. However, at high doses for extended periods of time, chloramines have been shown to affect blood and the liver in laboratory animals. USEPA has set a drinking water standard for chloramines to protect against the risk of these adverse effects. Drinking water which meets this USEPA standard is associated with little to none of this risk and should be considered safe with respect to chloramines.

78) Chlorine dioxide. The USEPA sets drinking water standards and has determined that chlorine dioxide is a health concern at certain levels of exposure. Chlorine dioxide is used in water treatment to kill bacteria and other disease-causing microorganisms and can be used to control tastes and odors. Disinfection is required for surface water systems. However, at high doses, chlorine dioxide-treated drinking water has been shown to affect blood in laboratory animals. Also, high levels of chlorine dioxide given to laboratory animals in drinking water have been shown to cause neurological effects on the developing nervous system. These neurodevelopmental effects may occur as a result of a short-term excessive chlorine dioxide exposure. To protect against such potentially harmful exposures, USEPA requires chlorine dioxide monitoring at the treatment plant, where disinfection occurs, and at representative points in the distribution system serving water users. USEPA has set a drinking water standard for chlorine dioxide to protect against the risk of these adverse effects.

Note: In addition to the language in this introductory text of subsection (78), systems must include either the language in subsection (78)(a) or (78)(b) of this Appendix. Systems with a violation at the treatment plant, but not in the distribution system, are required to use the language in subsection (78)(a) and treat the violation as a nonacute violation. Systems with a violation in the distribution system are required to use the language in subsection (78)(b) of this Appendix and treat the violation as an acute violation.

a) The chlorine dioxide violations reported today are the result of exceedences at the treatment facility only, and do not include violations within the distribution system serving users of this water supply. Continued

compliance with chlorine dioxide levels within the distribution system minimizes the potential risk of these violations to present consumers.

b) The chlorine dioxide violations reported today include exceedences of the USEPA standard within the distribution system serving water users. Violations of the chlorine dioxide standard within the distribution system may harm human health based on short-term exposures. Certain groups, including pregnant women, infants, and young children, may be especially susceptible to adverse effects of excessive exposure to chlorine dioxide-treated water. The purpose of this notice is to advise that such persons should consider reducing their risk of adverse effects from these chlorine dioxide violations by seeking alternate sources of water for human consumption until such exceedences are rectified. Local and State health authorities are the best sources for information concerning alternate drinking water.

79) Disinfection byproducts (DBPs) and treatment technique for DBPs. The USEPA sets drinking water standards and requires the disinfection of drinking water. However, when used in the treatment of drinking water, disinfectants react with naturally-occurring organic and inorganic matter present in water to form chemicals called disinfection byproducts (DBPs). USEPA has determined that a number of DBPs are a health concern at certain levels of exposure. Certain DBPs, including some trihalomethanes (THMs) and some haloacetic acids (HAAs), have been shown to cause cancer in laboratory animals. Other DBPs have been shown to affect the liver and the nervous system, and cause reproductive or developmental effects in laboratory animals. Exposure to certain DBPs may produce similar effects in people. USEPA has set standards to limit exposure to THMs, HAAs, and other DBPs.

80) Bromate. The USEPA sets drinking water standards and has determined that bromate is a health concern at certain levels of exposure. Bromate is formed as a byproduct of ozone disinfection of drinking water. Ozone reacts with naturally occurring bromide in the water to form bromate. Bromate has been shown to produce cancer in rats. USEPA has set a drinking water standard to limit exposure to bromate.

81) Chlorite. The USEPA sets drinking water standards and has determined that chlorite is a health concern at certain levels of exposure. Chlorite is formed from the breakdown of chlorine dioxide, a drinking water disinfectant. Chlorite in drinking water has been shown to affect blood and the developing nervous system. USEPA has set a drinking water standard for chlorite to protect against these effects. Drinking water which meets this standard is associated with little to none of these risks and should be considered safe with respect to chlorite.

BOARD NOTE: Derived from 40 CFR 141.32(e) (1995~~5~~8).

(Source: Amended at 23 Ill. Reg. _____, effective _____)

Section 611.Appendix F Converting Maximum Contaminant Level (MCL) Compliance Values for Consumer Confidence Reports

Key

AL=Action Level
MCL=Maximum Contaminant Level
MCLG=Maximum Contaminant Level Goal
MFL=million fibers per liter
mrem/year=millirems per year (a measure of radiation absorbed by the body)
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
ppq=parts per quadrillion, or picograms per liter
TT=Treatment Technique

Contaminant	MCL in compliance units (mg/L)	multiply by . . .	MCL in CCR units	MCLG in CCR units
Microbiological Contaminants				
1. Total Coliform Bacteria			(systems that collect 40 or more samples per month) 5% of monthly samples are positive; (systems that collect fewer than 40 samples per month) 1 positive monthly sample.	0
2. Fecal coliform and E. coli			A routine	0

			sample and a repeat sample are total coliform positive, and one is also fecal coliform or E. coli positive.	
3. Turbidity			TT (NTU)	n/a
Radioactive Contaminants				
4. Beta/photon emitters	4 mrem/yr		4 mrem/yr	0
5. Alpha emitters	15 pCi/L		15 pCi/L	0
6. Combined radium	5 pCi/L		5 pCi/L	0
Inorganic Contaminants				
7. Antimony	0.006	1000	6 ppb	6
8. Arsenic	0.05	1000	50 ppb	n/a
9. Asbestos	7 MFL		7 MFL	7
10. Barium	2		2 ppm	2
11. Beryllium	0.004	1000	4 ppb	4
12. Cadmium	0.005	1000	5 ppb	5
13. Chromium	0.1	1000	100 ppb	100
14. Copper	AL=1.3		AL=1.3 ppm	1.3
15. Cyanide	0.2	1000	200 ppb	200
16. Fluoride	4		4 ppm	4
17. Lead	AL=.015	1000	AL=15 ppb	0
18. Mercury (inorganic)	0.002	1000	2 ppb	2
19. Nitrate (as Nitrogen)	10		10 ppm	10
20. Nitrite (as Nitrogen)	1		1 ppm	1
21. Selenium	0.05	1000	50 ppb	50
22. Thallium	0.002	1000	2 ppb	0.5
Synthetic Organic Contaminants Including Pesticides and Herbicides				
23. 2,4-D	0.07	1000	70 ppb	70
24. 2,4,5-TP [Silvex]	0.05	1000	50 ppb	50
25. Acrylamide			TT	0
26. Alachlor	0.002	1000	2 ppb	0
27. Atrazine	0.003	1000	3 ppb	3
28. Benzo(a)pyrene [PAH]	0.0002	1,000,000	200 ppt	0
29. Carbofuran	0.04	1000	40 ppb	40
30. Chlordane	0.002	1000	2 ppb	0

31. Dalapon	0.2	1000	200 ppb	200
32. Di(2-ethylhexyl)adipate	0.4	1000	400 ppb	400
33. Di(2-ethylhexyl) phthalate	0.006	1000	6 ppb	0
34. Dibromochloropropane	0.0002	1,000,000	200 ppt	0
35. Dinoseb	0.007	1000	7 ppb	7
36. Diquat	0.02	1000	20 ppb	20
37. Dioxin [2,3,7,8-TCDD]	0.00000003	1,000,000,000	30 ppq	0
38. Endothall	0.1	1000	100 ppb	100
39. Endrin	0.002	1000	2 ppb	2
40. Epichlorohydrin			TT	0
41. Ethylene dibromide	0.00005	1,000,000	50 ppt	0
42. Glyphosate	0.7	1000	700 ppb	700
43. Heptachlor	0.0004	1,000,000	400 ppt	0
44. Heptachlor epoxide	0.0002	1,000,000	200 ppt	0
45. Hexachlorobenzene	0.001	1000	1 ppb	0
46. Hexachlorocyclopentadiene	0.05	1000	50 ppb	50
47. Lindane	0.0002	1,000,000	200 ppt	200
48. Methoxychlor	0.04	1000	40 ppb	40
49. Oxamyl [Vydate]	0.2	1000	200 ppb	200
50. PCBs [Polychlorinated biphenyls]	0.0005	1,000,000	500 ppt	0
51. Pentachlorophenol	0.001	1000	1 ppb	0
52. Picloram	0.5	1000	500 ppb	500
53. Simazine	0.004	1000	4 ppb	4
54. Toxaphene	0.003	1000	3 ppb	0
Volatile Organic Contaminants				
55. Benzene	0.005	1000	5 ppb	0
56. Carbon tetrachloride	0.005	1000	5 ppb	0
57. Chlorobenzene	0.1	1000	100 ppb	100
58. o-Dichlorobenzene	0.6	1000	600 ppb	600
59. p-Dichlorobenzene	0.075	1000	75 ppb	75
60. 1,2-Dichloroethane	0.005	1000	5 ppb	0
61. 1,1-Dichloroethylene	0.007	1000	7 ppb	7
62. cis-1,2-Dichloroethylene	0.07	1000	70 ppb	70
63. trans-1,2-Dichloroethylene	0.1	1000	100 ppb	100
64. Dichloromethane	0.005	1000	5 ppb	0
65. 1,2-Dichloropropane	0.005	1000	5 ppb	0
66. Ethylbenzene	0.7	1000	700 ppb	700
67. Styrene	0.1	1000	100 ppb	100
68. Tetrachloroethylene	0.005	1000	5 ppb	0
69. 1,2,4-Trichlorobenzene	0.07	1000	70 ppb	70
70. 1,1,1-Trichloroethane	0.2	1000	200 ppb	200
71. 1,1,2-Trichloroethane	0.005	1000	5 ppb	3
72. Trichloroethylene	0.005	1000	5 ppb	0

73. TTHMs [Total trihalomethanes]	0.10	1000	100 ppb	n/a
74. Toluene	1		1 ppm	1
75. Vinyl Chloride	0.002	1000	2 ppb	0
76. Xylenes	10		10 ppm	10

BOARD NOTE: Derived from Appendix A to Subpart O, 40 CFR Subpart O (1998).

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.Appendix G Regulated Contaminants

Key

AL=Action Level
MCL=Maximum Contaminant Level
MCLG=Maximum Contaminant Level Goal
MFL=million fibers per liter
mrem/year=millirems per year (a measure of radiation absorbed by the body)
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
ppq=parts per quadrillion, or picograms per liter
TT=Treatment Technique

Contaminant (units)	MCLG	MCL	Major sources in drinking water
Microbiological Contaminants			
1. Total Coliform Bacteria	0	(systems that collect 40 or more samples per month) 5% of monthly samples are positive; (systems that collect fewer than 40 samples per month) 1 positive sample	Naturally present in the environment
2. Fecal coliform and E. coli	0	A routine sample and a repeat sample	Human and animal fecal waste

		are fecal coliform positive, and one is also fecal coliform or E. coli positive	
3. Turbidity	n/a	TT	Soil runoff
Radioactive Contaminants			
4. Beta/photon emitters (mrem/yr)	0	4	Decay of natural and man-made deposits
5. Alpha emitters (pCi/L)	0	15	Erosion of natural deposits
6. Combined radium (pCi/L)	0	5	Erosion of natural deposits
Inorganic Contaminants			
7. Antimony (ppb)	6	6	Discharge from petroleum refineries; Fire retardants; Ceramics; Electronics; Solder
8. Arsenic (ppb)	n/a	50	Erosion of natural deposits; Runoff from orchards; Runoff from glass and electronics production wastes
9. Asbestos (MFL)	7	7	Decay of asbestos cement water mains; Erosion of natural deposits
10. Barium (ppm)	2	2	Discharge of drilling wastes; Discharge from metal refineries; Erosion of natural deposits
11. Beryllium (ppb)	4	4	Discharge from metal refineries and coal-burning factories; Discharge from electrical, aerospace, and defense industries
12. Cadmium (ppb)	5	5	Corrosion of galvanized pipes; Erosion of natural deposits; Discharge from metal refineries; Runoff from waste batteries and paints
13. Chromium (ppb)	100	100	Discharge from steel and pulp mills; Erosion of natural deposits
14. Copper (ppm)	1.3	AL=1.3	Corrosion of household plumbing systems; Erosion of natural deposits; Leaching

			from wood preservatives
15. Cyanide (ppb)	200	200	Discharge from steel/metal factories; Discharge from plastic and fertilizer factories
16. Fluoride (ppm)	4	4	Erosion of natural deposits; Water additive which promotes strong teeth; Discharge from fertilizer and aluminum factories
17. Lead (ppb)	0	AL=15	Corrosion of household plumbing systems; Erosion of natural deposits
18. Mercury [inorganic] (ppb)	2	2	Erosion of natural deposits; Discharge from refineries and factories; Runoff from landfills; Runoff from cropland
19. Nitrate [as Nitrogen] (ppm)	10	10	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
20. Nitrite [as Nitrogen] (ppm)	1	1	Runoff from fertilizer use; Leaching from septic tanks, sewage; Erosion of natural deposits
21. Selenium (ppb)	50	50	Discharge from petroleum and metal refineries; Erosion of natural deposits; Discharge from mines
22. Thallium (ppb)	0.5	2	Leaching from ore-processing sites; Discharge from electronics, glass, and drug factories
Synthetic Organic Contaminants Including Pesticides and Herbicides			
23. 2,4-D (ppb)	70	70	Runoff from herbicide used on row crops
24. 2,4,5-TP [Silvex] (ppb)	50	50	Residue of banned herbicide
25. Acrylamide	0	TT	Added to water during sewage/wastewater treatment
26. Alachlor (ppb)	0	2	Runoff from herbicide used on row crops
27. Atrazine (ppb)	3	3	Runoff from herbicide used on row crops

28. Benzo(a)pyrene [PAH] (nanograms/L)	0	200	Leaching from linings of water storage tanks and distribution lines
29. Carbofuran (ppb)	40	40	Leaching of soil fumigant used on rice and alfalfa
30. Chlordane (ppb)	0	2	Residue of banned termiticide
31. Dalapon (ppb)	200	200	Runoff from herbicide used on rights of way
32. Di(2-ethylhexyl)adipate (ppb)	400	400	Discharge from chemical factories
33. Di(2-ethylhexyl) phthalate (ppb)	0	6	Discharge from rubber and chemical factories
34 Dibromochloropropane (ppt)	0	200	Runoff/leaching from soil fumigant used on soybeans, cotton, pineapples, and orchards
35. Dinoseb (ppb)	7	7	Runoff from herbicide used on soybeans and vegetables
36. Diquat (ppb)	20	20	Runoff from herbicide use
37. Dioxin [2,3,7,8-TCDD] (ppq)	0	30	Emissions from waste incineration and other combustion; Discharge from chemical factories
38. Endothall (ppb)	100	100	Runoff from herbicide use
39. Endrin (ppb)	2	2	Residue of banned insecticide
40. Epichlorohydrin	0	TT	Discharge from industrial chemical factories; An impurity of some water treatment chemicals
41. Ethylene dibromide (ppt)	0	50	Discharge from petroleum refineries
42. Glyphosate (ppb)	700	700	Runoff from herbicide use
43. Heptachlor (ppt)	0	400	Residue of banned termiticide
44. Heptachlor epoxide (ppt)	0	200	Breakdown of heptachlor
45. Hexachlorobenzene (ppb)	0	1	Discharge from metal refineries and agricultural chemical factories
46. Hexachlorocyclo-pentadiene (ppb)	50	50	Discharge from chemical factories
47. Lindane (ppt)	200	200	Runoff/leaching from insecticide used on cattle, lumber, gardens
48. Methoxychlor (ppb)	40	40	Runoff/leaching from insecticide used on fruits,

			vegetables, alfalfa, livestock
49. Oxamyl [Vydate](ppb)	200	200	Runoff/leaching from insecticide used on apples, potatoes, and tomatoes
50. PCBs [Polychlorinated biphenyls] (ppt)	0	500	Runoff from landfills; Discharge of waste chemicals
51. Pentachlorophenol (ppb)	0	1	Discharge from wood preserving factories
52. Picloram (ppb)	500	500	Herbicide runoff
53. Simazine (ppb)	4	4	Herbicide runoff
54. Toxaphene (ppb)	0	3	Runoff/leaching from insecticide used on cotton and cattle
Volatile Organic Contaminants			
55. Benzene (ppb)	0	5	Discharge from factories; Leaching from gas storage tanks and landfills
56. Carbon tetrachloride (ppb)	0	5	Discharge from chemical plants and other industrial activities
57. Chlorobenzene (ppb)	100	100	Discharge from chemical and agricultural chemical factories
58. o-Dichlorobenzene (ppb)	600	600	Discharge from industrial chemical factories
59. p-Dichlorobenzene (ppb)	75	75	Discharge from industrial chemical factories
60. 1,2-Dichloroethane (ppb)	0	5	Discharge from industrial chemical factories
61. 1,1-Dichloroethylene (ppb)	7	7	Discharge from industrial chemical factories
62. cis-1,2-Dichloroethylene (ppb)	70	70	Discharge from industrial chemical factories
63. trans-1,2-Dichloroethylene (ppb)	100	100	Discharge from industrial chemical factories
64. Dichloromethane (ppb)	0	5	Discharge from pharmaceutical and chemical factories
65. 1,2-Dichloropropane (ppb)	0	5	Discharge from industrial chemical factories
66. Ethylbenzene (ppb)	700	700	Discharge from petroleum refineries
67. Styrene (ppb)	100	100	Discharge from rubber and plastic factories; Leaching from landfills

68. Tetrachloroethylene (ppb)	0	5	Leaching from PVC pipes; Discharge from factories and dry cleaners
69. 1,2,4-Trichlorobenzene (ppb)	70	70	Discharge from textile—finishing factories
70. 1,1,1-Trichloroethane (ppb)	200	200	Discharge from metal degreasing sites and other factories
71. 1,1,2-Trichloroethane (ppb)	3	5	Discharge from industrial chemical factories
72. Trichloroethylene (ppb)	0	5	Discharge from metal degreasing sites and other factories
73. TTHMs [Total trihalomethanes] (ppb)	n/a	100	Byproduct of drinking water chlorination
74. Toluene (ppm)	1	1	Discharge from petroleum factories
75. Vinyl Chloride (ppb)	0	2	Leaching from PVC piping; Discharge from plastics factories
76. Xylenes (ppm)	10	10	Discharge from petroleum factories; Discharge from chemical factories

BOARD NOTE: Derived from Appendix B to Subpart O, 40 CFR Subpart O (1998).

(Source: Added at 23 Ill. Reg. _____, effective _____)

Section 611.Appendix H Health Effects Language

Microbiological Contaminants

1) Total Coliform. 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.

2) Fecal coliform/E.coli. 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, and people with severely compromised immune systems.

3) Turbidity. 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.

Radioactive Contaminants

4) Beta/photon emitters. Certain minerals are radioactive and may emit forms of radiation known as photons and beta radiation. Some people who drink water containing beta and photon emitters in excess of the MCL over many years may have an increased risk of getting cancer.

5) Alpha emitters. 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.

6) Combined Radium 226/228. 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.

Inorganic Contaminants

7) Antimony. 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.

8) Arsenic. 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.

9) Asbestos. 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.

10) Barium. Some people who drink water containing barium in excess of the MCL over many years could experience an increase in their blood pressure.

11) Beryllium. Some people who drink water containing beryllium well in excess of the MCL over many years could develop intestinal lesions.

12) Cadmium. Some people who drink water containing cadmium in excess of the MCL over many years could experience kidney damage.

13) Chromium. Some people who use water containing chromium well in excess of the MCL over many years could experience allergic dermatitis.

14) Copper. 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.

15) Cyanide. Some people who drink water containing cyanide well in excess of the MCL over many years could experience nerve damage or problems with their thyroid.

16) Fluoride. 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.

17) Lead. 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.

18) Mercury (inorganic). Some people who drink water containing inorganic mercury well in excess of the MCL over many years could experience kidney damage.

19) Nitrate. Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.

20) Nitrite. Infants below the age of six months who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.

21) Selenium. 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.

22) Thallium. 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.

Synthetic Organic Contaminants Including Pesticides and Herbicides

23) 2,4-D. 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.

24) 2,4,5-TP (Silvex). Some people who drink water containing silvex in excess of the MCL over many years could experience liver problems.

25) Acrylamide. 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.

26) Alachlor. 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.

27) Atrazine. 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.

28) Benzo(a)pyrene (PAH). 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.

29) Carbofuran. 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.

30) Chlordane. 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.

31) Dalapon. Some people who drink water containing dalapon well in excess of the MCL over many years could experience minor kidney changes.

32) Di(2-ethylhexyl)adipate. 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.

33) Di (2-ethylhexyl) phthalate. 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.

34) Dibromochloropropane (DBCP). 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.

35) Dinoseb. Some people who drink water containing dinoseb well in excess of the MCL over many years could experience reproductive difficulties.

36) Dioxin (2,3,7,8-TCDD). 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.

37) Diquat. Some people who drink water containing diquat in excess of the MCL over many years could get cataracts.

38) Endothall. Some people who drink water containing endothall in excess of the MCL over many years could experience problems with their stomach or intestines.

39) Endrin. Some people who drink water containing endrin in excess of the MCL over many years could experience liver problems.

40) Epichlorohydrin. 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.

41) Ethylene dibromide. 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.

42) Glyphosate. Some people who drink water containing glyphosate in excess of the MCL over many years could experience problems with their kidneys or reproductive difficulties.

43) Heptachlor. 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.

44) Heptachlor epoxide. 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.

45) Hexachlorobenzene. 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.

46) Hexachlorocyclopentadiene. Some people who drink water containing hexachlorocyclopentadiene well in excess of the MCL over many years could experience problems with their kidneys or stomach.

47) Lindane. Some people who drink water containing lindane in excess of the MCL over many years could experience problems with their kidneys or liver.

48) Methoxychlor. Some people who drink water containing methoxychlor in excess of the MCL over many years could experience reproductive difficulties.

49) Oxamyl [Vydate]. Some people who drink water containing oxamyl in excess of the MCL over many years could experience slight nervous system effects.

50) PCBs [Polychlorinated biphenyls]. 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.

51) Pentachlorophenol. 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.

52) Picloram. Some people who drink water containing picloram in excess of the MCL over many years could experience problems with their liver.

53) Simazine. Some people who drink water containing simazine in excess of the MCL over many years could experience problems with their blood.

54) Toxaphene. Some people who drink water containing toxaphene in excess of the MCL over many years could have problems with their kidneys, liver, or thyroid, and may have an increased risk of getting cancer.

Volatile Organic Contaminants

55) Benzene. 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.

56) Carbon Tetrachloride. 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.

57) Chlorobenzene. Some people who drink water containing chlorobenzene in excess of the MCL over many years could experience problems with their liver or kidneys.

58) o-Dichlorobenzene. 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.

59) p-Dichlorobenzene. 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.

60) 1,2-Dichloroethane. 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.

61) 1,1-Dichloroethylene. Some people who drink water containing 1,1-dichloroethylene in excess of the MCL over many years could experience problems with their liver.

62) cis-1,2-Dichloroethylene. Some people who drink water containing cis-1,2-dichloroethylene in excess of the MCL over many years could experience problems with their liver.

63) trans-1,2-Dicholoroethylene. 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.

64) Dichloromethane. 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.

65) 1,2-Dichloropropane. 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.

66) Ethylbenzene. Some people who drink water containing ethylbenzene well in excess of the MCL over many years could experience problems with their liver or kidneys.

67) Styrene. 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.

68) Tetrachloroethylene. 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.

69) 1,2,4-Trichlorobenzene. 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.

70) 1,1,1,-Trichloroethane. 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.

71) 1,1,2-Trichloroethane. 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.

72) Trichloroethylene. 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.

73) TTHMs [Total Trihalomethanes]. Some people who drink water containing trihalomethanes in excess of the MCL over many years may experience problems with their liver, kidneys, or central nervous systems, and may have an increased risk of getting cancer.

74) Toluene. 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.

75) Vinyl Chloride. Some people who drink water containing vinyl chloride in excess of the MCL over many years may have an increased risk of getting cancer.

76) Xylenes. Some people who drink water containing xylenes in excess of the MCL over many years could experience damage to their nervous system.

(Source: Added at 23 Ill. Reg. _____, effective _____)