

ILLINOIS POLLUTION CONTROL BOARD  
August 9, 1990

IN THE MATTER OF: )

SAFE DRINKING WATER ACT )  
REGULATIONS )

R88-26  
(Rulemaking)

FINAL ORDER. ADOPTED RULE

ORDER OF THE BOARD (by J. Anderson):

Pursuant to Section 17.5 of the Environmental Protection Act (Act), the Board is adopting regulations which are identical in substance to USEPA regulations implementing the Safe Drinking Water Act (SDWA). This involves the repeal of portions of existing 35 Ill. Adm. Code 604, 605, 606 and 607, and adoption of a new 35 Ill. Adm. Code 611.

Section 17.5 of the Act provides for quick adoption of regulations which are "identical in substance" to federal regulations; Section 17.5 provides that Title VII of the Act and Section 5 of the Illinois Administrative Procedure Act (APA) shall not apply. Because this rulemaking is not subject to Section 5 of the APA, it is not subject to first notice or to second notice review by the Joint Committee on Administrative Rules (JCAR).

The Board adopted a Proposed Opinion and Order on October 5, 1989. The Proposal appeared on December 1, 1989, at 13 Ill. Reg. 18690. As is discussed in the accompanying Opinion, the Board has withdrawn the May 24, 1990, final Opinion and Order in this matter, and is replacing it with this Opinion and Order.

The text of new 35 Ill. Adm. Code 611, and the revisions to 35 Ill. Adm. Code 604 through 607, follows. Because of its length, the text of the adopted rules will not appear in the Opinion volumes. However, the complete text will be distributed to persons on the mailing list, and will appear in the Illinois Register.

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

PART 604  
FINISHED WATER AND RAW WATER QUALITY AND QUANTITY

SUBPART A: BACTERIOLOGICAL QUALITY

Section  
604.101 Standard Sample  
604.102 Total Coliform Limits  
604.103 Total Coliform Check-Samples  
604.104 Bacterial Plate Count Sample  
604.105 Bacterial Plate Count Limits

SUBPART B: CHEMICAL AND PHYSICAL QUALITY

Section  
604.201 Finished Water Quality (Repealed)  
604.202 Contaminants and Maximum Allowable Concentrations (Repealed)  
604.203 Exceptions to Maximum Allowable Concentrations (Repealed)  
604.204 Action Pursuant to Exceedance of Maximum Allowable Concentration  
(Repealed)

SUBPART C: RADIOLOGICAL QUALITY

Section  
604.301 Radium-226, -228, and Gross Alpha Particle Activity (Repealed)  
604.302 Man-Made Radioactivity (Repealed)  
604.303 Determining Maximum Allowable Concentrations (Repealed)

SUBPART D: CHLORINATION AND FLUORIDATION

Section  
604.401 Chlorination Requirement  
604.402 Chlorination Exemption Requirements (Repealed)  
604.403 Conditions for Obtaining a Written Chlorination Exemption (Repealed)  
604.404 Loss of Chlorination Exemption (Repealed)  
604.405 Fluoridation Requirement (Repealed)

SUBPART E: RAW WATER

Section  
604.501 Raw Water Quality (Repealed)  
604.502 Raw Water Quantity (Repealed)

Appendix: References to Former Rules

AUTHORITY: Implementing Section 17 and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat., 1987, ch. 111<sup>1/2</sup> pars. 1017 and 1027).

SOURCE: Filed with Secretary of State January 1, 1978; amended at 2 Ill. Reg. 36, p. 72, effective August 29, 1978; amended at 3 Ill. Reg. 13, p.236, effective March 30, 1979; amended and codified at 6 Ill. Reg. 11497, effective September 14, 1982; amended at 6 Ill. Reg. 14344, effective November 3, 1982; amended in R88-26 at 14 Ill. Reg. , effective .

SUBPART A: BACTERIOLOGICAL QUALITY

Section 604.101 Standard Sample

This Section applies until the effective date for the filtration and disinfection requirements of 35 Ill. Adm. Code 611.Subpart B as applicable to each supply.

- a) For the membrane filter technique, not less than 100 milliliters.
- b) For the fermentation tube method, five standard portions of either ten milliliters or 100 milliliters.

(Source: Amended at 14 Ill. Reg. , effective )

Section 604.102 Total Coliform Limits

This Section applies until the effective date for the filtration and disinfection requirements of 35 Ill. Adm. Code 611.Subpart B as applicable to each supply. The number of organisms of the coliform group present in potable water, as indicated by representative samples examined, shall not exceed the following limits:

- a) When the membrane filter technique is used, arithmetic mean coliform density of all standard samples examined per month shall not exceed one per 100 milliliters. Coliform colonies per standard sample shall not exceed four per 100 milliliters in:
  - 1) more than one standard sample when less than twenty are examined per month; or
  - 2) more than five percent of the standard samples when twenty or more are examined per month.
- b) When ten-milliliter standard portions are examined by the fermentation tube method, not more than ten percent in any month shall show the presence of the coliform group. The presence of the coliform group in three or more ten-milliliter portions of a standard sample shall not be allowable if this occurs in:
  - 1) more than one sample per month when less than twenty are examined per month; or
  - 2) more than five percent of the samples when twenty or more are examined per month.
- c) When 100-milliliter standard portions are examined by the fermentation tube method, not more than sixty percent in any month shall show the presence of the coliform group. The presence of the coliform group in five of the 100-milliliter portions of a standard sample shall not be allowable if this occurs in:
  - 1) more than one sample per month when less than five are examined per month; or

- 2) more than twenty percent of the samples when five or more are examined per month.

(Source: Amended at 14 Ill. Reg. , effective )

#### Section 604.103 Total Coliform Check-Samples

This Section applies until the effective date for the filtration and disinfection requirements of 35 Ill. Adm. Code 611.Subpart B as applicable to each supply.

- a) When coliform densities exceed the limit established in Section 604.102, they may indicate a breakdown in the protective barriers and shall be cause for special follow-up action to locate and eliminate the cause of contamination.
- b) Check-samples may be taken at the discretion of the the Environmental Protection Agency (Agency) under the following conditions:
  - 1) When coliform colonies in a single standard sample exceed four per 100 milliliters, as measured by the membrane filter technique, daily samples shall be promptly collected and examined from the same sampling point until the results obtained from at least two consecutive samples show less than one coliform per 100 milliliters.
  - 2) When organisms of the coliform group occur in three or more of the ten-milliliter portions of a single standard sample (fermentation tube method), daily samples shall be promptly collected and examined from the same sampling point until the results obtained from at least two consecutive samples show no positive results.
  - 3) When organisms of the coliform group occur in all five of the 100-milliliter portions of a single standard sample (fermentation tube method), daily samples shall be promptly collected and examined from the same sampling point until the results obtained from at least two consecutive samples show no positive tubes.
- c) The sampling point required to be check-sampled may not be eliminated from future collections based on a history of questionable water quality. These check samples shall not be included in the total number of samples examined per month, nor shall the check samples be used as a basis for determining compliance with Section 604.103(b).

(Source: Amended at 14 Ill. Reg. , effective )

#### Section 604.104 Bacterial Plate Count Sample

This Section applies until the effective date for the filtration and disinfection requirements of 35 Ill. Adm. Code 611.Subpart B as applicable to each supply. When bacterial plate counts are considered by the Agency to be

necessary, the sample for the bacterial plate count using Standard Plate-Count Agar (35°C, 48 hours) shall consist of two portions of one milliliter and two portions of one-tenth milliliter.

(Source: Amended at 14 Ill. Reg. , effective )

Section 604.105 Bacterial Plate Count Limits

This Section applies until the effective date for the filtration and disinfection requirements of 35 Ill. Adm. Code 611.Subpart B as applicable to each supply.

- a) The maximum number for the bacterial plate count in the water distributed to the consumer is 500 organisms per one milliliter, based on arithmetic average of all samples examined in a calendar month. In determining compliance, these data shall be reported to two significant figures.
- b) When the average bacterial plate count is found to exceed 500 organisms per one milliliter, either in portions of the distribution network or in finished water reservoir storage, the Agency shall determine if these bacterial counts require further action to be taken to protect the water consumers. Upon such findings, prompt attention shall be directed by the owner toward finding the cause and taking appropriate action for correction.

(Source: Amended at 14 Ill. Reg. , effective )

SUBPART B: CHEMICAL AND PHYSICAL QUALITY

Section 604.201 Finished Water Quality (Repealed)

- a) The finished water shall contain no impurity in concentrations that may be hazardous to the health of the consumer or excessively corrosive or otherwise deleterious to the water supply. Drinking water shall contain no impurity which could reasonably be expected to cause offense to the sense of sight, taste, or smell.
- b) Substances used in treatment should not remain in the water in concentrations greater than required by good practice. Substances which may have a deleterious physiological effect, or for which physiological effects are not known, shall not be used in a manner that would permit them to reach the consumer.

(Source: Repealed at 14 Ill. Reg. , effective )

Section 604.202 Contaminants and Maximum Allowable Concentrations (Repealed)

~~The concentration of substances in the finished water shall not exceed the limits listed, except as provided in Section 604.203.~~

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Maximum

Substance	Reported As	Concentration mg/l
Arsenic	As	0.05
Barium	Ba	1
Cadmium	Cd	0.010
Chromium	Cr	0.05
Copper	Cu	5
Cyanide	CN	0.2
Fluoride	F	1.8
Iron	Fe	1.0
Lead	Pb	0.05
Manganese	Mn	0.15
Mercury	Hg	0.002
Nitrate-Nitrogen	N	10.
Organics		
Pesticides		
Chlorinated Hydrocarbon Insecticides		
Aldrin		0.001
Chlordane		0.003
DDT		0.05
Dieldrin		0.001
Endrin		0.0002
Heptachlor		0.0001
Heptachlor Epoxide		0.0001
Lindane		0.004
Methoxychlor		0.1
Toxaphene		0.005
Chlorophenoxy Herbicides		
2,4-Dichlorophenoxyacetic acid (2,4-D)		0.01
2,4,5-Trichlorophenoxypropionic acid (2,4,5-TP or Silvex)		0.01
Total Trihalomethanes		0.10
Selenium	Se	0.01
Silver	Ag	0.05
Turbidity	NTU	1.
Zinc	Zn	5.-

(Source: Repealed at 14 Ill. Reg. , effective )

Section 604.203 Exceptions to Maximum Allowable Concentrations

The following supplementary conditions apply to the concentrations listed in Section 604.202.

- a) Fluoride: Those counties of the State north of and including the counties of Henderson, McDonough, Fulton, Yazewell, McLean, Ford and Iroquois shall have a maximum allowable fluoride concentration of 2.0 mg/l.
- b) Iron and Manganese:
  - 1) Community water supplies which serve a population of 1000 or less or 300 service connections or less shall be exempt from the

standards for iron and manganese.

- 2) All other water supplies shall comply with these standards by July 1, 1981. Iron in excess of 1.0 mg/l and manganese in excess of 0.15 mg/l may be allowed at the discretion of the Agency if sequestration tried on an experimental basis proves to be effective. If sequestering is not effective, positive iron or manganese reduction treatment as applicable must be provided. No experimental use of a sequestering agent may be tried without previous Agency approval.
- e) Nitrate-Nitrogen: The provisions of Section 604.204 notwithstanding, compliance with the maximum allowable concentration for nitrate shall be determined on the basis of the mean of two analyses. When a level exceeding the maximum allowable concentration for nitrate is found, a second analysis shall be initiated within 24 hours, and if the mean of the two analyses exceeds the maximum allowable concentration, the owner or operator of the public water supply shall report his findings to the Agency pursuant to 35 Ill. Adm. Code 606.102 and shall notify the public pursuant to 35 Ill. Adm. Code 606.
- d) Total Trihalomethanes:
- 1) The average of Total Trihalomethanes concentration in the finished water of four samples of any four consecutive quarters per treatment plant or per aquifer shall not exceed the limit listed in Section 604.202.
  - 2) Supplies serving 75,000 or more individuals shall comply with the Total Trihalomethanes standard listed in Section 604.202 by the effective date of these regulations. Supplies serving 10,000 to 74,999 individuals shall comply with this standard by November 5, 1983. This standard does not apply to supplies serving less than 10,000 individuals.
  - 3) If the average of samples covering any twelve-month period exceeds the Maximum Allowable Concentration for Total Trihalomethanes, as listed in Section 604.202, the owner or operator of the supply shall notify the Agency pursuant to Section 606.102 and give notice to the public pursuant to Sections 606.201 - 606.205 of these Rules. Monitoring after public notification shall be at the frequency required by Section 605.104.
- e) Turbidity:
- 1) Turbidity in drinking water shall not exceed one turbidity unit at the point where water enters the distribution system unless it can be demonstrated that a higher turbidity not exceeding 5 Nephelometric Turbidity Units (NTU) does not:
    - A) interfere with disinfection, or
    - B) cause tastes and odors upon disinfection, or

- C) prevent the maintenance of an effective disinfection agent throughout the distribution system, or
  - D) result in deposits in the distribution system, or
  - E) cause customers to question the safety of their drinking water.
- 2) The provisions of Section 604.204 notwithstanding, if a turbidity measurement exceeds the maximum allowable concentration, a resample must be taken as soon as practicable, and preferably within one hour. If the check-sample confirms that the standard has been exceeded, the Agency must be notified within 48 hours. The value of the check-sample shall be the value used in calculating the monthly average. If the monthly average of the daily samples taken in accordance with 35 Ill. Adm. Code 605.109 exceeds the maximum allowable concentration, or if the average of two samples taken on consecutive days exceeds 5 NTU, the owner or operator of the public water supply shall report to the Agency and notify the public as directed in 35 Ill. Adm. Code 606.-

(Source: Repealed at 14 Ill. Reg. , effective )

Section 604.204 Action Pursuant to Exceedance of Maximum Allowable Concentration (Repealed)

-If the result of an analysis made pursuant to these Rules indicates that the level of any contaminant listed in Section 604.202 exceeds the maximum allowable concentration allowed by this subpart, the owner or operator of the supply shall:

- a) report to the Agency within seven days and initiate three additional analyses at the same sampling point within one month;
- b) notify the Agency and give notice to the public pursuant to 35 Ill. Adm. Code 606 when the average of four analyses rounded to the same number of significant figures as the maximum allowable concentration for the substance in question, exceeds the maximum allowable concentrations; and
- c) monitor, after public notification, at a frequency designated by the Agency and continue monitoring until the maximum allowable concentration has not been exceeded in two successive samples or until a monitoring schedule as a condition to a variance or enforcement action becomes effective.-

(Source: Repealed at 14 Ill. Reg. , effective )

SUBPART C: RADIOLOGICAL QUALITY

Section 604.301 Radium - 226, -228, and Gross Alpha Particle Activity (Repealed)

-The following are the maximum allowable concentrations for radium-226, radium-228, and gross alpha particle radioactivity in community water supplies:

- a) Combined radium-226 and radium-228: 5 pCi/l
- b) Gross alpha particle activity (including radium-226, but excluding radon and uranium): 15 pCi/l

(Source: Repealed at 14 Ill. Reg. , effective )

Section 604.302 Man-Made Radioactivity (Repealed)

-The following are the maximum allowable concentrations for beta particle and photon radioactivity from man-made radionuclides in community water systems.

- a) The average annual concentration of beta particle and photon radioactivity from man-made radionuclides in drinking water shall not produce an annual dose equivalent to the total body or any internal organ greater than 4 millirem/year.
- b) Except for the radionuclides listed in subsection (c), the concentration of man-made radionuclides causing 4 millirem total body or organ dose equivalents shall be calculated on the basis of a 2 liter per day drinking water intake using the 168 hour data listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure," National Bureau of Standards Handbook 69 as amended August 1963, U.S. Department of Commerce. If two or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any organ shall not exceed 4 millirem/year.
- c) Average Annual Concentrations Assumed to Produce A Total Body or Organ Dose of 4MREM/YR.

Radionuclide	Critical Organ	pCi per liter
Tritium	Total Body	20,000
Strontium-90	Bone Marrow	8

(Source: Repealed at 14 Ill. Reg. , effective )

Section 604.303 Determining Maximum Allowable Concentrations (Repealed)

-To judge compliance with the maximum allowable concentrations listed in this subpart, averages of data shall be used and shall be rounded to the same number of significant figures as the maximum allowable concentration for the substance in question.-

(Source: Repealed at 14 Ill. Reg. , effective )

SUBPART D: CHLORINATION AND FLUORIDATION

Section 604.401 Chlorination Requirement

This Section applies until the effective date for the filtration and disinfection requirements of 35 Ill. Adm. Code 611. Subpart B as applicable to each supply. All supplies, except those community water supplies exempted in this subpart pursuant to Section 17(b) of the Environmental Protection Act (Ill. Rev. Stat. 1987, ch. 111 1/2, par. 1017(b)) shall chlorinate the water before it enters the distribution system.

- a) All supplies which are required to chlorinate shall maintain residuals of free or combined chlorine at levels sufficient to provide adequate protection.
- b) The Agency may set levels and promulgate procedures for chlorination.
- e) Supplies now in operation must comply with this rule immediately, except that community water supplies which were under the jurisdiction of the Illinois Department of Public Health prior to January 1, 1982, and which were not required to chlorinate under Public Health Rules and Regulations, must comply by January 1, 1983. Any supply which is now in compliance or reaches compliance before that date must continue in compliance thereafter.
- d) Those supplies having hand-pumped wells and no distribution system are exempted from the requirements of this subpart.

(Source: Amended at 14 Ill. Reg. , effective )

Section 604.402 Chlorination Exemption Requirements (Repealed)

~~-A community water supply shall be exempt from the chlorination requirement provided:~~

- a) ~~The community water supply obtains all of its water from a supply under the jurisdiction of the Agency which does chlorinate and maintains records which demonstrate that the water in all active parts of its distribution system has an adequate chlorine residual; or~~
- b) ~~the community water supply has a written exemption from the requirement to chlorinate pursuant to Section 604.403.~~

(Source: Repealed at 14 Ill. Reg. , effective )

Section 604.403 Conditions for Obtaining a Written Chlorination Exemption (Repealed)

~~-To obtain that exemption the community water supply must apply to the Agency in writing and meet all of the following conditions:~~

- a) ~~Pumps not more than 100 gallons of water per capita per day, averaged annually;~~

- b) Has no more than three miles of distribution piping for delivery of water to consumers;
- c) Has as its only source of raw water one or more properly constructed wells into confined geological formations not subject to contamination;
- d) Has no history of persistent or recurring contamination, as indicated by sampling results which show violations of finished water quality requirements, for the most recent five-year period;
- e) Does not provide any raw water treatment other than fluoridation;
- f) Has an active program approved by the Agency to continually educate its consumers on preventing the entry of contaminants into the water system;
- g) Has a certified operator of the proper class, or if it is a public water supply which is exempt from having a certified operator, has a registered person in responsible charge of the operation of the supply; and
- h) Submits samples for bacteriological analysis in accordance with 35 Ill. Adm. Code 605.101(a) and (b).

(Source: Repealed at 14 Ill. Reg. , effective )

Section 604.404 Loss of Chlorination Exemption (Repealed)

-Any community water supply which fails to continuously meet the exemption conditions applicable to that supply shall lose its exemption, shall immediately start chlorinating and shall continue to do so until the requirements stated in Sections 604.402 or 604.403 are again met, and written Agency approval of the exemption application is again granted.-

(Source: Repealed at 14 Ill. Reg. , effective )

Section 604.405 Fluoridation Requirement (Repealed)

-All supplies which are required to add fluoride to the water shall maintain a fluoride ion concentration reported as F of 0.9 to 1.2 mg/l in its distribution system, as required by Section 7(a) of "An Act to provide for safeguarding the public health by vesting certain measures of control and supervision in the Department of Public Health over Public Water Supplies in the State" approved and effective August 6, 1951, as amended (Ill. Rev. Stat. 1981, ch. 111 1/2, par. 121(g)(1)).-

(Source: Repealed at 14 Ill. Reg. , effective )

SUBPART E: RAW WATER

Section 604.501 Raw Water Quality (Repealed)

- a) Each supply must take its raw water from the best available source

which is economically reasonable and technically possible.

- b) Use of recycled sewage treatment plant effluent on a routine basis shall not be permitted.
- c) The twelve-month running geometric means of fecal coliform and total coliform densities in raw water sources shall not exceed 2,000 per 100 ml and 20,000 per 100 ml respectively, without specific approval of the Agency.
- d) Each owner or operator of a supply owning and/or controlling a supply's water source shall take all reasonable actions for the protection of that source from contamination.
- e) Each community water supply exempted from the chlorination requirement pursuant to Section 604.403 shall obtain water only from wells drilled into confined geologic formations not subject to contamination.

(Source: Repealed at 14 Ill. Reg. , effective )

Section 604.502 Raw Water Quantity (Repealed)

- a) Surface Supply - The quantity of surface water at the source shall be adequate to supply the total water demand of a community from that source, as well as a reasonable surplus for anticipated growth.
- b) Groundwater Supply - The quantity of ground water from the source of supply shall be adequate to supply the total water demand of that public water supply, as well as a reasonable surplus for anticipated growth, without excessive depletion of the aquifer.
- c) In determining adequacy of supply for compliance with this Section, each individual source of supply shall be considered in relation to the percentage of the total requirements it is expected to provide.

(Source: Repealed at 14 Ill. Reg. , effective )

APPENDIX References to Former Rules (Repealed)

The following table is provided to aid in referencing former Board rule numbers to section numbers pursuant to codification.

Chapter 6: Public Water Supplies	35 Ill. Adm. Code
Part III: Operation and Maintenance	Part 604
Rule 304(A)(1)	Section 604.101
Rule 304(A)(2)	Section 604.102
Rule 304(A)(3)	Section 604.103
Rule 304(A)(4)	Section 604.104
Rule 304(A)(5)	Section 604.105
Rule 304(B)	Section 604.201
Rule 304 (Table 1)	Section 604.202
Rule 304 (Table 1 Notes)	Section 604.203

Rule 304(B)(3)	Section 604.204
Rule 304(G)(1)	Section 604.301
Rule 304(G)(2) and Table II	Section 604.302
Rule 304(G)(3)	Section 604.303
Rule 305	Section 604.401
New	Section 604.402
New	Section 604.403
New	Section 604.404
Rule 306	Section 604.405
Rule 307	Section 604.501
Rule 308	Section 604.502-

(Source: Repealed at 14 Ill. Reg. , effective )

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

PART 605  
SAMPLING AND MONITORING

Section	
605.101	Frequency of Bacteriological Sampling
605.102	Minimum Allowable Monthly Samples for Bacteriological Analysis
605.103	Frequency of Chemical Analysis Sampling <u>(Repealed)</u>
605.104	Frequency of Trihalomethane Analysis Sampling <u>(Repealed)</u>
605.105	Monitoring Requirements for Radium-226, -228, and Gross Alpha Particle Activity <u>(Repealed)</u>
605.106	Monitoring Frequency for Radium-226, -228, and Gross Alpha Particle Activity <u>(Repealed)</u>
605.107	Monitoring Requirements for Man-Made Radioactivity <u>(Repealed)</u>
605.108	Monitoring Frequency for Man-Made Radioactivity <u>(Repealed)</u>
605.109	Surface Water Supplies Additional Monitoring Requirements
605.110	Modification of Monitoring Requirements <u>(Repealed)</u>
Appendix	References to Former Rules <u>(Repealed)</u>

AUTHORITY: Implementing Section 17 and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1987, ch. 111 1/2, pars. 1017 and 1027).

SOURCE: Filed with Secretary of State January 1, 1978; amended at 2 Ill. Reg. 36, p. 72, effective August 29, 1978; amended and codified at 6 Ill. Reg. 11497, effective September 14, 1982; amended at 6 Ill. Reg. 14344, effective November 3, 1982; amended in R88-26 at 14 Ill. Reg. , effective .

Section 605.101 Frequency of Bacteriological Sampling

This Section applies until the effective date for the filtration and disinfection requirements of 35 Ill. Adm. Code 611, Subpart B as applicable to each supply.

- a) Representative samples of the finished water from the distribution system are to be submitted monthly by each supply owner, official custodian, or his authorized personnel to a certified laboratory for bacteriological analysis.
  - 1) The minimum number of samples to be submitted monthly is dependent upon the population served as shown in Section 605.102.
  - 2) A greater number of samples may be required by the Environmental Protection Agency (Agency) to be analyzed each month.
- b) The owner, official custodian, or authorized personnel of any community water supply which is exempt from chlorination pursuant to 35 Ill. Adm. Code 604.403 shall submit samples to a certified laboratory for bacteriological analysis at least twice a month. Each

submission shall consist of the minimum number of samples shown in Section 605.102 plus raw water samples of a sufficient number to assure that each active well is sampled at least monthly.

- c) It shall be the responsibility of the supply to have the analyses performed either at its own certified laboratory or at any other certified laboratory. The Agency may require that some or all of the monthly samples be submitted to its laboratories.

(Source: Amended at 14 Ill. Reg. , effective )

Section 605.102 Minimum Allowable Monthly Samples for Bacteriological Analysis

This Section applies until the effective date for the filtration and disinfection requirements of 35 Ill. Adm. Code 611.Subpart B as applicable to each supply.

Population Served		Minimum Number of Samples Per Month
25	to 100.....	1
101	to 2,500.....	2
2,501	to 3,300.....	3
3,301	to 4,100.....	4
4,101	to 4,900.....	5
4,901	to 5,800.....	6
5,801	to 6,700.....	7
6,701	to 7,600.....	8
7,601	to 8,500.....	9
8,501	to 9,400.....	10
9,401	to 10,300.....	11
10,301	to 11,100.....	12
11,101	to 12,000.....	13
12,001	to 12,900.....	14
12,901	to 13,700.....	15
13,701	to 14,600.....	16
14,601	to 15,500.....	17
15,501	to 16,300.....	18
16,301	to 17,200.....	19
17,201	to 18,100.....	20
18,101	to 18,900.....	21
18,901	to 19,800.....	22
19,801	to 20,700.....	23
20,701	to 21,500.....	24
21,501	to 22,300.....	25
22,301	to 23,200.....	26
23,201	to 24,000.....	27
24,001	to 24,900.....	28
24,901	to 25,000.....	29
25,001	to 28,000.....	30
28,001	to 33,000.....	35
33,001	to 37,000.....	40
37,001	to 41,000.....	45

41,001	to	46,000	50
46,001	to	50,000	55
50,001	to	54,000	60
54,001	to	59,000	65
59,001	to	64,000	70
64,001	to	70,000	75
70,001	to	76,000	80
76,001	to	83,000	85
83,001	to	90,000	90
90,001	to	96,000	95
96,001	to	111,000	100
111,001	to	130,000	110
130,001	to	160,000	120
160,001	to	190,000	130
190,001	to	220,000	140
220,001	to	250,000	150
250,001	to	290,000	160
290,001	to	320,000	170
320,001	to	360,000	180
360,001	to	410,000	190
410,001	to	450,000	200
450,001	to	500,000	210
500,001	to	550,000	220
550,001	to	600,000	230
600,001	to	660,000	240
660,001	to	720,000	250
720,001	to	780,000	260
780,001	to	840,000	270
840,001	to	910,000	280
910,001	to	970,000	290
970,001	to	1,050,000	300
1,050,001	to	1,140,000	310
1,140,001	to	1,230,000	320
1,230,001	to	1,320,000	330
1,320,001	to	1,420,000	340
1,420,001	to	1,520,000	350
1,520,001	to	1,630,000	360
1,630,001	to	1,730,000	370
1,730,001	to	1,850,000	380
1,850,001	to	1,970,000	390
1,970,001	to	2,060,000	400
2,060,001	to	2,270,000	410
2,270,001	to	2,510,000	420
2,510,001	to	2,750,000	430
2,750,001	to	3,020,000	440
3,020,001	to	3,320,000	450
3,320,001	to	3,620,000	460
3,620,001	to	3,960,000	470
3,960,001	to	4,310,000	480
4,310,001	to	4,690,000	490
4,690,001	or more		500

(Source: Amended at 14 Ill. Reg. , effective )

Section 605.103 Frequency of Chemical Analysis Sampling (Repealed)

-A minimum of one representative sample each of the raw and finished water is to be submitted every year to the Agency's laboratory for chemical analysis from community water supplies which utilize a surface water source. Community water supplies which utilize a ground water source are to submit finished water samples to the Agency for analysis at least every three years. Sampling for specific parameters may be required by the Agency more frequently whenever there is reason to believe that these parameters are or may be in excess of the limits listed in 35 Ill. Adm. Code 604.202 and 604.203, or if the presence of other dangerous or potentially dangerous substances is suspected.-

(Source: Repealed at 14 Ill. Reg. , effective )

Section 605.104 Frequency of Trihalomethane Analysis Sampling (Repealed)

- a) Surface Water Sources: Supplies serving over 10,000 individuals shall submit at least four samples per treatment plant per quarter for analysis or analytical results from a certified laboratory for Total Trihalomethanes to the Agency. After results of four consecutive quarters demonstrate consistent Total Trihalomethanes concentrations below the Maximum Allowable Concentration, and upon written application by the supply, the Agency may reduce the sample frequency to one sample per quarter until the Maximum Allowable Concentration is exceeded or until a significant change in source or treatment method is made.
- b) Ground Water Sources: Supplies serving 10,000 individuals or more shall submit at least one sample per treatment plant for MTP analysis. After written request by the supply and the determination by the Agency that the results of the sample and local conditions indicate that the supply is not likely to approach or exceed the Maximum Allowable Concentration, the supply shall continue to submit one annual sample per treatment plant, or report of analysis by a certified laboratory to the Agency. If the sample exceeds the Maximum Allowable Concentration or cannot be analyzed for MTP, the supply shall submit samples in accordance with Section 605.104(a).
- c) Significant changes in water sources or treatment will require testing in accordance with Section 605.104(a).
- d) If the result of an analysis made pursuant to the reduced monitoring schedules provided by Section 605.104(a) indicates that the level of Total Trihalomethanes exceeds the Maximum Allowable Concentration listed in Section 604.202, the owner or operator of the supply shall initiate analysis of one check sample promptly after the exceedance is reported to the supply. If the check sample confirms that the level of Total Trihalomethanes exceeds the Maximum Allowable Concentration, the supply shall sample in accordance with the frequency set out in Section 605.104(a), for at least one year.-

(Source: Repealed at 14 Ill. Reg. , effective )

Section 605.105 Monitoring Requirements for Radium-226, -228

and Gross Alpha Particle Activity (Repealed)

- a) Compliance with 35 Ill. Adm. Code 604.301 shall be based on the analysis of an annual composite of four consecutive quarterly samples or the average of the analyses of four samples obtained at quarterly intervals.
- b) A gross alpha particle activity measurement may be substituted for the required radium-226 and radium-228 analysis, provided that the measured gross alpha particle activity does not exceed 5 pCi/l at a confidence level of 95 percent (1.96 sigma where sigma is the standard deviation of the net counting rate of the sample). In localities where radium-228 may be present in drinking water, radium-226 and/or radium-228 analyses may be required by the Agency when the gross alpha particle activity exceeds 2 pCi/l.
- c) When the gross alpha particle activity exceeds 5 pCi/l, the same or an equivalent sample shall be analyzed for radium-226. If the concentration of radium-226 exceeds 3 pCi/l, the same or an equivalent sample shall be analyzed for radium-228.
- d) A supply using two or more sources having different concentrations of radioactivity shall monitor source water in addition to water from a free-flowing tap, when required by the Agency.

(Source: Repealed at 14 Ill. Reg. , effective )

Section 605.106 Monitoring Frequency for Radium-226, -228  
and Gross Alpha Particle Activity (Repealed)

-Suppliers of water shall monitor at least once every four years. When an annual record taken in conformance with Section 605.105 has established that the average annual concentration is less than half the maximum contaminant levels established by 35 Ill. Adm. Code 604.301, analysis of a single sample may be substituted for the quarterly sampling procedure required by Section 605.105.

- a) More frequent monitoring shall be conducted when required by the Agency in the vicinity of mining or other operations.
- b) Monitoring for compliance with radium-228 levels need be done only in the initial test of each source and when specifically requested by the Agency, provided that the average annual concentration of radium-228 has been assayed at least once using the quarterly sampling procedure required by Section 605.104(a).
- c) Owners and operators of supplies shall conduct annual monitoring of any community water system in which the radium-226 concentration exceeds 3 pCi/l, except when specifically exempted by the Agency.
- d) Monitoring at quarterly intervals shall be continued until the annual average concentration no longer exceeds the maximum contaminant level or until a monitoring schedule as a condition to a variance, exemption or enforcement action shall become effective.

- e) If the average annual maximum allowable concentration for gross alpha particle activity or total radium is exceeded, the owner or operator of a community water supply shall give notice to the Agency and notify the public as required by 35 Ill. Adm. Code 606.-

(Source: Repealed at 14 Ill. Reg. , effective )

Section 605.107 Monitoring Requirements for Man-Made Radioactivity (Repealed)

- a) Community water supplies using surface water sources and serving more than 100,000 persons and such other community water supplies as are designated by the Agency shall be monitored for compliance with 35 Ill. Adm. Code 604.302 by analysis of a composite of four consecutive quarterly samples or analysis of four quarterly samples.
  - 1) Compliance with 35 Ill. Adm. Code 604.302 may be assumed without further analysis if the average annual concentrations of tritium and strontium-90 are less than those listed in 35 Ill. Adm. Code 604.302(c), provided that if both radionuclides are present, the sum of their annual dose equivalents to bone marrow shall not exceed 4 millirem/year.
  - 2) If the gross beta particle activity exceeds 50 pCi/l, an analysis of the sample must be performed to identify the major radioactive constituents present and the appropriate organ and total body doses shall be calculated to determine compliance with 35 Ill. Adm. Code 604.302.
- b) Supplies shall conduct additional monitoring, as required by the Agency, to determine the concentration of man-made radioactivity in principal watersheds designated by the Agency.
- c) At the discretion of the Agency, supplies utilizing only ground waters may be required to monitor for man-made radioactivity.-

(Source: Repealed at 14 Ill. Reg. , effective )

Section 605.108 Monitoring Frequency for Man-Made Radioactivity (Repealed)

- a) Supplies shall monitor for beta activity at least every four years.
- b) Any community water supply designated by the Agency as utilizing water contaminated by effluents from nuclear facilities shall initiate quarterly monitoring for gross beta particle and iodine-131 radioactivity and annual monitoring for strontium-90 and tritium.
- c) Quarterly monitoring for gross beta particle activity shall be based on the analysis of monthly samples or the analysis of a composite of three monthly samples. If the gross beta particle activity in a sample exceeds 15 pCi/l, the same or an equivalent sample shall be analyzed for strontium-89 and cesium-134. If the gross beta particle activity exceeds 50 pCi/l, an analysis of the sample must be

performed to identify the major radioactive constituents present and the appropriate organ and total body doses shall be calculated to determine compliance with 35 Ill. Adm. Code 604.302(c).

- d) For iodine-131, a composite of five consecutive daily samples shall be analyzed once each quarter. If required by the Agency, more frequent monitoring shall be conducted when iodine-131 is identified in the finished water.
- e) Annual monitoring for strontium-90 and tritium shall be conducted by means of the analysis of a composite of four consecutive quarterly samples, or of four quarterly samples.
- f) The Agency may allow the substitution of environmental surveillance data taken in conjunction with a nuclear facility for direct monitoring of man-made radioactivity by the community water supply where the Agency determines such data is applicable to that particular community water supply.
- g) If the average annual maximum allowable concentration for man-made radioactivity set forth in 35 Ill. Adm. Code 604.302 is exceeded, monitoring at monthly intervals shall continue until the concentration no longer exceeds the maximum allowable concentration or until a monitoring schedule as a condition to a variance or enforcement action shall become effective.
- h) If the average annual maximum allowable concentration for man-made radioactivity set forth in 35 Ill. Adm. Code 604.302 is exceeded, the owner or official custodian of a community water supply shall give notice to the Agency and to the public as required by 35 Ill. Adm. Code 606.--

(Source: Repealed at 14 Ill. Reg. , effective )

#### Section 605.109 Surface Water Supplies Additional Monitoring Requirements

This Section applies until the effective date for the filtration and disinfection requirements of 35 Ill. Adm. Code 611.Subpart B as applicable to each supply. Owners or official custodians of community water supplies utilizing surface water sources shall ensure:

- a) that finished water samples are taken at a representative entry points to the distribution system at least once per day, and
- b) that a turbidity analysis is performed on each of the samples immediately. The analysis of the samples shall be done by an individual who has been approved by the Agency as qualified to make this analysis.

(Source: Amended at 14 Ill. Reg. , effective )

#### Section 605.110 Modification of Monitoring Requirements (Repealed)

-When a supply provides water to one or more other supplies, the Agency may

modify the monitoring requirements imposed by this Section to the extent that the interconnection of the supplies justifies treating them as a single supply for monitoring purposes. Any modified monitoring shall be conducted pursuant to a schedule specified by the Agency.

(Source: Repealed at 14 Ill. Reg. , effective )

APPENDIX References to Former Rules (Repealed)

The following table is provided to aid in referencing former Board rule numbers to section numbers pursuant to codification.

Chapter 6: Public Water Supplies	35 Ill. Adm. Code
Part III: Operation and Maintenance	Part 605
Rule 309(A)	Section 605.101
Rule 309 (Table III)	Section 605.102
Rule 309(B)	Section 605.103
Rule 309(G)(1)(a)	Section 605.105
Rule 309(G)(1)(b)	Section 605.106
Rule 309(G)(2)(a)	Section 605.107
Rule 309(G)(2)(b)	Section 605.108
Rule 309(D)	Section 605.109
Rule 309(E)	Section 605.110-

(Source: Repealed at 14 Ill. Reg. , effective )

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

PART 606  
REPORTING AND PUBLIC NOTIFICATION

SUBPART A: REPORTING

Section	
606.101	Monthly Operating Reports <u>(Repealed)</u>
606.102	Reporting Requirements <u>(Repealed)</u>
606.103	Signatory Requirement <u>(Repealed)</u>

SUBPART B: PUBLIC NOTIFICATION

Section	
606.201	Public Notice Required to Persons Served <u>(Repealed)</u>
606.202	Public Notice Required to Public in General <u>(Repealed)</u>
606.203	Additional Public Notice <u>(Repealed)</u>
606.204	Form of Public Notice <u>(Repealed)</u>
606.205	Agency Issued Public Notice <u>(Repealed)</u>
Appendix	References to Former Rules <u>(Repealed)</u>

AUTHORITY: Implementing Section 17 and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1987, ch. 111 1/2, pars. 1017 and 1027).

SOURCE: Filed with Secretary of State January 1, 1978; amended at 2 Ill. Reg. 36, p. 72, effective August 29, 1978; amended at 3 Ill. Reg. 13, p. 236, effective March 30, 1979; amended and codified at 6 Ill. Reg. 11497, effective September 14, 1982; amended in R88-26 at 14 Ill. Reg. , effective .

SUBPART A: REPORTING

Section 606.101 Monthly Operating Reports (Repealed)

~~Monthly reports shall be submitted to the Environmental Protection Agency (Agency) by all supplies within 30 days following the last day of each month, on forms provided or approved by the Agency.~~

(Source: Repealed at 14 Ill. Reg. , effective )

Section 606.102 Reporting Requirements (Repealed)

- a) Except where a shorter reporting period is specified in this Chapter or by the Agency, the owner, operator or registered person in responsible charge of a supply shall report to the Agency within 40 days following a test, measurement or analysis required to be made by this Chapter, the results of that test, measurement or analysis.
- b) The owner, operator or registered person in responsible charge of a supply shall report to the Agency within 48 hours the failure to comply with any requirement (including failure to comply with monitoring requirements) set forth in this Chapter.

- e) The owner, operator or registered person in responsible charge of a supply is not required to report analytical results to the Agency in cases where an Agency laboratory performs the analysis and reports the results to the Agency office which would normally receive such notification.
- d) The owner, operator, or registered person in responsible charge of these community water supplies exempted from the chlorination requirement pursuant to 35 Ill. Adm. Code 604.403 shall report monthly to the Agency its activity to educate and inform its customers about preventing contamination into the supply's distribution system, pursuant to 35 Ill. Adm. Code 607.104.

(Source: Repealed at 14 Ill. Reg. , effective )

Section 606.103 Signatory Requirement (Repealed)

-All official operating reports submitted to the Agency must be signed by the certified operator in responsible charge or the registered person in responsible charge.-

(Source: Repealed at 14 Ill. Reg. , effective )

SUBPART B: PUBLIC NOTIFICATION

Section 606.201 Public Notice Required to Persons Served (Repealed)

-If a community water supply fails to comply with an applicable maximum allowable concentration established in 35 Ill. Adm. Code 604 fails to comply with an applicable testing procedure established in these Rules, is granted a variance from an applicable maximum allowable concentration, fails to comply with any requirement of any schedule prescribed pursuant to a variance, or fails to perform any monitoring required pursuant to these Rules, the owner or official custodian of such supply shall notify persons served by the supply of the failure or grant by inclusion of a notice in the first set of water bills of the supply issued after the failure or grant and in any event by written notice within three months. Such notice shall be repeated at least once every three months so long as the supply's failure continues or the variance remains in effect. If the supply issues water bills less frequently than quarterly, or does not issue water bills, or cannot economically include the notice with the water bill, the notice shall be made by or supplemented by another written form of direct mail or hand delivery.-

(Source: Repealed at 14 Ill. Reg. , effective )

Section 606.202 Public Notice Required to Public in General (Repealed)

-If a community water supply has failed to comply with an applicable maximum allowable concentration, the owner or official custodian of such supply shall notify the public of such failure, in addition to the notification required by Section 606.201 as follows:

- a) By publication on not less than three consecutive days in a newspaper

of newspapers of general circulation in the area served by the supply. Such notice shall be completed within fourteen days after the owner or operator learns of the failure. If the area served by a community water supply is not served by a daily newspaper of general circulation, notification by newspaper required shall instead be given by publication on three consecutive weeks in a weekly newspaper of general circulation serving the area. If no weekly or daily newspaper of general circulation serves the area, notice shall be given by posting the notice in post offices within the area served by the supply.

- b) By furnishing a copy of the notice to the radio and television stations serving the area served by the supply. Such notice shall be furnished within seven days after the owner or operator learns of the failure.

(Source: Repealed at 14 Ill. Reg. , effective )

Section 606.203 Additional Public Notice (Repealed)

-In any instance in which notification by mail is required by Section 606.201 but notification by newspaper or to radio or television stations is not required by Section 606.202, the Agency may order the owner or official custodian of the supply to provide notification by newspaper and to radio and television stations when circumstances make more immediate or broader notice appropriate to protect the public health. In cases of emergency, more expeditious means such as door-to-door notification by water supply personnel, police or others may be required by the Agency.

(Source: Repealed at 14 Ill. Reg. , effective )

Section 606.204 Form of Public Notice (Repealed)

-Notices given pursuant to this Section shall be written in a manner reasonably designed to inform fully the users of the supply.

- a) The notice shall be conspicuous and shall not use unduly technical language, unduly small print or other methods which would frustrate the purpose of the notice.
- b) The notice shall disclose all material facts regarding the subject including the nature of the problem and, when appropriate, a clear statement that a drinking water regulation has been violated and any preventive measures that should be taken by the public.
- c) Where appropriate, or where designated by the Agency, bilingual notice shall be given.
- d) Notices may include a balanced explanation of the significance or seriousness to the public health of the subject of the notice, a fair explanation of steps taken by the supply to correct any problem and the results of any additional sampling.

(Source: Repealed at 14 Ill. Reg. , effective )

Section 606.205 Agency Issued Public Notice (Repealed)

-Notice to the public required by this subpart may be given by the Agency on behalf of the owner or official custodian of the supply.-

(Source: Repealed at 14 Ill. Reg. , effective )

APPENDIX References to Former Rules (Repealed)

-Chapter 6: Public Water Supplies 35 Ill. Adm. Code

Part III: Operation and Maintenance Part 606

Rule 310(A)	Section 606.101
Rule 310(B)	Section 606.102
Rule 313(D)(1)	Section 606.201
Rule 313(D)(2), (3)	Section 606.202
Rule 313(D)(5)	Section 606.204
Rule 313(D)(6)	Section 606.205
Rule 313(D)(7)	Section 606.203-

(Source: Repealed at 14 Ill. Reg. , effective )

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

PART 607  
OPERATION AND RECORD KEEPING

Section	
607.101	Protection During Repair Work <u>(Repealed)</u>
607.102	Disinfection Following Repair or Reconstruction <u>(Repealed)</u>
607.103	Emergency Operation
607.104	Cross Connections
607.105	Laboratory Testing Equipment <u>(Repealed)</u>
607.106	Record Maintenance <u>(Repealed)</u>
Appendix	References to Former Rules <u>(Repealed)</u>

AUTHORITY: Implementing Section 17 and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1987, ch. 111 1/2, pars. 1017 and 1027).

SOURCE: Filed with Secretary of State January 1, 1978; amended and codified at 6 Ill. Reg. 11497 effective September 14, 1982; amended in R88-26 at 14 Ill. Reg. , effective .

Section 607.101 Protection During Repair Work (Repealed)

~~All supplies repaired, reconstructed or altered shall be adequately protected to prevent contamination of the water at the source or in the system during such work.~~

(Source: Repealed at 14 Ill. Reg. , effective )

Section 607.102 Disinfection Following Repair or Reconstruction (Repealed)

~~Any part of a supply which has been repaired, reconstructed, or altered shall be satisfactorily disinfected before being put into operation. The disinfection procedure must be specifically approved by the Environmental Protection Agency (Agency). Upon receipt of such approval, the supply may use the accepted disinfection procedure in the future, unless the Agency, for good cause, notifies the owner of a supply that such a procedure is no longer acceptable.~~

(Source: Repealed at 14 Ill. Reg. , effective )

Section 607.103 Emergency Operation

- a) Whenever contamination is determined to persist in a public water supply, as demonstrated by bacteriological analysis results, the owners or official custodians of the supply shall notify all consumers to boil all water used for drinking or culinary purposes until bacteriological samples demonstrate that the water is safe for domestic use, or until appropriate corrective action approved by the Agency is taken. If the owner or official custodian of the supply fails to take such action on his own or at the recommendation of the

Agency, the Agency may issue a boil order directly to the consumers affected.

- b) Any emergency which results in water pressures falling below twenty pounds per square inch on any portion of the distribution system shall be reason for immediate issuance of a boil order by the owner or official custodian of the supply to those consumers affected unless:
  - 1) There is a historical record of adequate chlorine residual and approved turbidity levels in the general area affected covering at least twelve monthly readings.
  - 2) Samples for bacteriological examination are taken in the affected area immediately and approximately twelve hours later.
  - 3) Tests for residual chlorine and turbidity taken at not more than hourly intervals in the affected area for several hours do not vary significantly from the historical record. If significant decrease in chlorine residual or increase in turbidity occurs, a boil order shall be issued.
- c) Whenever the safety of a supply is endangered for any reason, including but not limited to spillage of hazardous substances, the Agency shall be notified immediately by the owner, official custodian or his authorized representative, and the supply officials shall take appropriate action to protect the supply. The owner, official custodian or his authorized representative shall notify all consumers of appropriate action to protect themselves against any waterborne hazards. If the owner or official custodian of the supply fails to take such action on his own or at the recommendation of the Agency, the Agency shall notify directly the consumers affected.

(Source: Amended at 14 Ill. Reg. , effective )

Section 607.104 Cross Connections

- a) No physical connection shall be permitted between the potable portion of a supply and any other water supply not of equal or better bacteriological and chemical quality as determined by inspection and analysis by the Agency, except as provided for in subsection (d).
- b) There shall be no arrangement or connection by which an unsafe substance may enter a supply.
- c) Control of all cross-connections to a supply is the responsibility of the owner or official custodian of the supply. If a privately owned water supply source meets the applicable criteria, it may be connected to a water supply upon approval by the owner or official custodian and by the Agency. Where such connections are permitted, it is the responsibility of the public water supply officials to assure submission from such privately owned water supply source or sources samples and operating reports as required by 35 Ill. Adm. Code 605 and 606 as applicable to the cross-connected source.

- d) The Agency may adopt specific conditions for control of unsafe cross-connections, which shall be complied with by the supplies of this State, as applicable. These conditions shall be adopted and/or changed by the Agency as prescribed in 35 Ill. Adm. Code 602.115.
- e) Each community water supply exempted pursuant to 35 Ill. Adm. Code 603.103 or 604.402 shall provide an active program approved by the Agency to continually educate and inform water supply consumers regarding prevention of the entry of contaminants into the distribution system. Conditions under which the Agency will approve this active program shall be adopted or changed by the Agency as prescribed in 35 Ill. Adm. Code 602.115.

(Source: Amended at 14 Ill. Reg. , effective )

Section 607.105 Laboratory Testing Equipment (Repealed)

- a) Each supply must have adequate laboratory equipment and capability to perform the operational tests (except bacteriological) appropriate to the parameters to be tested and to the type of treatment employed. Such equipment must be in good operating condition, and the operator on duty must be familiar with the procedure for performing the tests.
- b) If a supply performs laboratory examination of water to comply with the provisions of 35 Ill. Adm. Code 605, such work shall be done by a certified laboratory.
- c) Nothing in this rule shall be construed to prevent a supply from running control laboratory tests in an uncertified laboratory. These results are not to be included in the sample quota for that supply, as required by 35 Ill. Adm. Code 605.

(Source: Repealed at 14 Ill. Reg. , effective )

Section 607.106 Record Maintenance (Repealed)

-Any owner, operator or registered person in responsible charge of a supply subject to the provisions of this Chapter shall retain on its premises or at a convenient location near its premises the following records:

- a) Records of bacteriological analyses made pursuant to these Rules shall be kept for not less than five years. Records of chemical analyses made pursuant to these Rules shall be kept for not less than ten years. Actual laboratory reports may be kept, or data may be transferred to tabular summaries, provided that the following information is included:
  - 1) The date, place, and time of sampling, and the name of the person who collected the sample;
  - 2) Identification of the sample as to whether it was a routine distribution system sample, check sample, raw or process water

sample, or other special purpose sample;

- 3) Date of analysis;
- 4) Laboratory and person responsible for performing analysis;
- 5) The analytical technique/method used; and
- 6) The results of the analysis.

- b) Records of action taken by the supply to correct violations of the Environmental Protection Act (Ill. Rev. Stat. 1981, ch. 111 1/2, pars. 1001 et seq.) and this Chapter shall be kept for a period not less than three years after the last action taken with respect to the particular violation involved.
- c) Copies of any written reports, summaries or communications relating to sanitary surveys of the supply conducted by the supply itself, by a private consultant, or by any local, State or Federal agency, shall be kept for a period not less than ten years after completion of the sanitary survey involved.
- d) Records concerning a variance granted to the supply shall be kept for a period ending not less than five years following the expiration of such variance. -

(Source: Repealed at 14 Ill. Reg. , effective )

APPENDIX References to Former Rules (Repealed)

-Chapter 6: Public Water Supplies 35 Ill. Adm. Code

Part III: Operation and Maintenance Part 607

Rule 310(G)	Section 607.106
Rule 311	Section 607.101
Rule 312,	Section 607.102
Rule 313(A)	Section 607.103
Rule 314	Section 607.104
Rule 315	Section 607.105-

(Source: Repealed at 14 Ill. Reg. , effective )

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

PART 611  
PRIMARY DRINKING WATER STANDARDS

SUBPART A: GENERAL

Section	
611.100	Purpose, Scope and Applicability
611.101	Definitions
611.102	Incorporations by Reference
611.103	Severability
611.108	Delegation to Local Government
611.109	Enforcement
611.110	Special Exception Permits
611.111	Section 1415 Variances
611.112	Section 1416 Variances
611.113	Alternative Treatment Techniques
611.114	Siting requirements
611.115	Source Water Quality
611.120	Effective dates
611.121	Maximum Contaminant Levels
611.125	Fluoridation Requirement
611.126	Prohibition on Use of Lead

SUBPART B: FILTRATION AND DISINFECTION

Section	
611.201	Requiring a Demonstration
611.202	Procedures for Agency Determinations
611.211	Filtration Required
611.212	Groundwater under Direct Influence of Surface Water
611.213	No Method of HPC Analysis
611.220	General Requirements
611.230	Filtration Effective Dates
611.231	Source Water Quality Conditions
611.232	Site-specific Conditions
611.233	Treatment Technique Violations
611.240	Disinfection
611.241	Unfiltered PWSs
611.242	Filtered PWSs
611.250	Filtration
611.261	Unfiltered PWSs: Reporting and Recordkeeping
611.262	Filtered PWSs: Reporting and Recordkeeping
611.271	Protection during Repair Work
611.272	Disinfection following Repair

SUBPART C: USE OF NON-CENTRALIZED TREATMENT DEVICES

Section	
611.280	Point-of-Entry Devices
611.290	Use of other Non-centralized Treatment Devices

SUBPART F: MAXIMUM CONTAMINANT LEVELS (MCL's)

Section

611.300 Inorganic Chemicals  
611.310 Organic Chemicals  
611.311 VOCs  
611.320 Turbidity  
611.325 Microbiological Contaminants  
611.330 Radium and Gross Alpha Particle Activity  
611.331 Beta Particle and Photon Radioactivity

SUBPART K: GENERAL MONITORING AND ANALYTICAL REQUIREMENTS

Section  
611.480 Alternative Analytical Techniques  
611.490 Certified Laboratories  
611.491 Laboratory Testing Equipment  
611.500 Consecutive PWSs

SUBPART L: MICROBIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS

Section  
611.521 Routine Coliform Monitoring  
611.522 Repeat Coliform Monitoring  
611.523 Invalidation of Total Coliform Samples  
611.524 Sanitary Surveys  
611.525 Fecal Coliform and E. Coli Testing  
611.526 Analytical Methodology  
611.527 Response to Violation  
611.531 Analytical Requirements  
611.532 Unfiltered PWSs  
611.533 Filtered PWSs

SUBPART M: TURBIDITY MONITORING AND ANALYTICAL REQUIREMENTS

Section  
611.560 Turbidity

SUBPART N: INORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

Section  
611.601 Requirements  
611.602 Violation of State MCL  
611.603 Frequency of State Monitoring  
611.606 Analytical Methods  
611.607 Fluoride Monitoring  
611.610 Special Monitoring for Sodium

SUBPART O: ORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

Section  
611.641 Sampling and Analytical Requirements  
611.645 Analytical Methods  
611.648 Sampling for VOCs  
611.650 Monitoring for 36 Contaminants  
611.657 Analytical Methods for 36 Contaminants

SUBPART P: THM MONITORING AND ANALYTICAL REQUIREMENTS

Section  
611.680 Sampling, Analytical and other Requirements  
611.683 Reduced Monitoring Frequency  
611.684 Averaging

611.685 Analytical Methods  
611.686 Modification to System

SUBPART Q: RADIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS

Section  
611.720 Analytical Methods  
611.731 Gross Alpha  
611.732 Manmade Radioactivity

SUBPART T: REPORTING, PUBLIC NOTIFICATION AND RECORDKEEPING

Section  
611.830 Applicability  
611.831 Monthly Operating Report  
611.832 Notice by Agency  
611.833 Cross Connection Reporting  
611.840 Reporting  
611.851 Reporting MCL and other Violations  
611.852 Reporting other Violations  
611.853 Notice to New Billing Units  
611.854 General Content of Public Notice  
611.855 Mandatory Health Effects Language  
611.856 Fluoride Notice  
611.858 Fluoride Secondary Standard  
611.860 Record Maintenance  
611.870 List of 36 Contaminants

Appendix A Mandatory Health Effects Information  
Appendix B Percent Inactivation of G. Lamblia Cysts  
Appendix C Common Names of Organic Chemicals  
Table A Total Coliform Monitoring Frequency  
Table B Fecal or Total Coliform Density Measurements  
Table C Frequency of RDC Measurement

AUTHORITY: Implementing Sections 17 and 17.5 and authorized by Section 27 of the Environmental Protection Act (Ill. Rev. Stat. 1989, ch. 111 1/2, pars. 1017, 1017.5 and 1027.

SOURCE: Adopted in R88-26 at 14 Ill. Reg. , effective .

SUBPART A: GENERAL

Section 611.100 Purpose, Scope and Applicability

- a) This Part satisfies the requirement of Section 17.5 of the Environmental Protection Act (Act) (Ill. Rev. Stat. 1988 Supp., ch. 111 1/2. par. 1001 et seq.) that the Board adopt regulations which are identical in substance with federal regulations promulgated by the United States Environmental Protection Agency (USEPA) pursuant to Sections 1412(b), 1414(c), 1417(a) and 1445(a) of the Safe Drinking Water Act (SDWA) (42 U.S.C. 300f et seq.)
- b) This Part establishes primary drinking water regulations (NPDWRs) pursuant to the SDWA, and also includes additional, related State requirements which are consistent with and more stringent than the USEPA regulations (Section 7.2(a)(6) of the Act). The latter provisions are specifically marked as "additional State requirements". They apply only community water systems (CWSs).
- c) This Part applies to "suppliers", owners and operators of "public water systems" ("PWSs"). PWSs include CWSs, "non-community water systems" ("non-CWSs") and "non-transient non-community water systems" ("NTNCWSs"), as these terms are defined in Section 611.101.
  - 1) CWS suppliers are required to obtain permits from the Illinois Environmental Protection Agency (Agency) pursuant to 35 Ill. Adm. Code 602.
  - 2) Non-CWS suppliers are subject to additional regulations promulgated by the Illinois Department of Public Health (Public Health) pursuant to Ill. Rev. Stat. 1989, ch. 111 1/2, par. 7459, including 77 Ill. Adm. Code 900.
  - 3) Non-CWS suppliers are not required to obtain permits or other approvals from the Agency, or to file reports or other documents with the Agency. Any provision in this Part so providing is to be understood as requiring the non-CWS supplier to obtain the comparable form of approval from, or to file the comparable report or other document with Public Health.

BOARD NOTE: Derived from 40 CFR 141.1 (1989).
- d) This Part applies to each PWS, unless the PWS meets all of the following conditions:
  - 1) Consists only of distribution and storage facilities (and does not have any collection and treatment facilities);
  - 2) Obtains all of its water from, but is not owned or operated by, a supplier to which such regulations apply;
  - 3) Does not sell water to any person; and
  - 4) Is not a carrier which conveys passengers in interstate

commerce.

BOARD NOTE: Derived from 40 CFR 141.3 (1989).

- e) Some subsection labels have been omitted in order to maintain local consistency between USEPA subsection labels and the subsection labels in this Part.

#### Section 611.101 Definitions

As used in this Part, the term:

"Act" means the Environmental Protection Act, Ill. Rev. Stat. 1989, ch. 111 1/2, par. 1001 et seq.

"Agency" means the Illinois Environmental Protection Agency.

"Best available technology" or "BAT" means the best technology, treatment techniques or other means which USEPA has found are available for the contaminant in question. BAT is specified in Subpart G.

BOARD NOTE: Derived from 40 CFR 141.2 (1989).

"Board" means the Illinois Pollution Control Board.

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

"CT" or "CTcalc" 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 "CT99.9")

BOARD NOTE: Derived from 40 CFR 141.2 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

"CT99.9" is the CT value required for 99.9 percent (3-log) inactivation of Giardia lamblia cysts. CT99.9 for a variety of disinfectants and conditions appear in Tables 1.1-1.6, 2.1 and 3.1 of Appendix B. (See "Inactivation Ratio".)

BOARD NOTE: Derived from the definition of "CT" in 40 CFR 141.2 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

"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 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

"Community Water System" ("CWS") means a PWS which 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 (1989).

"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 (1989), as amended at 54 Fed. Reg. 27562, June 29, 1989.

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

BOARD NOTE: Derived from 40 CFR 141.2 (1989).

"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 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

"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 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

"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 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

"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 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

"Disinfectant contact time" ("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 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 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

"Disinfection" means a process which inactivates pathogenic organisms in water by chemical oxidants or equivalent agents.

BOARD NOTE: Derived from 40 CFR 141.2 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

"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 (1989), as amended at 54 Fed. Reg. 27562, June 29, 1989.

"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 (1989).

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

BOARD NOTE: Derived from 40 CFR 141.2 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

"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 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

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

"GC/MS" means GC followed by mass spectrometry.

"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 (1989).

"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 (1989).

"Groundwater under the direct influence of surface water" is as determined in Section 611.211.

BOARD NOTE: Derived from 40 CFR 141.2 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

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

BOARD NOTE: Derived from 40 CFR 141.2 (1989).

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

"Inactivation Ratio" ( $A_i$ ) means:

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

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

$$B = \text{SUM}(A_i)$$

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 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

"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 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

"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 (1989).

"Maximum contaminant level" ("MCL") See Section 611.121

BOARD NOTE: Derived from 40 CFR 141.2 (1989).

"Maximum Total Trihalomethane Potential (MTP)" means the maximum concentration of total THMs produced in a given water containing a disinfectant residual after 7 days at a temperature of 25 deg. C or above.

BOARD NOTE: Derived from 40 CFR 141.2 (1989).

"Near the first service connection" means at one of the 20 percent of all service connections in the entire system that are nearest the PWS treatment facility, as measured by water transport time within the distribution system.

BOARD NOTE: Derived from 40 CFR 141.2 (1989), as amended at 54 Fed. Reg. 27562, June 29, 1989.

"Non-community water system" ("non-CWS") means a PWS which is not a CWS.

BOARD NOTE: Derived from the definition of "public water system" in 40 CFR 141.2 (1989).

"Non-transient non-community water system" ("NTNCWS") means a PWS that is not a 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 (1989).

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

"NTU" means "nephelometric turbidity units".

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

"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 non-CWSs, Public Health. 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 (1989).

"Person" means an individual, corporation, company, association, partnership, State, unit of local government or federal agency.

BOARD NOTE: Derived from 40 CFR 141.2 (1989).

"Picocurie (pCi)" means the quantity of radioactive material producing 2.22 nuclear transformations per minute.

BOARD NOTE: Derived from 40 CFR 141.2 (1989).

"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 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

"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 (1989).

"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 (1989).

"Public Health" means the Illinois Department of Public Health.

"Public water system" ("PWS") means a system for the provision to the public of piped water for human consumption, if such system has at least fifteen service connections or regularly serves an average of at least twenty-five individuals daily at least 60 days out of the year. Such term includes:

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 which are used primarily in connection with such system.

A PWS is either a "CWS" or a "nonCWS."

BOARD NOTE: Derived from 40 CFR 141.2 (1989).

"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 (1989).

"Residual disinfectant concentration" ("RDC" or "C" in CT calculations) means the concentration of disinfectant measured in mg/L in a representative sample of water.

BOARD NOTE: Derived from 40 CFR 141.2 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

"SDWA" means the Public Health Service Act, as amended by the Safe Drinking Water Act, Pub. L. 93-523, 42 U.S.C. 300f et seq.

BOARD NOTE: Derived from 40 CFR 141.2 (1989).

"Sanitary survey" means an onsite review of the water source, facilities, equipment, operation and maintenance of a 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 (1989).

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

BOARD NOTE: Derived from 40 CFR 141.2 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

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

BOARD NOTE: Derived from 40 CFR 141.2 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

"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 (1989).

"Supplier of water" or "supplier" means any person who owns or operates a PWS. This term includes the "official custodian".

BOARD NOTE: Derived from 40 CFR 141.2 (1989).

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

BOARD NOTE: Derived from 40 CFR 141.2 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

"System with a single service connection" means a system which supplies drinking water to consumers via a single service line.

BOARD NOTE: Derived from 40 CFR 141.2 (1989), as amended at 54 Fed. Reg. 27562 June 29, 1989.

"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 (1989), as amended at 54 Fed. Reg. 27562, June 29, 1989.

"Total trihalomethanes" (TTHM) means the sum of the concentration of THMs, in mg/L, rounded to two significant figures.

BOARD NOTE: Derived from the definition of "total trihalomethanes" in 40 CFR 141.2 (1989).

"Trihalomethane" (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 (1989).

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

"VOC" means "volatile organic chemical".

BOARD NOTE: Derived from 40 CFR 141.2 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

"Waterborne disease outbreak" means the significant occurrence of acute infectious illness, epidemiologically associated with the ingestion of water from a PWS which is deficient in treatment, as determined by the appropriate local or State agency.

BOARD NOTE: Derived from 40 CFR 141.2 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

"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) (1989), adopted at 54 Fed. Reg. 27526, June 29, 1989. The wellhead protection program will include 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.

#### Section 611.102 Incorporations by Reference

- a) Abbreviations. The following abbreviated names are used for materials incorporated by reference:

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

"ASTM" means American Society for Testing and Materials

"Indigo method" is as described in "Standard Methods", 17th Edition, Method 4500-03 B.

"Inductively Coupled Plasma Method" means "Inductively Coupled Plasma-Atomic Emission Spectrometric Method for Trace Element Analysis in Water and Wastes -- Method 200.7, with appendix" See 40 CFR 136, Appendix C.

"Inorganic Methods" means "Methods for Chemical Analysis of Water and Wastes", available from NTIS

"Microbiological Methods" means "Microbiological Methods for Monitoring the Environment, Water and Wastes", available from NTIS.

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

"NTIS" means "National Technical Information Service".

"Organic Methods" means "Methods for the Determination of Organic Compounds in Drinking Water", available from USEPA.

"Pesticide Methods" means "Methods for Organochlorine Pesticides and Chloro-phenoxy Acid Herbicides in Drinking Water and Raw Source Water", available from USEPA.

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

"SPE Test Method" means "Solid Phase Extraction Test Method", available from J.T. Baker Chemical Company.

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

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

"USGS Method" means "United States Geological Survey Method"

b) The Board incorporates the following publications by reference:

ASTM. American Society for Testing and Materials, 1976 Race Street, Philadelphia, PA 19103

ASTM Method D858-88, "Standard Test Methods for Manganese in Water", approved August 19, 1988.

ASTM Method D992-71

ASTM Method D1067-88, "Standard Test Methods for Acidity or Alkalinity of Water", approved August 19, 1988.

ASTM Method D1126-86, "Standard Test Method for Hardness in Water", approved August 29, 1988.

ASTM Method D1179-72A or B "Standard Test Methods for Fluoride in Water".

ASTM Method D1293-84, "Standard Test Methods for pH of Water", approved October 26, 1984.

ASTM Method D1428-64, "Standard Test Methods for Sodium and Potassium in Water and Water-Formed Deposits by Flame Photometry".

ASTM Method D1687-77D, "Standard Test Methods for Chromium in Water".

ASTM Method D1688-84D or E, "Standard Test Methods for Copper in Water".

ASTM Method D1889-88a, "Standard Test Method for Turbidity of Water", approved June 24, 1988.

ASTM Method D2459-72, "Standard Test Method for Gamma Spectrometry in Water," 1975, reapproved 1981, discontinued 1988.

ASTM Method D2907-83, "Standard Test Methods for Microquantities of Uranium in Water by Fluorometry", approved May 27, 1983.

ASTM Method D2972-78A or B, "Standard Test Methods for Arsenic in Water".

ASTM Method D3086-79, "Standard Test Methods for Organochlorine Pesticides In Water".

ASTM Method D3223-79, "Standard Test Method for Total Mercury in Water".

ASTM Method D3478-85, "Standard Test Method for Chlorinated Phenoxy Acid Herbicides in Water", approved November 29, 1985.

ASTM Method D3557-78A or B, "Standard Test Methods for Cadmium in Water".

ASTM Method D3559-78A or B, "Standard Test Methods for Lead in Water".

ASTM Method D3859-79, "Standard Test Methods for Selenium in Water".

ASTM Method D3867-79A or B, "Standard Test Methods for Nitrite-Nitrate in Water".

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.

Methods 302, 303, 304, 305 and 306

Standard Methods for the Examination of Water and Wastewater, 14th Edition, 1976.

Methods 301A II, III, IV, VI and VII

Method 325B

Method 404A and B(4)

Method 419C and D

Method 509A and B

Method 605

Standard Methods for the Examination of Water and Wastewater, 16th Edition, 1985.

Method 43A and C

Method 212

Method 214A

Methods 303A and B

Method 304

Method 408C, D, E and F

Method 410B and C

Method 412D

Method 413 B and E

Method 423

Method 907A

Method 908, 908A, B, C, D and E

Method 909, 909A, B and C

Method 912K

Standard Methods for the Examination of Water and Wastewater, 17th Edition, 1989.

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

AEPA-1 Polymer. See 40 CFR 141.22(a). Also, as referenced in ASTM D1889.

ERDA Health and Safety Laboratory, New York, NY

HASL Procedure Manual, HASL 300, 1973. See 40 CFR 141.25(b)(2).

J.T. Baker Chemical Company, 22 Red School Lane, Phillipsburg, NJ 08865:

Solid Phase Extract (SPE) Test Method Number SPE-550. See 40 CFR 141.24(e), footnote 6.

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.

NTIS. National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161 (703) 487-4600.

"Methods of for Chemical Analysis of Water and Wastes", J. Kopp and D. McGee, Third Edition, March, 1979. EPA-600/4-79-020, Doc. No. PB84-128677

"Microbiological Methods for Monitoring the Environment: Water and Wastes", R. Bodner and J. Winter, 1978. EPA-600/8-78-017, Doc. No. PB290-329/LP

"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

Technicon Industrial Systems, Tarrytown, NY 10591

"Fluoride in Water and Wastewater", Industrial Method #129-71W, December, 1972 See 40 CFR 141.23(f)(10), footnotes 6 and 7.

"Fluoride in Water and Wastewater", #380-75WE, February, 1976. See 40 CFR 141.23(f)(10), footnotes 6 and 7.

United States Environmental Protection Agency, (202) 382-4359

"The Analysis of Trihalomethanes in Drinking Waters by the Purge and Trap Method", Method 501.1. See 40 CFR 141, Subpart C, Appendix C.

"The Analysis of Trihalomethanes in Drinking Water by Liquid/Liquid Extraction," Method 501.2 See 40 CFR 141, Subpart C, Appendix C.

"Inductively Coupled Plasma-Atomic Emission Spectrometric Method for Trace Element Analysis in Water and Wastes -- Method 200.7, with Appendix to Method 200.7" entitled, "Inductively Coupled Plasma-Atomic Emission Analysis of Drinking Water", March 1987. See 40 CFR 136, Appendix C.

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

"Methods for the Determination of Organic Compounds in Drinking Water", EPA/600/4-88/039, December, 1988.

"Methods for Organochlorine Pesticides and Chloro-phenoxy Acid Herbicides in Drinking Water and Raw Source Water"

"Methods of for Chemical Analysis of Water and Wastes". See NTIS

Microbiological Methods for Monitoring the Environment, Water and Wastes". See NTIS

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

United States Environmental Protection Agency, 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. United States Geological Survey.

Techniques of Water-Resources Investigation of the United States Geological Survey:

Book 5, Chapter A-1, "Methods for Determination of Inorganic substances in Water and Fluvial Sediments", 1979

Book 5, Chapter A-3, "Methods for Analysis of Organic Substances in Water," 1971

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

40 CFR 136, Appendix B and C (1989)

40 CFR 141.22(a) (1989)

40 CFR 141.23(f)(10), footnotes 6 and 7 (1989)

40 CFR 141.24(e), footnote 6 (1989)

40 CFR 141.25(b)(2) (1989)

40 CFR 141, Subpart C, Appendix C (1989).

d) This Part incorporates no future amendments or editions.

#### Section 611.103 Severability

If any provision of this Part is adjudged invalid, or if its application to any person or in any circumstance is adjudged invalid, such invalidity does not affect the validity of this Part as a whole, or any other Subpart, Section, subsection, sentence or clause not adjudged invalid.

#### Section 611.108 Delegation to Local Government

The Agency may delegate portions of its inspection, investigating and

enforcement functions to units of local government pursuant to Section 4(r) of the Act.

Section 611.109 Enforcement

- a) Any person may file an enforcement action pursuant to Title VIII of the Act.
- b) The results of monitoring required under this Part may be used in an enforcement action.

BOARD NOTE: Derived from 40 CFR 141.22(e) (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989, and from 40 CFR 141.23(a)(4) (1989).

Section 611.110 Special Exception Permits

- a) Unless otherwise specified, each Agency determination in this Part is to be made by way of a written permit pursuant to Section 39(a) of the Act. Such permit is titled a "special exception" permit.
- b) No person shall cause or allow the violation of any condition of a special exception permit.
- c) The supplier may appeal the denial of or the conditions of a special exception permit to the Board pursuant to Section 40 of the Act.

Section 611.111 Section 1415 Variances

This Section is intended as a State equivalent of Section 1415(a)(1)(A) of the SDWA.

- a) The Board may grant a supplier a variance from a NPDWR in this Part.
  - 1) The supplier shall file a variance petition pursuant to 35 Ill. Adm. Code 104, except as modified or supplemented by this Section.
  - 2) The Board may grant a variance from the additional State requirements in this Part without following this Section.
- b) As part of the showing of arbitrary or unreasonable hardship, the supplier shall demonstrate that:
  - 1) Because of characteristics of the raw water sources which are reasonably available to the system, the supplier cannot meet the MCL or other requirement; and
  - 2) The system has applied BAT as identified in Subpart G. BAT may vary depending on:
    - A) The number of persons served by the system;
    - B) Physical conditions related to engineering feasibility; and

- c) Costs of compliance; and
- 3) The variance will not result in an unreasonable risk to health, as defined in subsection (g).
- c) The Board will prescribe a schedule for:
  - 1) Compliance, including increments of progress, by the supplier, with each MCL or other requirement with respect to which the variance was granted, and
  - 2) Implementation by the supplier of each additional control measure for each MCL or other requirement, during the period ending on the date compliance with such requirement is required.
- d) 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.
- e) The Board will provide notice and opportunity for a public hearing as provided in 35 Ill. Adm. Code 104.
- f) The Board will not grant a variance from the MCL for total coliforms or from any of the treatment technique requirements of Subpart B.
- g) As used in this Section and Section 611.112, "unreasonable risk to health level" ("URTH level") means the concentration of a contaminant which 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 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 which clearly exceed the health benefits to be derived.

BOARD NOTE: Derived from 40 CFR 141.4 (1989), as amended at 54 Fed. Reg. 27562, June 29, 1989, from Section 1415(a)(1)(A) 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.

Section 611.112      Section 1416 Variances

This Section is intended as a State equivalent of Section 1416 of the SDWA.

- a) The Board may grant a supplier a variance from any requirement respecting an MCL or treatment technique requirement of an NPDWR in this Part.
  - 1) The supplier shall file a variance petition pursuant to 35 Ill.

Adm. Code 104, except as modified or supplemented by this Section.

- 2) The Board may grant a variance from the additional State requirements in this Part without following this Section.
- b) As part of the showing of arbitrary or unreasonable hardship, the supplier shall demonstrate that:
- 1) Due to compelling factors (which may include economic factors), the supplier is unable to comply with the MCL or treatment technique requirement;
  - 2) The 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 supplier; and
  - 3) The variance will not result in an unreasonable risk to health.
- c) The Board will prescribe a schedule for:
- 1) Compliance, including increments of progress, by the supplier, with each MCL and treatment technique requirement with respect to which the variance was granted; and
  - 2) Implementation by the supplier of each additional control measure for each contaminant, subject to the MCL or treatment technique requirement, during the period ending on the date compliance with such requirement is required.
- d) 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; but no schedule shall extend more than 12 months after the date of the variance, except as follows:
- 1) The Board may extend the date for a period not to exceed three years beyond the date of the variance if the supplier establishes: that it is taking all practicable steps to meet the standard; and:
    - A) The supplier cannot meet the standard without capital improvements which cannot be completed within 12 months;
    - B) In the case of a supplier which needs financial assistance for the necessary improvements, the supplier has entered into an agreement to obtain such financial assistance; or

- c) The supplier has entered into an enforceable agreement to become a part of a regional PWS; and
- 2) In the case of a PWS with 500 or fewer service connections, and which needs financial assistance for the necessary improvements, a variance under subsections (d)(1)(A) or (B) may be renewed for one or more additional two year periods if the supplier establishes that it is taking all practicable steps to meet the final date for compliance.
- e) The Board will provide notice and opportunity for a public hearing as provided in 35 Ill. Adm. Code 104.
- f) The Agency shall promptly send USEPA the Opinion and Order of the Board granting a variance pursuant to this Section. The Board may reconsider and modify a grant of variance, or variance conditions, if USEPA 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 a variance from the MCL for total coliforms or from any of the treatment technique requirements of Subpart B.

BOARD NOTE: Derived from 40 CFR 141.4 (1989), as amended at 54 Fed. Reg. 27562, June 29, 1989.

#### Section 611.113 Alternative Treatment Techniques

This Section is intended to be equivalent to Section 1415(a)(3) of the SDWA.

- a) Pursuant to this Section, the Board may grant an adjusted standard from a treatment technique requirement.
- b) The supplier seeking an adjusted standard shall file a petition pursuant to 35 Ill. Adm. Code 106.Subpart G.
- c) As justification the supplier shall demonstrate that an alternative treatment technique is at least as effective in lowering the level of the contaminant with respect to which the treatment technique requirement was prescribed.
- d) As a condition of any adjusted standard, the Board will require the use of the alternative treatment technique.

BOARD NOTE: Derived from Section 1415(a)(3) of the SDWA.

#### Section 611.114 Siting requirements

Before a person enters into a financial commitment for or initiates construction of a new PWS or increases the capacity of an existing PWS, the person shall obtain a construction permit pursuant to 35 Ill. Adm. Code 602.101 and, to the extent practicable, avoid locating part or all of the new or expanded facility at a site which:

- a) Is subject to a significant risk from earthquakes, floods, fires or other disasters which could cause a breakdown of the PWS or a portion of the PWS. As used in this subsection, "significant risk" means a greater risk to the new or expanded facility than would exist at other locations within the area served by the PWS. Or,
- b) Except for intake structures, is within the floodplain of a 100-year flood.

BOARD NOTE: Derived from 40 CFR 141.5 (1989).

#### Section 611.115 Source Water Quantity

- a) Surface Supply - The quantity of surface water at the source shall be adequate to supply the total water demand of that CWS, as well as a reasonable surplus for anticipated growth.
- b) Groundwater supply - The quantity of groundwater from the source of supply shall be adequate to supply the total water demand of that CWS, as well as a reasonable surplus for anticipated growth, without excessive depletion of the aquifer.
- c) In determining the adequacy of supply for compliance with this Section, each individual CWS shall be considered in relation to the percentage of the total requirements it is expected to provide.

BOARD NOTE: This is an additional State requirement.

#### Section 611.120 Effective dates

Except as otherwise provided, this Part becomes effective when filed.

BOARD NOTE: Derived from 40 CFR 141.60 (1989).

#### Section 611.121 Maximum Contaminant Levels

- a) No person shall cause or allow water at a specified measurement point to exceed the MCL for any contaminant.
- b) Measurement point: Except as otherwise provided, samples for determining compliance with an MCL must be taken at the following points:
  - 1) For turbidity, at the point of entry to the distribution system.
  - 2) For other contaminants, at the free flowing outlet of the ultimate user of a PWS
- c) There is no violation of the MCL for contaminants added to the water under circumstances controlled by the user, except those resulting from corrosion of piping and plumbing caused by water quality.

BOARD NOTE: Derived from the definition of "MCL" in 40 CFR 141.2 (1989).

Section 611.125 Fluoridation Requirement

All CWSs which are required to add fluoride to the water shall maintain a fluoride ion concentration reported as F of 0.9 to 1.2 mg/l in its distribution system, as required by Section 7(a) of "An Act to provide for safeguarding the public health by vesting certain measures of control and supervision in the Department of Public Health over Public Water Supplies in the State", Ill. Rev. Stat. 1989, ch. 111 1/2, par. 121(g)(1).

BOARD NOTE: This is an additional State requirement.

Section 611.126 Prohibition on Use of Lead

- a) In general. Prohibition. Any pipe, solder or flux, shall be lead free, as defined by subsection (d), if it is used after June 19, 1986, in the installation or repair of:
  - 1) Any PWS, or
  - 2) Any plumbing in a residential or nonresidential facility providing water for human consumption which is connected to a PWS. This subsection does not apply to leaded joints necessary for the repair of cast iron pipes.
  
- d) Definition of lead free. For purposes of this Section, the term "lead free":
  - 1) When used with respect to solders and flux, refers to solders and flux containing not more than 0.2 percent lead, and
  - 2) When used with respect to pipes and pipe fittings, refers to pipes and pipe fittings containing not more than 8.0 percent lead.

BOARD NOTE: Derived from 40 CFR 141.43 (1989).

SUBPART B: FILTRATION AND DISINFECTION

Section 611.201 Requiring a Demonstration

The Agency shall notify each supplier in writing of the date on which any demonstrations pursuant to the Section are required. The Agency shall require demonstrations at times which meet the USEPA requirements for that type of demonstration, allowing sufficient time for the supplier to collect the necessary information.

Section 611.202 Procedures for Agency Determinations

The determinations in this Subpart are by special exception permit.

Section 611.211 Filtration Required

The Agency shall determine that filtration is required unless the PWS meets the following criteria:

- a) Source water quality criteria:
  - 1) Coliforms, see Section 611.231(a)
  - 2) Turbidity, see Section 611.231(b)
- b) Site specific criteria:
  - 1) Disinfection, see Section 611.241(b)
  - 2) Watershed control, see Section 611.232(b)
  - 3) On-site inspection, see Section 611.232(c)
  - 4) Absence of waterborne disease outbreaks, see Section 611.232(d)
  - 5) Total coliform MCL, see Sections 611.232(e) and 611.325.
  - 6) TTHMs MCL, see Section 611.310.

BOARD NOTE: Derived from 40 CFR 141.71, adopted at 54 Fed. Reg. 27526, June 29, 1989, and from the Preamble at 54 Fed. Reg. 27505, June 29, 1989.

#### 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" by June 29, 1994. 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 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 other pathogenic organism associated with surface water (e.g. cryptosporidium), which 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 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, adopted at 54 Fed. Reg. 27526, June 29, 1989; 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.

#### Section 611.213 No Method of HPC Analysis

This Section is used in Sections 611.241(d)(2), 611.242(c)(2), 611.261(b)-(8)(G), 611.262(b)(3)(G), 611.532(f)(2) and 611.533(c)(2). The Agency shall determine that a system has no means for having a sample analyzed for HPC if the Agency determines that such action is warranted, based on the following site-specific conditions:

- a) There is no certified laboratory which can analyze the sample within the time and temperatures specified in Standard Methods, 16th Edition, Method 907A, incorporated by reference in Section 611.102, considering:
  - 1) Transportation time to the nearest laboratory pursuant to Section 611.490; and
  - 2) Based on the size of the PWS, whether it should acquire in-house laboratory capacity to measure HPC; and
- b) The supplier is providing adequate disinfection in the distribution system, considering:
  - 1) Other measurements which show the presence of RDC in the distribution system;
  - 2) The size of the distribution system;
  - 3) The adequacy of the supplier's cross connection control program.
- c) The PWS cannot maintain an RDC in the distribution system.

BOARD NOTE: Derived from 40 CFR 141.72(a)(4)(ii) (1989), adopted at 54 Fed. Reg. 27526, June 29, 1989, and from the Preamble at 54 Fed. Reg. 27495, June 29, 1989.

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 Section 611.230 and the disinfection requirements in Section 611.241; or
  - 2) It meets the filtration requirements in Section 611.230 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 Ill. Rev. Stat. 1989, ch. 111 1/2, par. 501 et seq.

BOARD NOTE: Derived from 40 CFR 141.70 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

Section 611.230 Filtration Effective Dates

- a) A supplier that uses a surface water source shall meet all of the conditions of Section 611.231 and 611.232, and is subject to Section 611.233, beginning December 30, 1991, unless the Agency has determined that filtration is required.
- b) A supplier that uses a groundwater source under the direct influence of surface water shall meet all of the conditions of Section 611.231

and 611.232, and is subject to Section 611.233, beginning 18 months after the Agency determines that it is under the direct influence of surface water, or December 30, 1991, whichever is later, unless the Agency has determined that filtration is required.

- c) If the Agency determines, before December 30, 1991, that filtration is required, the system shall have installed filtration and shall meet the criteria for filtered systems specified in Section 611.242 and Section 611.250 by June 29, 1993.
- d) Within 18 months of the failure of a system using surface water or a groundwater source under the direct influence of surface water to meet any one of the requirements of Section 611.231 and 611.232, or after June 29, 1993, whichever is later, the system shall have installed filtration and meet the criteria for filtered systems specified in Sections 611.242 and 611.250.

BOARD NOTE: Derived from 40 CFR 141.71 preamble (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

#### Section 611.231 Source Water Quality Conditions

The Agency shall consider the following source water quality conditions in determining whether to require filtration pursuant to Section 611.211:

- a) The fecal coliform concentration must be equal to or less than 20/100 ml, or the total coliform concentration must be equal to or less than 100/100 ml (measured as specified in Section 611.531(a) or (b) and 611.532(a)) in representative samples of the source water immediately prior to the first or only point of disinfectant application in at least 90 percent of the measurements made for the 6 previous months that the system served water to the public on an ongoing basis. If a system measures both fecal and total coliforms, the fecal coliform criterion, but not the total coliform criterion, in this subsection, must be met.
- b) The turbidity level cannot exceed 5 NTU (measured as specified in Section 611.531(d) and 611.532(b) in representative samples of the source water immediately prior to the first or only point of disinfectant application unless:
  - 1) The Agency determines that any such event was caused by circumstances that were unusual and unpredictable; and
  - 2) As a result of any such event there have not been more than two events in the past 12 months the system served water to the public, or more than five events in the past 120 months the system served water to the public, in which the turbidity level exceeded 5 NTU. An "event" is a series of consecutive days during which at least one turbidity measurement each day exceeds 5 NTU.

BOARD NOTE: Derived from 40 CFR 141.71(a) (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

- c) Each CWS must take its raw water from the best available source which is economically reasonable and technically possible.

BOARD NOTE: This is an additional State requirement.

- d) Use of recycled sewage treatment plant effluent by a CWS on a routine basis shall not be permitted.

BOARD NOTE: This is an additional State requirement.

#### 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 requirements of Section 611.241(b) 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. 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:

- 1) The comprehensiveness of the watershed review;
- 2) The effectiveness of the system's program to monitor and control detrimental activities occurring in the watershed; and
- 3) The the extent to which the water system has maximized land

ownership or controlled land use within the watershed. At a minimum, the watershed control program must:

- A) Characterize the watershed hydrology and land ownership;
  - B) Identify watershed characteristics and activities which may have an adverse effect on source water quality; and
  - C) Monitor the occurrence of activities which may have an adverse effect on source water quality.
- 4) 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. Either the Agency or a unit of local government delegated pursuant to Section 611.108 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 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.

BOARD NOTE: Derived from 40 CFR 141.71(b) (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

Section 611.233 Treatment Technique Violations

- a) A supplier is in violation of a treatment technique requirement if:
  - 1) Filtration is required because:
    - A) The supplier fails to meet any one of the criteria in Section 611.231 and 611.232; or
    - B) The Agency has determined, pursuant to Section 611.211, that filtration is required; and
  - 2) The supplier fails to install filtration by the date specified in Section 611.230.
- b) A supplier which has not installed filtration is in violation of a treatment technique requirement if:
  - 1) The turbidity level (measured as specified in Section 611.531(d) and 611.532(b)) in a representative sample of the source water immediately prior to the first or only point of disinfection application exceeds 5 NTU; or
  - 2) The system is identified as a source of a waterborne disease outbreak.

BOARD NOTE: Derived from 40 CFR 141.71(c) (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

Section 611.240 Disinfection

- a) A supplier that uses a surface water source and does not provide filtration treatment shall provide the disinfection treatment specified in Section 611.241 beginning December 30, 1991.

- b) A supplier that uses a groundwater source under the influence of surface water and does not provide filtration treatment shall provide disinfection treatment specified in Section 611.241 beginning December 30, 1991, or 18 months after the Agency determines that the groundwater source is under the influence of surface water, whichever is later, unless the Agency has determined that filtration is required.
- c) If the Agency determines that filtration is required, the Agency may, by special exception permit, require the supplier to comply with interim disinfection requirements before filtration is installed.
- d) A system that uses a surface water source that provides filtration treatment shall provide the disinfection treatment specified in Section 611.242 beginning June 29, 1993, or beginning when filtration is installed, whichever is later.
- e) A system that uses a groundwater source under the direct influence of surface water and provides filtration treatment shall provide disinfection treatment as specified in Section 611.242 by June 29, 1993 or beginning when filtration is installed, whichever is later.
- f) Failure to meet any requirement of the following Sections after the applicable date specified in this Section is a treatment technique violation.

BOARD NOTE: Derived from 40 CFR 141.72 preamble (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

- g) CWS suppliers using groundwater which is not under the direct influence of surface water shall provide disinfection pursuant to Section 611.241 or 611.242, unless the Agency has granted the supplier an exemption pursuant to Section 17(b) of the Act.

BOARD NOTE: This is an additional State requirement.

#### Section 611.241 Unfiltered PWSs

Each supplier that does not provide filtration treatment shall provide disinfection treatment as follows:

- a) The disinfection treatment must be sufficient to ensure at least 99.9 percent (3-log) inactivation of *Giardia lamblia* cysts and 99.99 percent (4-log) inactivation of viruses, every day the system serves water to the public, except any one day each month. Each day a system serves water to the public, the supplier shall calculate the CT value(s) from the system's treatment parameters using the procedure specified in Section 611.532(c) and determine whether this value(s) is sufficient to achieve the specified inactivation rates for *Giardia lamblia* cysts and viruses.
  - 1) If a system uses a disinfectant other than chlorine, the system may demonstrate to the Agency, through the use of an Agency-

approved protocol for on-site disinfection challenge studies or other information, that CT99.9 values other than those specified in Appendix B, Tables 2.1 and 3.1 or other operational parameters are adequate to demonstrate that the system is achieving minimum inactivation rates required by this subsection.

- 2) The demonstration must be made by way of special exception permit application.
- b) The disinfection system must have either:
- 1) Redundant components, including an auxiliary power supply with automatic start-up and alarm to ensure that disinfectant application is maintained continuously while water is being delivered to the distribution system; or
  - 2) Automatic shut-off of delivery of water to the distribution system whenever there is less than 0.2 mg/L of RDC in the water. If the Agency determines, by special exception permit, that automatic shut-off would cause unreasonable risk to health or interfere with fire protection, the system shall comply with subsection (b)(1).
- c) The RDC in the water entering the distribution system, measured as specified in Section 611.531(e) and 611.532(e), cannot be less than 0.2 mg/L for more than 4 hours.
- d) RDC in the distribution system.
- 1) The RDC in the distribution system, measured as total chlorine, combined chlorine or chlorine dioxide, as specified in Section 611.531(e) and 611.532(e), cannot be undetectable in more than 5 percent of the samples each month for any two consecutive months that the system serves water to the public. Water in the distribution system with HPC less than or equal to 500/ml, measured as specified in Section 611.531(c), is deemed to have a detectable RDC for purposes of determining compliance with this requirement. Thus, the value "V" in the following formula cannot exceed 5 percent in one month, for any two consecutive months.

$$V = 100(c + d + e) / (a + b)$$

where:

- a = Number of instances where the RDC is measured.
- b = Number of instances where the RDC is not measured, but HPC is measured.
- c = Number of instances where the RDC is measured but not detected and no HPC is measured.

- d = Number of instances where the RDC is measured but not detected, and where the HPC is greater than 500/ml.  
And,
- e = Number of instances where the RDC is not measured and HPC is greater than 500/ml.

- 2) Subsection (d)(1) does not apply if the Agency determines, pursuant to Section 611.213, that a supplier has no means for having a sample analyzed for HPC.

BOARD NOTE: Derived from 40 CFR 141.72(a) (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

#### Section 611.242 Filtered PWSs

Each supplier that provides filtration treatment shall provide disinfection treatment as follows:

- a) The disinfection treatment must be sufficient to ensure that the total treatment processes of that system achieve at least 99.9 percent (3-log) inactivation and/or removal of *Giardia lamblia* cysts and at least 99.99 percent (4-log) inactivation and/or removal of viruses.
- b) The RDC in the water entering the distribution system, measured as specified in Section 611.531(e) and 611.533(b), cannot be less than 0.2 mg/L for more than 4 hours.
- c) RDC in the distribution system.
  - 1) The RDC in the distribution system, measured as total chlorine, combined chlorine or chlorine dioxide, as specified in Section 611.531(e) and 611.533(c), cannot be undetectable in more than 5 percent of the samples each month, for any two consecutive months that the system serves water to the public. Water in the distribution system with HPC less than or equal to 500/ml, measured as specified in Section 611.531(c), is deemed to have a detectable RDC for purposes of determining compliance with this requirement. Thus, the value "V" in the following formula cannot exceed 5 percent in one month, for any two consecutive months.

$$V = 100(c + d + e) / (a + b)$$

where:

- a = Number of instances where the RDC is measured.
- b = Number of instances where the RDC is not measured, but HPC is measured.
- c = Number of instances where the RDC is measured but not detected and no HPC is measured.

- d = Number of instances where the RDC is measured but not detected, and where HPC is greater than 500/ml. And,
- e = Number of instances where the RDC is not measured and HPC is greater than 500/ml.

- 2) Subsection (c)(1) does not apply if the Agency determines, pursuant to Section 611.213, that a supplier has no means for having a sample analyzed for HPC.

BOARD NOTE: Derived from 40 CFR 141.72(b) (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

#### 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 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 shall 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 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 5 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.
- e) Turbidity is measured as specified in Sections 611.531(d) and 611.533(a).

BOARD NOTE: Derived from 40 CFR 141.73 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

Section 611.261 Unfiltered PWSs: Reporting and Recordkeeping

A supplier that uses a surface water source and does not provide filtration treatment shall report monthly to the Agency the information specified in this Section beginning December 31, 1990, unless the Agency has determined that filtration is required, in which case the Agency shall, by special exception permit, specify alternative reporting requirements, as appropriate, until filtration is in place. A supplier that uses a groundwater source under the direct influence of surface water and does not provide filtration treatment shall report monthly to the Agency the information specified in this Section beginning December 31, 1990, or 6 months after the Agency determines that the groundwater source is under the direct influence of surface water, whichever is later, unless the Agency has determined that filtration is required, in which case the Agency shall, by special exception permit, specify alternative reporting requirements, as appropriate, until filtration is in place.

- a) Source water quality information must be reported to the Agency within 10 days after the end of each month the system serves water to the public. Information that must be reported includes:
  - 1) The cumulative number of months for which results are reported.
  - 2) The number of fecal or total coliform samples, whichever are analyzed during the month (if a system monitors for both, only

fecal coliforms must be reported), the dates of sample collection, and the dates when the turbidity level exceeded 1 NTU.

- 3) The number of samples during the month that had equal to or less than 20/100 ml fecal coliforms or equal to or less than 100/100 ml total coliforms, whichever are analyzed.
  - 4) The cumulative number of fecal or total coliform samples, whichever are analyzed, during the previous six months the system served water to the public.
  - 5) The cumulative number of samples that had equal to or less than 20/100 ml fecal coliforms or equal to or less than 100/100 ml total coliforms, whichever are analyzed, during the previous six months the system served water to the public.
  - 6) The percentage of samples that had equal to or less than 20/100 ml fecal coliforms or equal to or less than 100/100 ml total coliforms, whichever are analyzed, during the previous six months the system served water to the public.
  - 7) The maximum turbidity level measured during the month, the date(s) of occurrence for any measurement(s) which exceeded 5 NTU and the date(s) the occurrence(s) was reported to the Agency.
  - 8) For the first 12 months of recordkeeping, the dates and cumulative number of events during which the turbidity exceeded 5 NTU, and after one year of recordkeeping for turbidity measurements, the dates and cumulative number of events during which the turbidity exceeded 5 NTU in the previous 12 months the system served water to the public.
  - 9) For the first 120 months of recordkeeping, the dates and cumulative number of events during which the turbidity exceeded 5 NTU, and after 10 years of recordkeeping for turbidity measurements, the dates and cumulative number of events during which the turbidity exceeded 5 NTU in the previous 120 months the system served water to the public.
- b) Disinfection information specified in Section 611.532 must be reported to the Agency within 10 days after the end of each month the system serves water to the public. Information that must be reported includes:
- 1) For each day, the lowest measurement of RDC in mg/L in water entering the distribution system.
  - 2) The date and duration of each period when the RDC in water entering the distribution system fell below 0.2 mg/L and when the Agency was notified of the occurrence.
  - 3) The daily RDC(s) (in mg/L) and disinfectant contact time(s) (in

minutes) used for calculating the CT value(s).

- 4) If chlorine is used, the daily measurement(s) of pH of disinfected water following each point of chlorine disinfection.
- 5) The daily measurement(s) of water temperature in degrees C following each point of disinfection.
- 6) The daily CT<sub>calc</sub> and A<sub>i</sub> values for each disinfectant measurement or sequence and the sum of all A<sub>i</sub> values (B) before or at the first customer.
- 7) The daily determination of whether disinfection achieves adequate Giardia cyst and virus inactivation, i.e., whether A<sub>i</sub> is at least 1.0 or, where disinfectants other than chlorine are used, other indicator conditions that the Agency, pursuant to Section 611.241(a)(1), determines are appropriate, are met.
- 8) The following information on the samples taken in the distribution system in conjunction with total coliform monitoring pursuant to Section 611.240 et seq.:
  - A) Number of instances where the RDC is measured;
  - B) Number of instances where the RDC is not measured but HPC is measured;
  - C) Number of instances where the RDC is measured but not detected and no HPC is measured;
  - D) Number of instances where no RDC is detected and where HPC is greater than 500/ml;
  - E) Number of instances where the RDC is not measured and HPC is greater than 500/ml;
  - F) For the current and previous month the system served water to the public, the value of "V" in the following formula:

$$V = 100(c + d + e) / (a + b)$$

where:

- a = Value in subsection (b)(8)(A).
- b = Value in subsection (b)(8)(B).
- c = Value in subsection (b)(8)(C).
- d = Value in subsection (b)(8)(D). And,
- e = Value in subsection (b)(8)(E).
- G) The requirements of subsections (b)(8)(A) through (F) do

not apply if the Agency determines, pursuant to Section 611.213, that a system has no means for having a sample analyzed for HPC.

- 9) A system need not report the data listed in subsections (b)(1), and (b)(3) through (6), if all data listed in subsections (b)(1) through (b)(8) remain on file at the system, and the Agency determines, by special exception permit, that:
  - A) The system has submitted to the Agency all the information required by subsections (b)(1) through (8) for at least 12 months; and
  - B) The Agency has determined that the system is not required to provide filtration treatment.
- c) By October 10 of each year, each system shall provide to the Agency a report which summarizes its compliance with all watershed control program requirements specified in 611.232(b).
- d) By October 10 of each year, each system shall provide to the Agency a report on the on-site inspection conducted during that year pursuant to Section 611.232(c), unless the on-site inspection was conducted by the Agency. If the inspection was conducted by the Agency, the Agency shall provide a copy of its report to the supplier.
- e) Reporting health threats.
  - 1) Each system, upon discovering that a waterborne disease outbreak potentially attributable to that water system has occurred, shall report that occurrence to the Agency as soon as possible, but no later than by the end of the next business day.
  - 2) If at any time the turbidity exceeds 5 NTU, the system shall inform the Agency as soon as possible, but no later than the end of the next business day.
  - 3) If at any time the RDC falls below 0.2 mg/L in the water entering the distribution system, the system shall notify the Agency as soon as possible, but no later than by the end of the next business day. The system also shall notify the Agency by the end of the next business day whether or not the RDC was restored to at least 0.2 mg/L within 4 hours.

BOARD NOTE: Derived from 40 CFR 141.75(a) (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

#### Section 611.262 Filtered PWSs: Reporting and Recordkeeping

A supplier that uses a surface water source or a groundwater source under the direct influence of surface water and provides filtration treatment shall report monthly to the Agency the information specified in this Section beginning June 29, 1993, or when filtration is installed, whichever is later.

- a) Turbidity measurements as required by Section 611.533(a) must be reported within 10 days after the end of each month the system serves water to the public. Information that must be reported includes:
- 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 611.250 for the filtration technology being used.
  - 3) The date and value of any turbidity measurements taken during the month which exceed 5 NTU.
- b) Disinfection information specified in Section 611.533 must be reported to the Agency within 10 days after the end of each month the system serves water to the public. Information that must be reported includes:
- 1) For each day, the lowest measurement of RDC in mg/L in water entering the distribution system.
  - 2) The date and duration of each period when the RDC in water entering the distribution system fell below 0.2 mg/L and when the Agency was notified of the occurrence.
  - 3) The following information on the samples taken in the distribution system in conjunction with total coliform monitoring pursuant to Section 611.240 et seq.:
    - A) Number of instances where the RDC is measured;
    - B) Number of instances where the RDC is not measured but HPC is measured;
    - C) Number of instances where the RDC is measured but not detected and no HPC is measured;
    - D) Number of instances where no RDC is detected and where HPC is greater than 500/ml;
    - E) Number of instances where the RDC is not measured and HPC is greater than 500/ml;
    - F) For the current and previous month the system serves water to the public, the value of "V" in the following formula:

$$V = 100(c + d + e) / (a + b)$$

where:

a = Value in subsection (b)(3)(A).

b =Value in subsection (b)(3)(B).

c =Value in subsection (b)(3)(C).

d =Value in subsection (b)(3)(D). And,

e =Value in subsection (b)(3)(E).

G) Subsections (b)(3)(A) through (F) do not apply if the Agency determines, pursuant to Section 611.213, that a system has no means for having a sample analyzed for HPC.

c) Reporting health threats.

- 1) Each system, upon discovering that a waterborne disease outbreak potentially attributable to that water system has occurred, shall report that occurrence to the Agency as soon as possible, but no later than by the end of the next business day.
- 2) If at any time the turbidity exceeds 5 NTU, the system shall inform the Agency as soon as possible, but no later than the end of the next business day.
- 3) If at any time the residual falls below 0.2 mg/L in the water entering the distribution system, the system shall notify the Agency as soon as possible, but no later than by the end of the next business day. The system also shall notify the Agency by the end of the next business day whether or not the residual was restored to at least 0.2 mg/L within 4 hours.

BOARD NOTE: Derived from 40 CFR 141.75(b) (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

#### Section 611.271 Protection during Repair Work

The supplier shall prevent contamination of water at the source or in the CWS during repair, reconstruction or alteration.

BOARD NOTE: This is an additional State requirement.

#### Section 611.272 Disinfection following Repair

- a) After any portion of the CWS has been repaired, reconstructed or altered, the supplier shall disinfect that portion before putting it into operation.
- b) The disinfection procedure must be approved by special exception permit.

BOARD NOTE: This is an additional State requirement.

### SUBPART J: USE OF NON-CENTRALIZED TREATMENT DEVICES

#### Section 611.280 Point-of-Entry Devices

- a) Suppliers may use point-of-entry devices to comply with MCLs only if they meet the requirements of this Section.
- b) It is the responsibility of the supplier to operate and maintain the point-of entry treatment system.
- c) The supplier shall develop a monitoring plan before point-of-entry devices are installed for compliance.
  - 1) Point-of-entry devices must provide health protection equivalent to central water treatment. "Equivalent" means that the water would meet all NPDWR and would be of acceptable quality similar to water distributed by a well-operated central treatment plant.
  - 2) In addition to the VOCs, monitoring must include physical measurements and observations such as total flow treated and mechanical condition of the treatment equipment.
  - 3) Use of point-of-entry devices must be approved by special exception permit.
- d) Effective technology must be properly applied under a plan approved by the Agency and the microbiological safety of the water must be maintained.
  - 1) The Agency shall require adequate certification of performance, field testing, and, if not included in the certification process, a rigorous engineering design review of the point-of-entry devices.
  - 2) The design and application of the point-of-entry devices must consider the tendency for increase in heterotrophic bacteria concentrations in water treated with activated carbon. The Agency may require, by special exception permit, frequent backwashing, post-contactor disinfection and HPC monitoring to ensure that the microbiological safety of the water is not compromised.
- e) All consumers must be protected. Every building connected to the system must have a point-of-entry device installed, maintained and adequately monitored. The Agency must be assured that every building is subject to treatment and monitoring, and that the rights and responsibilities of the PWS customer convey with title upon sale of property.

BOARD NOTE: Derived from 40 CFR 141.100 (1989).

#### Section 611.290 Use of other Non-centralized Treatment Devices

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

BOARD NOTE: Derived from 40 CFR 141.101 (1989).

SUBPART F: MAXIMUM CONTAMINANT LEVELS (MCL'S)

Section 611.300 Inorganic Chemicals

- a) The MCL for nitrate is applicable to both CWS suppliers and non-CWS suppliers except as provided by in subsection (d). The levels for the other inorganic chemicals apply only to CWS suppliers. The levels for additional State requirements apply only to CWSs. Compliance with MCLs for inorganic chemicals is calculated pursuant to Subpart N.

BOARD NOTE: Derived from 40 CFR 141.11(a) (1989).

- b) The following are the MCL's for inorganic chemicals:

Contaminant	Level, mg/L	Additional State Requirement
Arsenic.....	0.05	
Barium.....	1.	
Cadmium.....	0.010	
Chromium.....	0.05	
Copper.....	5.	*
Cyanide.....	0.2	*
Fluoride.....	4.0	
Iron.....	1.0	*
Lead.....	0.05	
Manganese.....	0.15	*
Mercury.....	0.002	
Nitrate (as N).....	10.	
Selenium.....	0.01	
Silver.....	0.05	
Zinc.....	5.	*

BOARD NOTE: Derived from 40 CFR 141.11(b) and 141.62 (1989).

- c) The secondary MCL for fluoride is 2.0 mg/L.

BOARD NOTE: Derived from 40 CFR 141.11(c) (1989).

- d) Nitrate.

- 1) The Board incorporates by reference 40 CFR 141.11(d) (1989). This incorporation includes no later editions or amendments.
- 2) If allowed by Public Health, non-CWSs may exceed the MCL for nitrate to the extent authorized by 40 CFR 141.11(d).

BOARD NOTE: Derived from 40 CFR 141.11(d) (1989). Public Health regulations are at 77 Ill. Adm. Code 900.50.

e) The following supplementary condition applies to the concentrations listed in subsection (b): Iron and manganese:

- 1) CWS suppliers which serve a population of 1000 or less, or 300 service connections or less, are exempt from the standards for iron and manganese.
- 2) The Agency may, by special exception permit, allow iron and manganese in excess of the MCL if sequestration tried on an experimental basis proves to be effective. If sequestration is not effective, positive iron or manganese reduction treatment as applicable must be provided. Experimental use of a sequestering agent may be tried only if approved by special exception permit.

BOARD NOTE: This is an additional State requirement.

Section 611.310 Organic Chemicals

The following are the MCLs for organic chemicals. The MCLs for organic chemicals in subsections (a) and (b) apply to all CWSs. The levels for additional State requirements apply only to 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
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a) Chlorinated hydrocarbons:

Aldrin.....	0.001	*
Chlordane.....	0.003	*
DDT.....	0.05	*
Dieldrin.....	0.001	*
Endrin .....	0.0002	
Heptachlor.....	0.0001	*
Heptachlor epoxide.....	0.0001	*
Lindane.....	0.004	
Methoxychlor.....	0.1	
Toxaphene.....	0.005	

b) Chlorophenoxy:

2,4-D.....	0.01	*
2,4,5-TP (Silvex).....	0.01	

BOARD NOTE: Derived from 40 CFR 141.12 (1989).

c) TTHM ..... 0.10 \*

d) TTHM. CWS suppliers serving fewer than 10,000 individuals shall comply with the TTHM standard by January 1, 1992.

BOARD NOTE: This is an additional State requirement.

Section 611.311 VOCs

- a) The following MCL levels for VOCs apply to CWS suppliers and NTNCWS suppliers.

CAS No.	Contaminant	MCL (mg/L)
71-43-2	Benzene.....	0.005
75-01-4	Vinyl chloride.....	0.002
56-23-5	Carbon tetrachloride.....	0.005
107-06-2	1,2-Dichloroethane.....	0.005
79-01-6	Trichloroethylene.....	0.005
75-35-4	1,1-Dichloroethylene.....	0.007
71-55-6	1,1,1-Trichloroethane.....	0.20
106-46-7	para-Dichlorobenzene.....	0.075

- b) BATs for achieving compliance with the MCLs for VOCs are: central treatment using packed tower aeration; central treatment using granular activated carbon for all these chemicals except vinyl chloride.

BOARD NOTE: Derived from 40 CFR 141.61 (1989).

Section 611.320 Turbidity

This Section applies to unfiltered PWSs until December 30, 1991, unless the Agency or Public Health has determined, pursuant to Section 611.211, prior to that date that filtration is required. This Section applies to unfiltered systems that the Agency has determined, pursuant to Section 611.211, must install filtration, until June 29, 1993, or until filtration is installed, whichever is later. The MCLs for turbidity are applicable to both CWS suppliers and non-CWS suppliers using surface water sources in whole or in part. The MCLs for turbidity in drinking water, measured at a representative entry point(s) to the distribution system, are:

- a) One turbidity unit, as determined by a monthly average pursuant to Subpart M, except that five or fewer turbidity units are allowed if the supplier demonstrates, by special exception permit application, that the higher turbidity does not do any of the following:
  - 1) Interfere with disinfection;
  - 2) Prevent maintenance of an effective disinfectant agent throughout the distribution system; or
  - 3) Interfere with microbiological determinations.
- b) Five turbidity units based on an average for two consecutive days pursuant to Subpart M.

BOARD NOTE: Derived from 40 CFR 141.13 (1989), as amended at 54 Fed.

Reg. 27526, June 29, 1989.

Section 611.325 Microbiological Contaminants

- a) The MCL is based on the presence or absence of total coliforms in a sample, rather than coliform density.
  - 1) For a supplier which collects at least 40 samples per month, if no more than 5.0 percent of the samples collected during a month are total coliform-positive, the supplier is in compliance with the MCL for total coliforms.
  - 2) For a supplier which collects fewer than 40 samples per month, if no more than one sample collected during a month is total coliform-positive, the supplier is in compliance with the MCL for total coliforms.
- b) Any fecal coliform-positive repeat sample or E. coli-positive repeat sample, or any total coliform-positive repeat sample following a fecal coliform-positive or E. coli-positive routine sample, constitutes a violation of the MCL for total coliforms. For purposes of the public notification requirements in Section 611.851 et seq., this is a violation that may pose an acute risk to health.
- c) A supplier shall determine compliance with the MCL for total coliforms in subsections (a) and (b) for each month in which it is required to monitor for total coliforms.
- d) BATs for achieving compliance with the MCL for total coliforms in subsections (a) and (b):
  - 1) Protection of wells from contamination by coliforms by appropriate placement and construction;
  - 2) Maintenance of RDC throughout the distribution system;
  - 3) Proper maintenance of the distribution system including appropriate pipe replacement and repair procedures, main flushing programs, proper operation and maintenance of storage tanks and reservoirs and continual maintenance of positive water pressure in all parts of the distribution system;
  - 4) Filtration and disinfection of surface water, as described in Subpart B, or disinfection of groundwater using strong oxidants such as chlorine, chlorine dioxide or ozone; or
  - 5) The development and implementation of an approved wellhead protection program.

BOARD NOTE: Derived from 40 CFR 141.63 (1989), as amended at 54 Fed. Reg. 27562, June 29, 1989.

Section 611.330 Radium and Gross Alpha Particle Activity

The following are the MCLs for radium-226, radium-228 and gross alpha particle radioactivity:

- a) Combined radium-226 and radium-228 - 5 pCi/L.
- b) Gross alpha particle activity (including radium-226 but excluding radon and uranium) - 15 pCi/L.

BOARD NOTE: Derived from 40 CFR 141.15 (1989).

Section 611.331 Beta Particle and Photon Radioactivity

- a) The average annual concentration of beta particle and photon radioactivity from man-made radionuclides in drinking water must not produce an annual dose equivalent to the total body or any internal organ greater than 4 mrem/year.
- b) Except for the radionuclides listed below, the concentration of man-made radionuclides causing 4 mrem total body or organ dose equivalents must be calculated on the basis of a 2 liter per day drinking water intake using the 168 hour data 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. If two or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any organ must not exceed 4 mrem/year.

AVERAGE ANNUAL CONCENTRATIONS ASSUMED TO PRODUCE A TOTAL BODY OR ORGAN DOSE OF 4 mrem/year

Radionuclide	Critical Organ	pCi/L
Tritium	Total body	20,000
Strontium-90	Bone marrow	8

BOARD NOTE: Derived from 40 CFR 141.16 (1989).

SUBPART K: GENERAL MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.480 Alternative Analytical Techniques

The Agency may approve, by special exception permit, an alternate analytical technique. The Agency shall not approve an alternate analytical technique without the concurrence of USEPA. The Agency shall approve an alternate technique if it is substantially equivalent to the prescribed test in both precision and accuracy as it relates to the determination of compliance with any MCL. The use of the alternate analytical technique must not decrease the frequency of monitoring required by this Part.

BOARD NOTE: Derived from 40 CFR 141.27 (1989).

Section 611.490 Certified Laboratories

- a) For the purpose of determining compliance with Subparts L through Q, samples will be considered only if they have been analyzed:
  - 1) By a laboratory certified pursuant to Section 4(o) of the Act; or,
  - 2) By a laboratory certified by USEPA; or,
  - 3) Measurements for turbidity, free chlorine residual, temperature and pH may be performed under the supervision of a certified operator (35 Ill. Adm. Code 603.103).
- b) Nothing in this Part shall be construed to preclude the Agency or any duly designated representative of the Agency from taking samples or from using the results from such samples to determine compliance by a supplier of water with the applicable requirements of this Part.

BOARD NOTE: Derived from 40 CFR 141.28 (1989).

- c) The CWS supplier shall have required analyses performed either at an Agency laboratory, or a certified laboratory. The Agency may require that some or all of the required samples be submitted to its laboratories.

BOARD NOTE: This is an additional State requirement.

#### Section 611.491 Laboratory Testing Equipment

- a) Each CWS supplier shall have adequate laboratory equipment and capability to perform operational tests (except bacteriological) appropriate to the parameters to be tested and the type of treatment employed. Such equipment must be in good operating condition, and the operator on duty must be familiar with the procedure for performing the tests.
- b) Nothing in this Subpart shall be construed to prevent a CWS supplier from running control laboratory tests in an uncertified laboratory. These results are not to be included in the required monitoring results.

BOARD NOTE: This is an additional State requirement.

#### Section 611.500 Consecutive PWSs

When a PWS supplies water to one or more other PWSs, the Agency shall modify the monitoring requirements imposed by this Part to the extent that the interconnection of the PWSs justifies treating them as a single PWS for monitoring purposes. Any modified monitoring must be conducted pursuant to a schedule specified by special exception permit. The Agency shall not approve such modified monitoring without the concurrence of USEPA.

BOARD NOTE: Derived from 40 CFR 141.29 (1989).

#### SUBPART L: MICROBIOLOGICAL MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.521 Routine Coliform Monitoring

- a) Suppliers shall collect total coliform samples at sites which are representative of water throughout the distribution system according to a written sample siting plan, which must be approved by by special exception permit.
- b) The monitoring frequency for total coliforms for CWSs is based on the population served by the CWS, as set forth in Table A. If a CWS serving 25 to 1,000 persons has no history of total coliform contamination in its current configuration and a sanitary survey conducted in the past five years shows that the CWS is supplied solely by a protected groundwater source and is free of sanitary defects, the Agency shall reduce the monitoring frequency specified in Table A, except that in no case shall the Agency reduce the monitoring frequency to less than one sample per quarter. The Agency shall approve the reduced monitoring frequency by special exception permit.
- c) The monitoring frequency for total coliforms for non-CWSs is as follows:
  - 1) A non-CWS using only groundwater (except groundwater under the direct influence of surface water, as determined in Section 611.212) and serving 1,000 persons or fewer shall monitor each calendar quarter that the system provides water to the public, except that Public Health shall reduce this monitoring frequency if a sanitary survey shows that the system is free of sanitary defects. Beginning June 29, 1994, Public Health cannot reduce the monitoring frequency for a non-CWS using only groundwater (except groundwater under the direct influence of surface water) and serving 1,000 persons or fewer to less than once per year.
  - 2) A non-CWS using only groundwater (except groundwater under the direct influence of surface water) and serving more than 1,000 persons during any month shall monitor at the same frequency as a like-sized CWS, as specified in subsection (b), except Public Health shall reduce this monitoring frequency for any month the system serves 1,000 persons or fewer. Public Health cannot reduce the monitoring to less than once per year. For systems using groundwater under the direct influence of surface water, subsection (c)(4) applies.
  - 3) A non-CWS using surface water, in total or in part, shall monitor at the same frequency as a like-sized CWS, as specified in subsection (b), regardless of the number of persons it serves.
  - 4) A non-CWS using groundwater under the direct influence of surface water, shall monitor at the same frequency as a like-sized CWS, as specified in subsection (b). The supplier shall begin monitoring at this frequency beginning six months after Public Health determines that the groundwater is under the direct influence of surface water.

- d) The supplier shall collect samples at regular time intervals throughout the month, except that a supplier which uses groundwater (except groundwater under the direct influence of surface water) and serves 4,900 persons or fewer, may collect all required samples on a single day if they are taken from different sites.
- e) A PWS that uses surface water or groundwater under the direct influence of surface water, and does not practice filtration in compliance with Subpart B, shall collect at least one sample near the first service connection each day the turbidity level of the source water, measured as specified in Section 611.532(b), exceeds 1 NTU. This sample must be analyzed for the presence of total coliforms. When one or more turbidity measurements in any day exceed 1 NTU, the supplier shall collect this coliform sample within 24 hours of the first exceedance, unless the Agency has determined, by special exception permit, that the supplier, for logistical reasons outside the supplier's control, cannot have the sample analyzed within 30 hours of collection. Sample results from this coliform monitoring must be included in determining compliance with the MCL for total coliforms in Section 611.325.
- f) Special purpose samples, such as those taken to determine whether disinfection practices are sufficient following pipe placement, replacement or repair, must not be used to determine compliance with the MCL for total coliforms in Section 611.325.

BOARD NOTE: Derived from 40 CFR 141.21(a) (1989), as amended at 54 Fed. Reg. 27562, June 29, 1989.

#### Section 611.522 Repeat Coliform Monitoring

- a) If a routine sample is total coliform-positive, the supplier shall collect a set of repeat samples within 24 hours of being notified of the positive result. A supplier which collects more than one routine sample per month shall collect no fewer than three repeat samples for each total coliform-positive sample found. A supplier which collects one routine sample per month or fewer shall collect no fewer than four repeat samples for each total coliform-positive sample found. The Agency shall extend the 24-hour limit on a case-by-case basis if the supplier has a logistical problem in collecting the repeat samples within 24 hours that is beyond its control. In the case of an extension, the Agency shall specify how much time the supplier has to collect the repeat samples.
- b) The supplier shall collect at least one repeat sample from the sampling tap where the original total coliform-positive sample was taken, and at least one repeat sample at a tap within five service connections upstream and at least one repeat sample at a tap within five service connections downstream of the original sampling site. If a total coliform-positive sample is at the end of the distribution system, or one away from the end of the distribution system, the Agency may waive the requirement to collect at least one repeat sample upstream or downstream of the original sampling site.

- c) The supplier shall collect all repeat samples on the same day, except that the Agency shall allow a supplier with a single service connection to collect the required set of repeat samples over a four-day period or to collect a larger volume repeat sample(s) in one or more sample containers of any size, as long as the total volume collected is at least 400 ml (300 ml for PWSs which collect more than one routine sample per month).
- d) If one or more repeat samples in the set is total coliform-positive, the supplier shall collect an additional set of repeat samples in the manner specified in subsections (a) through (c). The additional samples must be collected within 24 hours of being notified of the positive result, unless the Agency extends the limit as provided in subsection (a). The supplier shall repeat this process until either total coliforms are not detected in one complete set of repeat samples or the supplier determines that the MCL for total coliforms in Section 611.325 has been exceeded and notifies the Agency.
- e) If a supplier collecting fewer than five routine samples/month has one or more total coliform-positive samples and the Agency does not invalidate the sample(s) under Section 611.523, the supplier shall collect at least five routine samples during the next month the supplier provides water to the public, unless the Agency determines that the conditions of subsection (e)(1) or (2) are met. This does not apply to the requirement to collect repeat samples in subsections (a) through (d). The supplier does not have to collect the samples if:
  - 1) The Agency performs a site visit before the end of the next month the supplier provides water to the public. Although a sanitary survey need not be performed, the site visit must be sufficiently detailed to allow the Agency to determine whether additional monitoring or any corrective action is needed.
  - 2) The Agency has determined why the sample was total coliform-positive and establishes that the supplier has corrected the problem or will correct the problem before the end of the next month the supplier serves water to the public.
    - A) The Agency shall document this decision in writing, and make the document available to USEPA and the public. The written documentation must describe the specific cause of the total coliform-positive sample and what action the supplier has taken or will take to correct the problem.
    - B) The Agency cannot waive the requirement to collect five routine samples the next month the supplier provides water to the public solely on the grounds that all repeat samples are total coliform-negative.
    - C) Under this subsection, a supplier shall still take at least one routine sample before the end of the next month it serves water to the public and use it to determine

compliance with the MCL for total coliforms in Section 611.325, unless the Agency has determined that the supplier has corrected the contamination problem before the supplier took the set of repeat samples required in subsections (a) through (d), and all repeat samples were total coliform-negative.

- f) After a supplier collects a routine sample and before it learns the results of the analysis of that sample, if it collects another routine sample(s) from within five adjacent service connections of the initial sample, and the initial sample, after analysis, is found to contain total coliforms, then the supplier may count the subsequent sample(s) as a repeat sample instead of as a routine sample.
- g) Results of all routine and repeat samples not invalidated pursuant to Section 611.523 must be included in determining compliance with the MCL for total coliforms in Section 611.325.

BOARD NOTE: Derived from 40 CFR 141.21(b) (1989), as amended at 54 Fed. Reg. 27562, June 29, 1989.

#### Section 611.523 Invalidation of Total Coliform Samples

A total coliform-positive sample invalidated under this Section does not count towards meeting the minimum monitoring requirements.

- a) The Agency shall invalidate a total coliform-positive sample only if the conditions of subsection (a)(1), (2) or (3) are met.
  - 1) The laboratory establishes that improper sample analysis caused the total coliform-positive result.
  - 2) The Agency, on the basis of the results of repeat samples collected as required by Section 611.522(a) through (d) determines that the total coliform-positive sample resulted from a domestic or other non-distribution system plumbing problem. The Agency cannot invalidate a sample on the basis of repeat sample results unless all repeat sample(s) collected at the same tap as the original total coliform-positive sample are also total coliform-positive, and all repeat samples collected within five service connections of the original tap are total coliform-negative (e.g., Agency cannot invalidate a total coliform-positive sample on the basis of repeat samples if all the repeat samples are total coliform-negative, or if the supplier has only one service connection).
  - 3) The Agency determines that a total coliform-positive result is due to a circumstance or condition which does not reflect water quality in the distribution system. In this case, the supplier shall still collect all repeat samples required under Section 611.522(a) through (d) and use them to determine compliance with the MCL for total coliforms in Section 611.325. To invalidate a total coliform-positive sample under this subsection, the

decision with the rationale for the decision must be documented in writing. The Agency shall make this document available to USEPA and the public. The written documentation must state the specific cause of the total coliform-positive sample, and what action the supplier has taken, or will take, to correct this problem. The Agency shall not invalidate a total coliform-positive sample solely on the grounds that all repeat samples are total coliform-negative.

- b) A laboratory shall invalidate a total coliform sample (unless total coliforms are detected) if the sample produces a turbid culture in the absence of gas production using an analytical method where gas formation is examined (e.g., the Multiple-Tube Fermentation Technique), produces a turbid culture in the absence of an acid reaction in the P-A Coliform Test, or exhibits confluent growth or produces colonies too numerous to count with an analytical method using a membrane filter (e.g., Membrane Filter Technique). If a laboratory invalidates a sample because of such interference, the supplier shall collect another sample from the same location as the original sample within 24 hours of being notified of the interference problem, and have it analyzed for the presence of total coliforms. The supplier shall continue to re-sample within 24 hours and have the samples analyzed until it obtains a valid result. The Agency shall waive the 24-hour time limit on a case-by-case basis, if it is not possible to collect the sample within that time.

BOARD NOTE: Derived from 40 CFR 141.21(c) (1989), as amended at 54 Fed. Reg. 27562, June 29, 1989.

#### Section 611.524 Sanitary Surveys

- a) Requirement to conduct a sanitary survey.
- 1) Suppliers which do not collect five or more routine samples per month shall undergo an initial sanitary survey by June 29, 1994, for CWS suppliers and June 29, 1999, for non-CWS suppliers. Thereafter, suppliers shall undergo another sanitary survey every five years, except that non-CWS suppliers using only disinfected groundwater, from a source which is not under the direct influence of surface water, shall undergo subsequent sanitary surveys at least every ten years after the initial sanitary survey. The Agency or, for non-CWSs, Public Health shall review the results of each sanitary survey to determine whether the existing monitoring frequency is adequate and what additional measures, if any, the supplier needs to undertake to improve drinking water quality.
  - 2) In conducting a sanitary survey of a PWS using groundwater, information on sources of contamination within the delineated wellhead protection area that was collected in the course of developing and implementing the wellhead protection program should be considered instead of collecting new information, if the information was collected since the last time the PWS was subject to a sanitary survey.

- b) Sanitary surveys must be performed by the Agency. The PWS is responsible for ensuring the survey takes place.

BOARD NOTE: Derived from 40 CFR 141.21(d) (1989), as amended at 54 Fed. Reg. 27562, June 29, 1989.

#### Section 611.525 Fecal Coliform and E. Coli Testing

- a) If any routine or repeat sample is total coliform-positive, the supplier shall analyze that total coliform-positive culture medium to determine if fecal coliforms are present, except that the supplier may test for E. coli in lieu of fecal coliforms. If fecal coliforms or E. coli are present, the supplier shall notify the Agency by the end of the day when the supplier is notified of the test result, unless the supplier is notified of the result after the Agency office is closed, in which case the supplier shall notify the Agency before the end of the next business day. The supplier need not notify the Agency if the original sample was analyzed in an Agency laboratory.
- b) The Agency may allow a supplier, on a case-by-case basis, to forgo fecal coliform or E. coli testing on a total coliform-positive sample if that supplier assumes that the total coliform-positive sample is fecal coliform-positive or E. coli-positive. Accordingly, the supplier shall notify the Agency as specified in subsection (a) and the provisions of Section 611.325(b) apply.

BOARD NOTE: Derived from 40 CFR 141.21(e) (1989), as amended at 54 Fed. Reg. 27562, June 29, 1989.

#### Section 611.526 Analytical Methodology

- a) The standard sample volume required for total coliform analysis, regardless of analytical method used, is 100 ml.
- b) Suppliers need only determine the presence or absence of total coliforms, a determination of total coliform density is not required.
- c) Suppliers shall conduct total coliform analyses in accordance with one of the following analytical methods, incorporated by reference in Section 611.102:
  - 1) Multiple-Tube Fermentation (MTF) Technique, as set forth in:
    - A) Standard Methods, 16th Edition, Method 908, 908A and 908B, except that 10 fermentation tubes must be used; or
    - B) Microbiological Methods, Part III, Section B 4.1-4.6.4, pp. 114-118, (Most Probable Number Method), except that 10 fermentation tubes must be used; or
  - 2) Membrane Filter (MF) Technique, as set forth in:
    - A) Standard Methods, 16th Edition, Method 909, 909A and 909B;

or

- B) Microbiological Methods, Part III, Section B.2.1-2.6, pp. 108-112; or
- 3) P-A Coliform Test, as set forth in: Standard Methods, 16th Edition, Method 908E.
- d) In lieu of the 10-tube MTF Technique specified in subsection (c)(1), a supplier may use the MTF Technique using either five tubes (20-ml sample portions or a single culture bottle containing the culture medium for the MTF Technique, i.e., lauryl tryptose broth (formulated as described in Standard Methods, 16th Edition, Method 908A, incorporated by reference in Section 611.102) as long as a 100-ml water sample is used in the analysis.
- e) Suppliers shall conduct fecal coliform analysis in accordance with the following procedure:
  - 1) When the MTF Technique or P-A Coliform Test is used to test for total coliforms, shake the lactose-positive presumptive tube or P-A bottle vigorously and transfer the growth with a sterile 3-mm loop or sterile applicator stick into brilliant green lactose bile broth and EC medium, defined below, to determine the presence of total and fecal coliforms, respectively.
  - 2) For Microbiological Methods, referenced above, which use a membrane filter, remove the membrane containing the total coliform colonies from the substrate with a sterile forceps and carefully curl and insert the membrane into a tube of EC medium. (The laboratory may first remove a small portion of selected colonies for verification). Gently shake the inoculated EC tubes to insure adequate mixing and incubate in a waterbath at 44.5 +/- 0.2 degrees C for 24 +/- 2 hours. Gas production of any amount in the inner fermentation tube of the EC medium indicates a positive fecal coliform test.
  - 3) The preparation of EC medium is described in Standard Methods, 16th Edition, Method 908C.
  - 4) Suppliers need only determine the presence or absence of fecal coliforms, a determination of fecal coliform density is not required.

BOARD NOTE: Derived from 40 CFR 141.21(f) (1989), as amended at 54 Fed. Reg. 27562, June 29, 1989.

#### Section 611.527 Response to Violation

- a) A supplier which has exceeded the MCL for total coliforms in Section 611.325 shall report the violation to the Agency no later than the end of the next business day after it learns of the violation, and notify the public in accordance with Subpart T.

- b) A supplier which has failed to comply with a coliform monitoring requirement, including the sanitary survey requirement, shall report the monitoring violation to the Agency within ten days after the supplier discovers the violation, and notify the public in accordance with Subpart T.

BOARD NOTE: Derived from 40 CFR 141.21(g) (1989), as amended at 54 Fed. Reg. 27562, June 29, 1989.

#### Section 611.531 Analytical Requirements

Only the analytical method(s) specified in this Section may be used to demonstrate compliance with the requirements of Subpart B. Measurements for pH, temperature, turbidity and RDCs must be conducted under the supervision of a certified operator. Measurements for total coliforms, fecal coliforms and HPC must be conducted by a laboratory certified by the Agency to do such analysis. The following procedures must be performed by the following methods, incorporated by reference in Section 611.102:

- a) Fecal coliform concentration: Standard Methods, 16th Edition, Methods 908C, 908D or 909C.
- b) Total coliform concentration: Standard Methods, 16th Edition, Methods 908A, 908B, 908D, 909A or 909B.

BOARD NOTE: Suppliers may use a five-tube test or a ten-tube test.

- c) HPC: Standard Methods, 16th Edition, Method 907A.
- d) Turbidity: Standard Methods, 16th Edition, Method 214A.
- e) RDC:
  - 1) Free chlorine and combined chlorine (chloramines) must be measured by Standard Methods, 16th Edition, Method 408C, 408D, 408E or 408F.
  - 2) Ozone must be measured by the Indigo method, or automated methods which are calibrated in reference to the results obtained by the Indigo method on a regular basis, if approved by the Agency.
  - 3) Chlorine dioxide must be measured by Standard Methods, 16th Edition, Methods 410B or 410C.
- f) Temperature: Standard Methods, 16th Edition, Method 212.
- g) pH: Standard Methods, 16th Edition, Method 423.

BOARD NOTE: Derived from 40 CFR 141.74(a) (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

#### Section 611.532 Unfiltered PWSs

A supplier that uses a surface water source and does not provide filtration treatment shall begin monitoring December 31, 1990, unless the Agency has determined, pursuant to Section 611.211, that filtration is required, in which case the Agency shall specify alternative monitoring requirements, as appropriate, until filtration is in place. A supplier that uses a groundwater source under the direct influence of surface water and does not provide filtration treatment shall begin monitoring beginning December 31, 1990, or 6 months after the Agency determines, pursuant to Section 611.212, that the groundwater source is under the direct influence of surface water, whichever is later, unless the Agency has determined that filtration is required, in which case the Agency shall specify alternative monitoring requirements, as appropriate, until filtration is in place.

- a) Fecal coliform or total coliform density measurements as required by Section 611.231(a) must be performed on representative source water samples immediately prior to the first or only point of disinfectant application. The supplier shall sample for fecal or total coliforms at the minimum frequency specified in Table B each week the supplier serves water to the public. Also, one fecal or total coliform density measurement must be made every day the supplier serves water to the public and the turbidity of the source water exceeds 1 NTU (these samples count towards the weekly coliform sampling requirement) unless the Agency determines that the supplier, for logistical reasons outside the supplier's control cannot have the sample analyzed within 30 hours of collection.
- b) Turbidity measurements as required by Section 611.231(b) must be performed on representative grab samples of source water immediately prior to the first or only point of disinfectant application every four hours (or more frequently) that the supplier serves water to the public. A supplier may substitute continuous turbidity monitoring for grab sample monitoring if it validates the continuous measurement for accuracy on a regular basis using a protocol approved by special exception permit.
- c) The total inactivation ratio for each day that the supplier is in operation must be determined based on the CT99.9 values in Appendix B as appropriate. The parameters necessary to determine the total inactivation ratio must be monitored as follows:
  - 1) The temperature of the disinfected water must be measured at least once per day at each RDC sampling point.
  - 2) If the supplier uses chlorine, the pH of the disinfected water must be measured at least once per day at each chlorine RDC sampling point.
  - 3) The disinfectant contact time(s) ("T") must be determined for each day during peak hourly flow.
  - 4) The RDC(s) ("C") of the water before or at the first customer must be measured each day during peak hourly flow.
  - 5) If a supplier uses a disinfectant other than chlorine, the

supplier may monitor by other methods approved pursuant to Section 611.241(a)(1) and (2).

- d) The total inactivation ratio must be calculated as follows:
- 1) If the supplier uses only one point of disinfectant application, the supplier may determine the total inactivation ratio based on either of the following two methods:
    - A) One inactivation ratio ( $A_i = CT_{calc}/CT_{99.9}$ ) is determined before or at the first customer during peak hourly flow and, if the  $A_i$  is greater than 1.0, the 99.9 percent *Giardia lamblia* inactivation requirement has been achieved; or
    - B) Successive  $A_i$  values, representing sequential inactivation ratios, are determined between the point of disinfectant application and a point before or at the first customer during peak hourly flow. Under this alternative, the following method must be used to calculate the total inactivation ratio:
      - i) Determine, for each sequence:
$$A_i = CT_{calc}/CT_{99.9}$$
      - ii) Add the  $A_i$  values together:
$$B = \text{SUM}(A_i)$$
      - iii) If  $B$  is greater than 1.0, the 99.9 percent *Giardia lamblia* inactivation requirement has been achieved.
  - 2) If the supplier uses more than one point of disinfectant application before or at the first customer, the supplier shall determine the CT value of each disinfection sequence immediately prior to the next point of disinfectant application during peak hourly flow. The  $A_i$  value of each sequence and  $B$  must be calculated using the method in subsection (d)(1)(B) to determine if the supplier is in compliance with Section 611.241.
  - 3) Although not required, the total percent inactivation (PI) for a supplier with one or more points of RDC monitoring may be calculated as follows:
$$PI = 100 - (100/10^{3B})$$
- e) The RDC of the water entering the distribution system must be monitored continuously, and the lowest value must be recorded each day, except that if there is a failure in the continuous monitoring equipment, grab sampling every 4 hours may be conducted in lieu of continuous monitoring, but for no more than 5 working days following the failure of the equipment, and suppliers serving 3,300 or fewer persons may take grab samples in lieu of providing continuous

monitoring on an ongoing basis at the frequencies prescribed in Table C. If at any time the RDC falls below 0.2 mg/L in a system using grab sampling in lieu of continuous monitoring, the supplier shall take a grab sample every 4 hours until the RDC is equal to or greater than 0.2 mg/L.

f) Points of measurement.

- 1) The RDC must be measured at least at the same points in the distribution system and at the same time as total coliforms are sampled, as specified in Section 611.521 et seq., except that the Agency shall allow a supplier which uses both a surface water source or a groundwater source under direct influence of surface water, and a groundwater source to take disinfectant residual samples at points other than the total coliform sampling points if the Agency determines, by special exception permit, that such points are more representative of treated (disinfected) water quality within the distribution system. HPC may be measured in lieu of RDC.
- 2) If the Agency determines, pursuant to Section 611.213, a supplier has no means for having a sample analyzed for HPC, the requirements of subsection (f)(1) do not apply to that supplier.

BOARD NOTE: Derived from 40 CFR 141.74(b) (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

Section 611.533 Filtered PWSs

A supplier that uses a surface water source or a groundwater source under the influence of surface water and provides filtration treatment shall monitor in accordance with this Section beginning June 29, 1993, or when filtration is installed, whichever is later.

- a) Turbidity measurements as required by Section 611.250 must be performed on representative samples of the PWS's filtered water every four hours (or more frequently) that the supplier serves water to the public. A supplier may substitute continuous turbidity monitoring for grab sample monitoring if it validates the continuous measurement for accuracy on a regular basis using a protocol approved by special exception permit. For any suppliers using slow sand filtration or filtration treatment other than conventional treatment, direct filtration or diatomaceous earth filtration, the Agency shall, by special exception permit condition, reduce the sampling frequency to once per day if it determines that less frequent monitoring is sufficient to indicate effective filtration performance. For suppliers serving 500 or fewer persons, the Agency shall, by special exception permit, reduce the turbidity sampling frequency to once per day, regardless of the type of filtration treatment used, if the Agency determines that less frequent monitoring is sufficient to indicate effective filtration performance.
- b) RDC entering distribution system.

- 1) Suppliers serving more than 3300 persons. The RDC of the water entering the distribution system must be monitored continuously, and the lowest value must be recorded each day, except that, if there is a failure in the continuous monitoring equipment, grab sampling every 4 hours may be conducted in lieu of continuous monitoring, but for no more than 5 working days following the failure of the equipment.
  - 2) Suppliers serving 3,300 or fewer persons may take grab samples in lieu of providing continuous monitoring on an ongoing basis at the frequencies each day prescribed in Table C. If at any time the RDC falls below 0.2 mg/L in a system using grab sampling in lieu of continuous monitoring, the supplier shall take a grab sample every 4 hours until RDC is equal to or greater than 0.2 mg/L.
- c) Points of measurement.
- 1) The RDC must be measured at least at the same points in the distribution system and at the same time as total coliforms are sampled, as specified in 611.521 et seq., except that the Agency shall allow a supplier which uses both a surface water source or a groundwater source under direct influence of surface water, and a groundwater source, to take RDC samples at points other than the total coliform sampling points if the Agency determines that such points are more representative of treated (disinfected) water quality within the distribution system. HPC may be measured in lieu of RDC.
  - 2) Subsection (c)(1) does not apply if the Agency determines, pursuant to Section 611.213(c), that a system has no means for having a sample analyzed for HPC.

BOARD NOTE: Derived from 40 CFR 141.74(c) (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

#### SUBPART M: TURBIDITY MONITORING AND ANALYTICAL REQUIREMENTS

##### Section 611.560 Turbidity

The requirements in this Section apply to unfiltered PWSs until December 30, 1991, unless the Agency has determined prior to that date that filtration is required. The requirements in this Section apply to filtered PWSs until June 29, 1993. The requirements in this Section apply to unfiltered PWSs that the Agency has determined must install filtration, until June 29, 1993, or until filtration is installed, whichever is later.

- a) Suppliers shall take samples at representative entry point(s) to the distribution system at least once per day, for the purposes of making turbidity measurements to determine compliance with Section 611.320.
  - 1) If Public Health determines that a reduced sampling frequency in a non-CWS will not pose a risk to public health, it shall reduce the required sampling frequency. The option of reducing the

turbidity frequency will be permitted only in those suppliers that practice disinfection and which maintain an active RDC in the distribution system, and in those cases where Public Health has indicated in writing that no unreasonable risk to health existed under the circumstances of this option.

- 2) The turbidity measurements must be made in accordance with the following methods, incorporated by reference in Section 611.102:
  - A) By the Nephelometric Method:
    - i) Standard Methods, 16th Edition, Method 214A; or
    - ii) Inorganic Methods, Method 180.1.
  - B) Calibration of the turbidimeter must be made either by the use of a formazin standard as specified in the cited references, or a styrene divinylbenzene polymer standard (Amco-AEPA-1 Polymer).
- b) If the result of a turbidity analysis indicates that the maximum allowable limit has been exceeded, the sampling and measurement must be confirmed by resampling as soon as practicable and preferably within one hour. If the repeat sample confirms that the maximum allowable limit has been exceeded, the supplier of water shall report to the Agency within 48 hours. The repeat sample must be the sample used for the purpose of calculating the monthly average. If the monthly average of the daily samples exceeds the maximum allowable limit, or if the average of two samples taken on consecutive days exceeds 5 NTU, the supplier of water shall report to the Agency and notify the public as directed in Subpart T.
- c) Sampling for non-CWSs must begin by June 29, 1991.
- d) This Section applies only to suppliers which use water obtained in whole or in part from surface sources.

BOARD NOTE: Derived from 40 CFR 141.22 (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989.

#### SUBPART N: INORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

##### Section 611.601 Requirements

- a) Analyses for the purpose of determining compliance with Section 611.300 are required as follows:
  - 1) Analyses for all CWSs utilizing surface water sources must be repeated at yearly intervals.

BOARD NOTE: This applies also to additional State requirements.
  - 2) Analyses for all CWSs utilizing only groundwater sources must be

repeated at three-year intervals.

BOARD NOTE: This applies also to additional State requirements.

- 3) For non-CWSs, whether supplied by surface or groundwater sources, analyses for nitrate must be repeated at intervals specified by Public Health.
- b) If the result of an analysis made under subsection (a) or Section 611.607 indicates that the level of any contaminant listed in Section 611.300 exceeds the MCL, the supplier shall report to the Agency within 7 days and initiate three additional analyses at the same sampling point within one month.

BOARD NOTE: This applies also to additional State requirements.

- c) When the average of four analyses made pursuant to subsection (b), rounded to the same number of significant figures as the MCL for the substance in question, exceeds the MCL, the supplier shall notify the Agency and give notice to the public pursuant to Subpart T. Monitoring after public notification must be at a frequency designated by the Agency and must continue until the MCL has not been exceeded in two successive samples or until a monitoring schedule as a condition to a variance, adjusted standard, site specific rule or enforcement action becomes effective.

BOARD NOTE: This applies also to additional State requirements.

- d) The provisions of subsections (b) and (c) notwithstanding, compliance with the MCL of nitrate must be determined on the basis of the mean of two analyses. When a level exceeding the MCL for nitrate is found, a second analysis must be initiated within 24 hours, and if the mean of the two analyses exceeds the MCL, the supplier of water shall report his findings to the Agency and shall notify the public pursuant to Subpart T.

BOARD NOTE: Derived from 40 CFR 141.23(a) through (d) (1989).

#### Section 611.602 Violation of State MCL

This Section applies to MCLs which are marked as "additional State requirements", and for which no specific monitoring, reporting or public notice requirements are specified below. If the results of analysis pursuant to this Part indicates that the level of any contaminant exceeds the MCL, the CWS supplier shall:

- a) Report to the Agency within seven days, and initiate three additional analyses at the same sampling point within one month;
- b) Notify the Agency and give public notice as specified in Subpart T, when the average of four analyses, rounded to the same number of significant figures as the MCL for the contaminant in question, exceeds the MCL; and,

- c) Monitor, after public notification, at a frequency designated by the Agency, and continue monitoring until the MCL has not been exceeded in two consecutive samples, or until a monitoring schedule as a condition of a variance or enforcement action becomes effective.

BOARD NOTE: This is an additional State requirement.

#### Section 611.603 Frequency of State Monitoring

This Section applies to MCLs which are marked as "additional State requirements", and for which no specific monitoring, reporting or public notice requirements are specified below.

- a) Analyses for all CWS suppliers utilizing surface water sources must be repeated at yearly intervals.
- b) Analyses for all CWS suppliers utilizing only groundwater sources must be repeated at three-year intervals.

BOARD NOTE: This is an additional State requirement.

#### Section 611.606 Analytical Methods

Analyses conducted to determine compliance with Section 611.300 must be made in accordance with the following methods, incorporated by reference in Section 611.102. For approved analytical procedures for metals, the technique applicable to total metals must be used.

- a) Arsenic:
  - 1) ASTM Method D2972; or
  - 2) Standard Methods, 14th Edition:
    - A) Method 301A VII; or
    - B) Method 404A and 404B(4); or
  - 3) USGS Methods, Method I-1062-78, pp. 61-63, Atomic Absorption - Gaseous Hydride; or
  - 4) Inorganic Methods:
    - A) Method 206.2, Atomic Absorption Furnace Technique; or
    - B) Method 206.3; or
    - C) Method 206.4; or
  - 5) Inductively Coupled Plasma Method 200.7.
- b) Barium:
  - 1) Standard Methods, 14th Edition, Method 301A IV; or

- 2) Inorganic Methods:
    - A) Method 208.1; or
    - B) Method 208.2, Atomic Absorption Furnace Technique; or
  - 3) Inductively Coupled Plasma Method 200.7.
- c) Cadmium:
- 1) ASTM Method D3557 A or B; or
  - 2) Standard Methods, 14th Edition, Methods 301A II or III; or
  - 3) Inorganic Methods:
    - A) Method 213.1; or
    - B) Method 213.2, Atomic Absorption Furnace Technique; or
  - 4) Inductively Coupled Plasma Method 200.7.
- d) Chromium:
- 1) ASTM Method D 1687; or
  - 2) Standard Methods, 14th Edition, Methods 301A II or III; or
  - 3) Inorganic Methods:
    - A) Method 218.1; or
    - B) Method 218.2, Atomic Absorption Furnace Technique; or
  - 4) Inductively Coupled Plasma Method 200.7.
- e) Lead:
- 1) ASTM Method D 3559 A or B; or
  - 2) Standard Methods, 14th Edition, Methods 301A II or III; or
  - 3) Inorganic Methods:
    - A) Method 239.1; or
    - B) Method 239.2, Atomic Absorption Furnace Technique.
  - 4) Inductively Coupled Plasma Method 200.7.
- f) Mercury:
- 1) ASTM Method D 3223; or

- 2) Standard Methods, 14th Edition, Method 301A VI, Cold Vapor Technique; or
  - 3) Inorganic Methods:
    - A) Method 245.1; or
    - B) Method 245.2, Automated Cold Vapor Technique.
- g) Nitrate:
- 1) ASTM:
    - A) Method D 3867 A or B; or
    - B) Method D 992; or
  - 2) Standard Methods, 14th Edition:
    - A) Method 419C, Spectrometric, Cadmium Reduction;
    - B) Method 419D, Colorimetric Brucine; or
    - C) Method 605, Automated Cadmium Reduction.
  - 3) Inorganic Methods:
    - A) Method 352.1; or
    - B) Method 353.1, Automated Hydrazine Reduction; or
    - C) Method 353.2; or
    - D) Method 353.3; or
- h) Selenium:
- 1) Inorganic Methods
    - A) Method 270.2, Atomic Absorption Furnace Technique; or
    - B) Method 270.3; or
  - 3) USGS Methods, Method I-1667-78, pp. 237-239; or
  - 4) ASTM Method D 3859; or
  - 5) Standard methods, 14th Edition, Method 301A VII, Hydride Generation - Atomic Absorption Spectrophotometry.
- i) Silver:
- 1) Standard Methods, 14th Edition, Methods 301A II; or

- 2) Inorganic Methods:
    - A) Method 272.1; or
    - B) Method 272.2, Atomic Absorption Furnace Technique; or
  - 3) Inductively Coupled Plasma Method 200.7.
- j) Fluoride:
- 1) ASTM D 1179 A or B; or
  - 2) Standard Methods, 16th Edition:
    - A) Methods 43A and 43C;
    - B) 413B; or
    - C) 413E; or
  - 3) Inorganic Methods:
    - A) Method 340.1;
    - B) Method 340.2;
    - C) Method 340.3; or
  - 4) Technicon Methods, Methods 129-71W or 380-75WE  
BOARD NOTE: Derived from 40 CFR 141.23(f) (1989).
- k) Manganese:
- 1) ASTM D 858;
  - 2) Standard Methods, 16th Edition, Method 303A.
  - 3) Inorganic Methods: Methods 243.1 or 243.2; or
  - 4) Inductively Coupled Plasma Method 200.7.  
BOARD NOTE: These methods are used for additional State requirements.
- l) Iron:
- 1) Inorganic Methods: 236.1 or 236.2; or
  - 2) Inductively Coupled Plasma Method 200.7.
  - 3) Standard Methods, 16th Edition, Method 303A

BOARD NOTE: These methods are used for additional State requirements.

m) Copper:

- 1) ASTM D 1688 D or E;
- 2) Standard Methods, 16th Edition:
  - A) Methods 303A or B;
  - B) Method 304; or

BOARD NOTE: These methods are used for additional State requirements.

- 3) Inorganic Methods: 220.1 or 220.2; or
- 4) Inductively Coupled Plasma Method 200.7.

n) Zinc:

- 1) Inorganic Methods 289.1 or 289.2; or
- 2) Standard Methods, 16th Edition, Method 303A

BOARD NOTE: These methods are used for additional State requirements.

o) Cyanide:

- 1) Inorganic Method 335.2; or
- 2) Standard Methods, 16th Edition, Method 412D

BOARD NOTE: These methods are used for additional State requirements.

Section 611.607 Fluoride Monitoring

In addition to complying with Section 611.601 through 611.606, suppliers monitoring for fluoride shall comply with the requirements of this Section.

a) Sampling points.

- 1) Where the PWS draws water from one source, the supplier shall take one sample at the entry point to the distribution system.
- 2) Where the PWS draws water from more than one source, the supplier shall sample each source at the entry points to the distribution system.
- 3) If the PWS draws water from more than one source and sources are combined before distribution, the supplier shall sample at an

entry point to the distribution system during periods representative of the maximum fluoride levels occurring under normal operating conditions.

- b) The Agency shall, by special exception permit, alter the frequencies for fluoride monitoring as set out in Section 611.601(a) to increase or decrease such frequency considering the following factors:
  - 1) Reported concentrations from previously required monitoring,
  - 2) The degree of variation in reported concentrations and,
  - 3) Other factors which affect fluoride concentrations such as changes in pumping rates in groundwater supplies or significant changes in the PWS's configuration, operating procedures, source of water and changes in stream flows.
- c) Monitoring shall be decreased from the frequencies specified in Section 611.601(a) upon application by the supplier if the Agency determines that the supplier is unlikely to exceed the MCL, considering the factors listed in subsection (b). Such determination must be by special exception permit. In no case shall monitoring be reduced to less than one sample every 10 years. For suppliers monitoring once every 10 years, the Agency shall review the monitoring results every ten years to determine whether more frequent monitoring is necessary.
- d) Analyses for fluoride under this Section may only be used for determining compliance if conducted by laboratories that have analyzed performance evaluation samples to within +/-10% of the reference value at fluoride concentrations from 1.0 mg/L to 10.0 mg/L, within the last 12 months. See 35 Ill. Adm. Code 183.125(c)(3).
- e) Compliance with the MCL must be determined based on each sampling point. If any sampling point is determined to be out of compliance, the supplier is deemed to be out of compliance.

BOARD NOTE: Derived from 40 CFR 141.23(g) (1989).

#### Section 611.610 Special Monitoring for Sodium

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

content is variable.

- b) The CWS supplier shall report to the Agency the results of the analyses for sodium within the first 10 days of the month following the month in which the sample results were received or within the first 10 days following the end of the required monitoring period as specified by special exception permit, whichever of these is first. If more than annual sampling is required the supplier shall report the average sodium concentration within 10 days of the month following the month in which the analytical results of the last sample used for the annual average was received.
- c) The CWS supplier shall notify the Agency and appropriate local public health officials of the sodium levels by written notice by direct mail within three months. A copy of each notice required to be provided by this subsection must be sent to the Agency within 10 days of its issuance.
- d) Analyses for sodium must be performed by the following methods, incorporated by reference in Section 611.102:
  - 1) Standard Methods, 14th Edition, Method 325B, flame photometric method;
  - 2) Inorganic Methods:
    - A) Method 273.1, Atomic Absorption - Direct Aspiration; or
    - B) Method 273.2, Atomic Absorption - Graphite Furnace; or
  - 3) ASTM Method D1428.

BOARD NOTE: Derived from 40 CFR 141.41 (1989).

SUBPART 0: ORGANIC MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.641 Sampling and Analytical Requirements

- a) An analysis of substances for the purpose of determining compliance with Section 611.310(a) and (b) must be made as follows:
  - 1) The Agency shall, by special exception permit, require CWS suppliers utilizing surface water sources to collect samples during the period of the year when contamination by pesticides is most likely to occur. The Agency shall require the supplier to repeat these analyses at least annually.  
  
BOARD NOTE: This applies also to additional State requirements.
  - 2) The Agency shall, by special exception permit, require CWS suppliers utilizing only groundwater sources to collect samples at least once every three years.  
  
BOARD NOTE: This applies also to additional State requirements.

- b) If the result of an analysis made pursuant to subsection (a) indicates that the level of any contaminant listed in Section 611.310 (a) and (b) exceeds the MCL, the CWS supplier shall report to the Agency within 7 days and initiate three additional analyses within one month.
- c) When the average of four analyses made pursuant to subsection (b), rounded to the same number of significant figures as the MCL for the substance in question, exceeds the MCL, the CWS supplier shall report to the Agency and give notice to the public pursuant to Subpart T. Monitoring after public notification must be at a frequency designated by the Agency and must continue until the MCL has not been exceeded in two successive samples or until a monitoring schedule as a condition to a variance, adjusted standard or enforcement action becomes effective.

BOARD NOTE: Derived from 40 CFR 141.24(a) through (d) (1989).

#### Section 611.645 Analytical Methods

- a) Analysis made to determine compliance with Section 611.310(a) must be made in accordance with the following methods, incorporated by reference in Section 611.102, or alternative methods approved pursuant to Section 611.480:
  - 1) Pesticide Methods; or
  - 2) ASTM Method D 3086; or
  - 3) Standard Methods, 14th Edition, Method 509A; or
  - 4) USGS Methods, Book 5, Chapter A-3, pp. 24-39; or
  - 5) SPE Test Method Number SPE-500
- b) Analysis made to determine compliance with Section 611.310(b) must be conducted in accordance with:
  - 1) Pesticide Methods; or
  - 2) ASTM Method D 3478; or
  - 3) Standard Methods, 14th Edition, Method 509B; or
  - 4) USGS Method, Book 5, Chapter A-3, pp. 24-39.

BOARD NOTE: Derived from 40 CFR 141.24(e,f) (1989).

#### Section 611.648 Sampling for VOCs

Analysis of the VOCs listed in Section 611.311(a) for purposes of determining compliance with the MCLs must be conducted as follows:

- a) CWS or NTCWS suppliers using groundwater sources shall sample at points of entry to the distribution system representative of each well after any application of treatment. Sampling must be conducted at the same location(s) or more representative location(s) every three months for one year except as provided in subsection (h)(1).
- b) CWS or NTCWS suppliers using surface water shall sample at points in the distribution system representative of each source or at entry points to the distribution system after any application of treatment. Surface water systems must sample each source every three months except as provided in subsection (h)(2). Sampling must be conducted at the same location or a more representative location each quarter.
- c) If the CWS or NTCWS draws water from more than one source and sources are combined before distribution, the supplier shall sample at an entry point to the distribution system during periods of normal operating conditions.
- d) Time for sampling.
  - 1) All CWS and NTNCWS suppliers serving more than 3,300 people shall analyze all distribution or entry-point samples, as appropriate, representing all source waters.
  - 2) All other CWS and NTNCWS suppliers shall analyze distribution or entry-point samples, as required in this paragraph, representing all source waters beginning no later than January 1, 1991.
- e) If the results exceed the MCL, the CWS or NTCWS supplier shall initiate three additional analyses at the same sampling point within one month. The sample results must be averaged with the first sampling result and used for compliance determination in accordance with subsection (i). The Agency shall delete results of obvious sampling errors from this calculation.
- f) Analysis for vinyl chloride is required only for groundwater systems that have detected one or more of the following two-carbon organic compounds: Trichloroethylene, tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene or 1,1-dichloroethylene. The analysis for vinyl chloride is required at each distribution or entry point at which one or more of the two-carbon organic compounds were found. If the first analysis does not detect vinyl chloride, the Agency shall reduce the frequency of vinyl chloride monitoring to once every three years for that sample location or other sample locations which are more representative of the same source.
- g) The Agency or suppliers may composite up to five samples from one or more suppliers. Compositing of samples is to be done in the laboratory by the procedures listed below. Samples must be analyzed within fourteen days of collection. If any VOC listed in Section 611.311 is detected in the original composite sample, a sample from each source that made up the composite sample must be reanalyzed

individually within fourteen days from sampling. The sample for reanalysis cannot be the original sample but can be a duplicate sample. If duplicates of the original samples are not available, new samples must be taken from each source used in the original composite and analyzed for VOCs. Reanalysis must be accomplished within fourteen days of the second sample. To composite samples, the following procedure must be followed:

- 1) Compositing samples prior to GC analysis.
  - A) Add 5 ml or equal larger amounts of each sample (up to 5 samples are allowed) to a 25 ml glass syringe. Special precautions must be made to maintain zero headspace in the syringe.
  - B) The samples must be cooled at 4 degrees C during this step to minimize volatilization losses.
  - C) Mix well and draw out a 5-ml aliquot for analysis.
  - D) Follow sample introduction, purging and desorption steps described in the method.
  - E) If less than five samples are used for compositing, a proportionately smaller syringe may be used.
- 2) Compositing samples prior to GC/MS analysis.
  - A) Inject 5-ml or equal larger amounts of each aqueous sample (up to 5 samples are allowed) into a 25-ml purging device using the sample introduction technique described in the method.
  - B) The total volume of the sample in the purging device must be 25 ml.
  - C) Purge and desorb as described in the method.
- h) The Agency shall, by special exception permit, reduce the monitoring frequency specified in subsections (a) and (b) if it makes the following determinations:
  - 1) The monitoring frequency for groundwater systems is as follows:
    - A) When VOCs are not detected in the first sample (or any subsequent samples that may be taken and the CWS is not vulnerable as defined in subsection (h)(4), monitoring must be reduced to one sample and must be repeated every 5 years.
    - B) When VOCs are not detected in the first sample (or any subsequent sample that may be taken) and the CWS is vulnerable as defined in subsection (h)(4):

- i) Monitoring one sample must be repeated every 3 years for CWSs with more than 500 connections.
    - ii) Monitoring one sample must be repeated every 5 years for CWSs with less than 500 connections.
  - C) If VOCs are detected in the first sample (or any subsequent sample that may be taken) regardless of vulnerability, monitoring must be repeated every 3 months, as required under subsection (a).
- 2) The repeat monitoring frequency for surface water systems is as follows:
  - A) When VOCs are not detected in the first year of quarterly sampling (or any other subsequent sample that may be taken) and the CWS is not vulnerable as defined in subsection (h)(4), additional monitoring is not required.
  - B) When VOCs are not detected in the first year of quarterly sampling (or any other subsequent sample that may be taken) and the CWS is vulnerable as defined in subsection (h)(4):
    - i) Monitoring must be repeated every three years (for CWS with more than 500 connections).
    - ii) Monitoring must be repeated every five years (for CWS with less than 500 connections).
  - C) When VOCs are detected in the first year of quarterly sampling (or any other subsequent sample that may be taken), regardless of vulnerability, monitoring must be repeated every 3 months, as required under subsection (b).
- 3) The Agency shall, by special exception permit, reduce the frequency of monitoring to once per year for a groundwater system or surface water system detecting VOCs at levels consistently less than the MCL for three consecutive years, unless the levels are increasing.
- 4) The Agency shall, by special exception permit, determine the vulnerability of each CWS based upon an assessment of the following factors:
  - A) Previous monitoring results.
  - B) Number of persons served by CWS.
  - C) Proximity of a smaller CWS to a larger CWS.
  - D) Proximity to commercial or industrial use, disposal or storage of the VOCs listed in Section 611.311.
  - E) Protection of the water source.

- 5) A CWS is deemed to be vulnerable for a period of three years after any positive measurement of one or more contaminants listed in Sections 611.650(e), 611.657(d) or 611.311(a), except for THMs or other demonstrated disinfection by-products.
- i) Compliance with Section 611.311(a) is determined based on the results of running annual average of quarterly sampling for each sampling location. If one location's average is greater than the MCL, then the CWS or NTCWS is deemed to be out of compliance. If a CWS or NTCWS has a distribution system separable from other parts of the distribution system with no interconnections, only that part of the system that exceeds any MCL as specified in Section 611.311(a) is deemed out of compliance. The Agency shall, by special exception permit, reduce the public notice requirement to that portion of the CWS which is out of compliance. If any one sample result would cause the annual average to be exceeded, then the CWS is deemed to be out of compliance immediately. For CWS suppliers that only take one sample per location because no VOCs were detected, compliance is based on that one sample.
- j) Analysis under this Section must be conducted using the following methods or alternatives approved pursuant to Section 611.480. These methods are contained in Organic Methods, incorporated by reference in Section 611.102:
  - 1) Method 502.1.
  - 2) Method 503.1.
  - 3) Method 524.1.
  - 4) Method 524.2.
  - 5) Method 502.2.
- k) Analysis under this Section must only be conducted by laboratories that have received conditional approval by the Agency, pursuant to Section 611.490, according to the following conditions:
  - 1) To receive conditional approval to conduct analyses for benzene, vinyl chloride, carbon tetrachloride, 1,2-dichloroethane, trichloroethylene, 1,1-dichloroethylene, 1,1,1-trichloroethane and paradichlorobenzene the laboratory shall:
    - A) Analyze performance evaluation samples which include these substances provided by the Agency.
    - B) Achieve the quantitative acceptance limits under subsection (k)(1)(C) or (D) for at least six of the seven subject organic chemicals.
    - C) Achieve quantitative results on the analyses performed under subsection (k)(1)(A) that are within +/- 20 percent

of the actual amount of the substances in the performance evaluation sample when the actual amount is greater than or equal to 0.010 mg/L.

- D) Achieve quantitative results on the analyses performed under subsection (k)(1)(A) that are within +/- 40 percent of the actual amount of the substances in the performance evaluation sample when the actual amount is less than 0.010 mg/L.
  - E) Achieve a method detection limit of 0.0005 mg/L, according to the procedures in 40 CFR 136, App. B, incorporated by reference in Section 611.102
  - F) Be currently approved by the Agency for the analyses of THMs under Subpart P.
- 2) To receive conditional approval for vinyl chloride, the laboratory shall:
- A) Analyze performance evaluation samples provided by the Agency. (See 35 Ill. Adm. Code 183.125(c)(3).)
  - B) Achieve quantitative results on the analyses performed under subsection (k)(2)(A) that are within +/- 40 percent of the actual amount of vinyl chloride in the performance evaluation sample.
  - C) Achieve a method detection limit of 0.0005 mg/L, according to the procedures in 40 CFR 136, App. B, incorporated by reference in Section 611.102.
  - D) Receive approval or be currently approved by the Agency under subsection (k)(1).
- m) The Agency shall, by special exception permit, increase required monitoring where it determines that it is necessary to do so to detect variations within the CWS.
- n) See Section 611.100(e).
- o) Each approved laboratory shall determine the method detection limit (MDL), as defined in 40 CFR 136, App. B, incorporated by reference in Section 611.102, at which it is capable of detecting VOCs. The acceptable MDL is 0.0005 mg/L. This concentration is the detection level for purposes of subsections (e), (f), (g) and (h).

BOARD NOTE: Derived from 40 CFR 141.24(g) (1989).

#### Section 611.650 Monitoring for 36 Contaminants

- a) All CWS and NTNCWS suppliers shall monitor for the contaminants listed in subsection (e) by the following dates:

- 1) Less than 3300 persons served: monitoring to begin no later than January 1, 1991.
  - 2) All others: immediately.
- b) Surface water systems shall sample at points in the distribution system representative of each water source or at entry points to the distribution system after any applicaiton of treatment. The minimum number of samples is one year of quarterly samples per water source.
- c) Groundwater systems shall sample at points of entry to the distribution system representative of each well after any application of treatment. The minimum number of samples is one sample per entry point to the distribution system.
- e) CWS and NTNCWS suppliers shall monitor for the following contaminants except as provided in subsection (f):
- 1) Chloroform
  - 2) Bromodichloromethane
  - 3) Chlorodibromomethane
  - 4) Bromoform
  - 5) trans-1,2-Dichloroethylene
  - 6) Chlorobenzene
  - 7) m-Dichlorobenzene
  - 8) Dichloromethane
  - 9) cis-1,2-Dichloroethylene
  - 10) o-Dichlorobenzene
  - 11) Dibromomethane
  - 12) 1,1-Dichloropropene
  - 13) Tetrachloroethylene
  - 14) Toluene
  - 15) p-Xylene
  - 16) o-Xylene
  - 17) m-Xylene
  - 18) 1,1-Dichloroethane

- 19) 1,2-Dichloropropane
  - 20) 1,1,2,2-Tetrachloroethane
  - 21) Ethylbenzene
  - 22) 1,3-Dichloropropane
  - 23) Styrene
  - 24) Chloromethane
  - 25) Bromomethane
  - 26) 1,2,3-Trichloropropane
  - 27) 1,1,1,2-Tetrachloroethane
  - 28) Chloroethane
  - 29) 1,1,2-Trichloroethane
  - 30) 2,2-Dichloropropane
  - 31) o-Chlorotoluene
  - 32) p-Chlorotoluene
  - 33) Bromobenzene
  - 34) 1,3-Dichloropropene
  - 35) Ethylene dibromide (EDB)
  - 36) 1,2-Dibromo-3-chloropropane (DBCP)
- f) CWS and NTNCWS suppliers shall monitor for EDB and DBCP only if the Agency or, for non-CWSs, Public Health determines they are vulnerable to contamination by either or both of these substances. For the purpose of this subsection, a "vulnerable system" is defined as a system which is potentially contaminated by EDB and DBCP, including surface water systems where these two compounds are applied, manufactured, stored, disposed of or shipped upstream, and for groundwater systems in areas where the compounds are applied, manufactured, stored, disposed of or shipped in the groundwater recharge basin, or for groundwater systems that are in proximity to underground storage tanks that contain leaded gasoline.

BOARD NOTE: Derived from 40 CFR 141.40(a) through (f) (1989).

Section 611.657 Analytical Methods for 36 Contaminants

- a) Analysis under Section 611.650 must be conducted using the following methods found in Organic Methods, incorporated by reference in

Section 611.102:

- 1) Method 502.1;
  - 2) Method 503.1;
  - 3) Method 524.1;
  - 4) Method 524.2;
  - 5) Method 502.2; or
  - 6) Method 504.
- b) Analysis under this Section must only be conducted by laboratories approved under Section 611.648(k). In addition to the requirements of that Section, each laboratory analyzing for EDB and DBCP shall achieve a method detection limit for EDB and DBCP of 0.00002 mg/L, according to the procedures in 40 CFR 136, App. B, incorporated by reference in Section 611.102.
- c) Suppliers may use monitoring data collected any time after January 1, 1983 to meet the requirements for unregulated monitoring, provided that the monitoring program was consistent with the requirements of this Section. In addition, PWSs may use monitoring data collected any time after January 1, 1983, provided the monitoring was consistent with this Section.
- e) Instead of performing the monitoring required by this Section, a CWS or NTNCWS supplier serving fewer than 150 service connections may send a letter to the Agency or, for non-CWSs, Public Health stating that the PWS is available for sampling. This letter must be sent no later than January 1, 1991. The supplier shall not send such samples to the Agency, unless requested to do so by the Agency.
- f) All CWS and NTNCWS suppliers shall repeat the monitoring required in Section 611.650 no less frequently than every five years from the dates specified in Section 611.650(a).
- g) The Agency or suppliers may composite up to five samples when monitoring for substances in Section 611.650(e).

BOARD NOTE: Derived from 40 CFR 141.40(g-m) (1989).

SUBPART P: THM MONITORING AND ANALYTICAL REQUIREMENTS

Section 611.680 Sampling, Analytical and other Requirements

- a) Required monitoring.
- 1) CWS suppliers shall analyze for TTHMs in accordance with this Section.
  - 2) For the purpose of this Section, the minimum number of samples

required to be taken by the system must be based on the number of treatment plants used by the system. However, the Agency shall, by special exception permit, provide that multiple wells drawing raw water from a single aquifer be considered one treatment plant for determining the minimum number of samples.

- 3) All samples taken within an established frequency must be collected within a 24-hour period.
- b) CWSs serving 10,000 or more individuals.
- 1) For CWSs utilizing surface water sources in whole or in part, and for CWSs utilizing only groundwater sources, except as provided in Section 611.683, analyses for TTHMs must be performed at quarterly intervals on at least four water samples for each treatment plant used by the system. At least 25 percent of the samples must be taken at locations within the distribution system reflecting the maximum residence time (MRT) of the water in the system. The remaining 75 percent must be taken at representative locations in the distribution system, taking into account number of persons served, different sources of water and different treatment methods employed. The results of all analyses per quarter must be arithmetically averaged and reported to the Agency within 30 days of the supplier's receipt of such results. All samples collected must be used in the computation of the average, unless the analytical results are invalidated for technical reasons. Sampling and analyses must be conducted in accordance with the methods listed in Section 611.685.
  - 2) Upon application by a CWS supplier, the Agency shall, by special exception permit, reduce the monitoring frequency required by subsection (b)(1) to a minimum of one sample analyzed for TTHMs per quarter taken at a point in the distribution system reflecting the MRT of the water in the system, if the Agency determines that the data from at least one year of monitoring in accordance with subsection (b)(1) and local conditions demonstrate that TTHM concentrations will be consistently below the MCL.
  - 3) If at any time during which the reduced monitoring frequency prescribed under this subsection applies, the results from any analysis exceed 0.10 mg/L TTHMs and such results are confirmed by at least one check sample taken promptly after such results are received, or if the CWS supplier makes any significant change to its source of water or treatment program, the supplier shall immediately begin monitoring in accordance with the requirements of subsection (b)(1), which monitoring must continue for at least 1 year before the frequency may be reduced again. The Agency shall, by special exception permit, require monitoring in excess of the minimum frequency where it is necessary to detect variations of TTHM levels within the distribution system.

BOARD NOTE: Derived from 40 CFR 141.30(a) and (b) (1989), modified to remove the limitation regarding addition of disinfectant.

- c) Surface water sources for CWSs serving fewer than 10,000 individuals. Suppliers shall submit at least one initial sample per treatment plant for analysis or analytical results from a certified laboratory for MRT concentration taken between May 1, 1990, and October 31, 1990. After written request by the supplier and the determination by the Agency that the results of the sample indicate that the CWS is not likely to exceed the MCL, the CWS shall continue to submit one annual sample per treatment plant for analysis or analytical results from a certified laboratory to the Agency taken between May 1 and October 31 of succeeding years. If the sample exceeds the MCL, the CWS shall submit to the Agency samples in accordance with the sampling frequency specified in subsection (b).

BOARD NOTE: This is an additional State requirement.

- d) Groundwater sources for CWSs serving fewer than 10,000 individuals. Suppliers are not required to submit samples for THM analysis under this Section.

BOARD NOTE: This is an additional State requirement.

#### Section 611.683 Reduced Monitoring Frequency

- a) A CWS supplier utilizing only groundwater sources may, by special exception permit application, seek to have the monitoring frequency required by Section 611.681(b)(1) reduced to a minimum of one sample for maximum TTHM potential per year for each treatment plant used by the supplier, taken at a point in the distribution system reflecting maximum residence time of the water in the system.
- 1) The CWS supplier shall submit to the Agency the results of at least one sample analyzed for maximum TTHM potential for each treatment plant used by the supplier, taken at a point in the distribution system reflecting the maximum residence time of the water in the system.
  - 2) The Agency shall reduce the supplier's monitoring frequency if it determines that, based upon the data submitted by the supplier, the supplier has a maximum TTHM potential of less than 0.10 mg/L and that, based upon an assessment of the local conditions of the CWS, the CWS is not likely to approach or exceed the MCL for TTHMs.
  - 3) The results of all analyses must be reported to the Agency within 30 days of the supplier's receipt of such results.
  - 4) All samples collected must be used for determining whether the supplier complies with the monitoring requirements of Section 611.681(b), unless the analytical results are invalidated for technical reasons.

- 5) Sampling and analyses must be conducted in accordance with the methods listed in Section 611.685.
- b) Loss or modification of reduced monitoring frequency.
- 1) If the results from any analysis taken by the supplier for maximum TTHM potential are equal to or greater than 0.10 mg/L, and such results are confirmed by at least one check sample taken promptly after such results are received, the CWS supplier shall immediately begin monitoring in accordance with the requirements of Section 611.681(b), and such monitoring must continue for at least one year before the frequency may be reduced again.
  - 2) In the event of any significant change to the CWS's raw water or treatment program, the supplier shall immediately analyze an additional sample for maximum TTHM potential taken at a point in the distribution system reflecting maximum residence time of the water in the system.
  - 3) The Agency shall require increased monitoring frequencies above the minimum where necessary to detect variation of TTHM levels within the distribution system.

BOARD NOTE: Derived from 40 CFR 141.30 (c) (1989).

#### Section 611.684 Averaging

Compliance with Section 611.310(c) is determined based on a running annual average of quarterly samples collected by the supplier as prescribed in Section 611.681(b)(1) or (2). If the average of samples covering any 12 month period exceeds the MCL, the 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) (1989).

#### Section 611.685 Analytical Methods

Sampling and analyses made pursuant to this Subpart must be conducted by one of the following methods, incorporated by reference in Section 611.102:

- a) "The Analysis of Trihalomethanes in Drinking Waters by the Purge and Trap Method," Method 501.1.
- b) "The Analysis of Trihalomethanes in Drinking Water by Liquid/Liquid Extraction," Method 501.2. Samples for TTHM must be dechlorinated upon collection to prevent further production of Trihalomethanes, according to the procedures described in the above two methods. Samples for maximum TTHM potential must not be dechlorinated, and must be held for seven days at 25 degrees C (or above) prior to

analysis, according to the procedures described in the above two methods.

BOARD NOTE: Derived from 40 CFR 141.30(e) (1989).

Section 611.686 Modification to System

Before a CWS supplier makes any significant modifications to its existing treatment process for the purposes of achieving compliance with Section 611.310(c), the supplier shall submit, by way of special exception permit application, a detailed plan setting forth its proposed modification and those safeguards that it will implement to ensure that the bacteriological quality of the drinking water served by the CWS will not be adversely affected by such modification. Upon approval, the plan will become a special exception permit. At a minimum, the plan must require the supplier modifying its disinfection practice to:

- a) Evaluate the water system for sanitary defects and evaluate the source water for biological quality;
- b) Evaluate its existing treatment practices and consider improvements that will minimize disinfectant demand and optimize finished water quality throughout the distribution system;
- c) Provide baseline water quality survey data of the distribution system. Such data should include the results from monitoring for coliform and fecal coliform bacteria, fecal streptococci, standard plate counts at 35 degrees C and 20 degrees C, phosphate, ammonia nitrogen and total organic carbon. Virus studies are required where source waters are heavily contaminated with sewage effluent;
- d) Conduct additional monitoring to assure continued maintenance of optimal biological quality in finished water, for example, when chloramines are introduced as disinfectants or when pre-chlorination is being discontinued. The Agency shall also require additional monitoring for chlorate, chlorite and chlorine dioxide when chlorine dioxide is used. The Agency shall also require HPC analysis (Section 611.531) as appropriate before and after any modifications;
- e) Consider inclusion in the plan of provisions to maintain an active RDC throughout the distribution system at all times during and after the modification.

BOARD NOTE: Derived from 40 CFR 141.30(f) (1989).

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) Radiochemical Methods;
- 2) Standard Methods, 13th Edition:
  - A) Gross Alpha and Beta: Method 302;
  - B) Total Radium: Method 304;
  - C) Radium-226: Method 305;
  - D) Strontium-89,90: Method 303;
  - E) Tritium: Method 306.
- 3) ASTM Methods:
  - A) Cesium-134: ASTM D-2459;
  - B) Uranium: ASTM D-2907.
- b) When the identification and measurement of radionuclides other than those listed in subsection (a) is 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 USEPA.
  - 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.
- 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 (1989).

Section 611.731 Gross Alpha

Monitoring requirements for gross alpha particle activity, radium-226 and radium-228 are as follows:

- a) Compliance must be based on the analysis of an annual composite of four consecutive quarterly samples or the average of the analyses of four samples obtained at quarterly intervals.
  - 1) A gross alpha particle activity measurement may be substituted for the required radium-226 and radium-228 analysis; provided, that, the measured gross alpha particle activity does not exceed 5 pCi/L at a confidence level of 95 percent (1.65 sigma where sigma is the standard deviation of the net counting rate of the sample). In localities where radium-228 may be present in drinking water, the Agency may, by special exception permit, require radium-226 or radium-228 analyses if it determines that the gross alpha particle activity exceeds 2 pCi/L.
  - 2) When the gross alpha particle activity exceeds 5 pCi/L, the same or an equivalent sample must be analyzed for radium-226. If the concentration of radium-226 exceeds 3 pCi/L the same or an equivalent sample must be analyzed for radium-228.
- b) See Section 611.100(e).
- c) CWS suppliers shall monitor at least once every four years following the procedure required by subsection (a). When an annual record taken in conformance with subsection (a) has established that the average annual concentration is less than half the MCLs established by Section 611.330, the Agency shall, by special exception permit, substitute analysis of a single sample for the quarterly sampling procedure required by subsection (a).
  - 1) The Agency shall, by special exception permit, require more frequent monitoring in the vicinity of mining or other operations which may contribute alpha particle radioactivity to either surface or groundwater sources of drinking water.
  - 2) A CWS supplier shall monitor in conformance with subsection (a) for one year after the introduction of a new water source. The Agency shall, by special exception permit, require more frequent monitoring in the event of possible contamination or when changes in the distribution system or treatment processing occur which may increase the concentration of radioactivity in finished water.
  - 3) The Agency shall, by special exception permit, require a CWS supplier using two or more sources having different concentrations of radioactivity to monitor source water, in addition to water from a free-flowing tap.
  - 4) The Agency shall not require monitoring for radium-228 to determine compliance with Section 611.330 after the initial

period; provided, that the average annual concentration of radium-228 has been assayed at least once using the quarterly sampling procedure required by subsection (a).

- 5) The Agency shall require the CWS supplier to conduct annual monitoring if the radium-226 concentration exceeds 3 pCi/L.
- d) If the average annual MCL for gross alpha particle activity or total radium as set forth in Section 611.330 is exceeded, the CWS supplier shall give notice to the Agency and notify the public as required by Subpart T. Monitoring at quarterly intervals must be continued until the annual average concentration no longer exceeds the MCL or until a monitoring schedule as a condition to a variance, adjusted standard or enforcement action becomes effective.

BOARD NOTE: Derived from 40 CFR 141.26(a) (1989).

#### Section 611.732 Manmade Radioactivity

Monitoring requirements for manmade radioactivity in CWSs are as follows:

- a) CWSs using surface water sources and serving more than 100,000 persons and such other CWSs as the Agency, by special exception permit, requires must monitor for compliance with Section 611.331 by analysis of a composite of four consecutive quarterly samples or analysis of four quarterly samples. Compliance with Section 611.331 is assumed without further analysis if the average annual concentration of gross beta particle activity is less than 50 pCi/L and if the average annual concentrations of tritium and strontium-90 are less than those listed in Section 611.331; provided, that if both radionuclides are present the sum of their annual does equivalents to bone marrow must not exceed 4 millirem/year.
  - 1) If the gross beta particle activity exceeds 50 pCi/L, an analysis of the sample must be performed to identify the major radioactive constituents present and the appropriate organ and total body doses must be calculated to determine compliance with Section 611.331.
  - 2) If the MCLs are exceeded, the Agency shall, by special exception permit, require the supplier to conduct additional monitoring to determine the concentration of man-made radioactivity in principal watersheds.
  - 3) The Agency shall, pursuant to subsection (d), by special exception permit, require suppliers of water utilizing only groundwater to monitor for man-made radioactivity.
- b) See Section 611.100(e).
- c) CWS suppliers shall monitor at least every four years following the procedure in subsection (a).
- d) The Agency shall, by special exception permit, require any CWS

supplier utilizing waters contaminated by effluents from nuclear facilities to initiate quarterly monitoring for gross beta particle and iodine-131 radioactivity and annual monitoring for strontium-90 and tritium.

- 1) Quarterly monitoring for gross beta particle activity must be based on the analysis of monthly samples or the analysis of a composite of three monthly samples. If the gross beta particle activity in a sample exceeds 15 pCi/L, the same or an equivalent sample must be analyzed for strontium-89 and cesium-134. If the gross beta particle activity exceeds 50 pCi/L, an analysis of the sample must be performed to identify the major radioactive constituents present and the appropriate organ and total body doses must be calculated to determine compliance with Section 611.331.
  - 2) For iodine-131, a composite of five consecutive daily samples must be analyzed once each quarter. The Agency shall, by special exception permit, require more frequent monitoring when iodine-131 is identified in the finished water.
  - 3) The Agency shall, by special exception permit, require annual monitoring for strontium-90 and tritium by means of the analysis of a composite of four consecutive quarterly samples or analysis of four quarterly samples.
  - 4) The Agency shall, by special exception permit, allow the substitution of environmental surveillance data taken in conjunction with a nuclear facility for direct monitoring of manmade radioactivity by the supplier where the Agency determines such data is applicable to the CWS.
- e) If the average annual MCL for man-made radioactivity set forth in Section 611.331 is exceeded, the CWS supplier shall give notice to the Agency and to the public as required by Subpart T. Monitoring at monthly intervals must be continued until the concentration no longer exceeds the MCL or until a monitoring schedule as a condition to a variance, adjusted standard or enforcement action becomes effective.

BOARD NOTE: Derived from 40 CFR 141.26(b) (1989).

#### SUBPART T: REPORTING, PUBLIC NOTIFICATION AND RECORDKEEPING

##### Section 611.830 Applicability

Except as otherwise provided, this Subpart applies to violations of both identical in substance regulations and additional State requirements.

##### Section 611.831 Monthly Operating Report

Within 30 days following the last day of the month, each CWS supplier shall submit a monthly operating report to the Agency, on forms provided or approved by the Agency.

BOARD NOTE: This is an additional State requirement.

Section 611.832 Notice by Agency

The Agency may give the public notices required in this Part on behalf of the CWS supplier. However, the supplier remains responsible for ensuring that the requirements of this Part are met.

BOARD NOTE: Drawn from 40 CFR 141.32(g) (1989).

Section 611.833 Cross Connection Reporting

Each CWS supplier exempted pursuant to Section 17(b) of the Act from the disinfection requirement shall report monthly to the Agency its activity to educate and inform its customers about preventing contamination into the distribution system.

BOARD NOTE: This is an additional State requirement.

Section 611.840 Reporting

- a) Except where a shorter period is specified in this Part, a supplier shall report to the Agency the results of any test measurement or analysis required by this Part within the following times, whichever is shortest:
  - 1) The first ten days following the month in which the result is received; or
  - 2) The first ten days following the end of the required monitoring period, as specified by special exception permit.
- b) Except where a different reporting period is specified in this Part, the supplier shall report to the Agency within 48 hours: The failure to comply with any provision (including failure to comply with monitoring requirements) in this Part.
- c) The supplier is not required to report analytical results to the Agency in cases where an Agency laboratory performs the analysis.
- d) The supplier, within ten days of completion of each public notification required pursuant to Section 611.851 et seq., shall submit to the Agency a representative copy of each type of notice distributed, published, posted or made available to the persons served by the supplier or to the media.
- e) The supplier shall submit to the Agency within the time stated in the request copies of any records required to be maintained under Section 611.860 or copies of any documents then in existence which the Agency is entitled to inspect pursuant to the authority of Section 4 of the Act.

BOARD NOTE: Derived from 40 CFR 141.31 (1989), as amended at 54 Fed. Reg. 27562, June 29, 1989.

Section 611.851 Reporting MCL and other Violations

A supplier which fails to comply with an applicable MCL or treatment technique established by this Part or which fails to comply with the requirements of any schedule prescribed pursuant to a variance or 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 special exception permit that the PWS in violation has corrected the violation or failure within the 45-day period; and
  - 3) For violations of the MCLs of contaminants 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 in Section 611.300(b).
    - 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.
- 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 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.

BOARD NOTE: Derived from 40 CFR 141.32(a) (1989). as amended at 54 Fed. Reg. 27526, June 29, 1989, and at 54 Fed. Reg. 27562, June 29, 1989.

#### Section 611.852 Reporting other Violations

A supplier which fails to perform monitoring required by this Part, fails to comply with a testing procedure established by this Part, or is subject to a variance or adjusted standard under Section 611.111, 611.112 or 611.113 shall notify persons served by the PWS as follows:

- a) Except as provided in subsection (c) or (d), the supplier shall give notice, within three months of the violation or granting of a variance or adjusted standard, by publication in a daily newspaper of general circulation in the area served by the PWS. 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.
- b) Except as provided in subsection (c) or (d), 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 exists. Repeat notice of the existence of a variance or adjusted standard (Section 611.111 through 611.113) must be given every three months for as long as the variance or adjusted standard remains in effect.
- 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, within three months of the violation or granting of the variance or adjusted

standard, by hand delivery or by continuous posting in conspicuous places with the area served by the CWS. Posting must continue for as long as the violation exists or a variance or adjusted standard remains in effect.

- 2) In lieu of the requirements of subsections (a) and (b), a non-CWS supplier may give notice, within three months of the violation or the granting of the variance or adjusted standard, by hand delivery or by continuous posting in conspicuous places within the area served by the PWS. Posting must continue for as long as the violation exists, or a variance or adjusted standard remains in effect. Notice by hand delivery must be repeated at least every three months for as long as the violation exists or a variance or adjusted standard remains in effect.

BOARD NOTE: Derived from 40 CFR 141.32(b) (1989).

#### 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, 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) (1989).

#### Section 611.854 General Content of Public Notice

Each notice required by this Section must provide a clear and readily understandable explanation of the violation, any potential adverse health effects, the population at risk, the steps that the supplier is taking to correct such violation, the necessity for seeking alternative water supplies, if any, and any preventive measures the consumer should take until the violation is corrected. Each notice must be conspicuous and must not contain unduly technical language, unduly small print or similar problems that frustrate the purpose of the notice. Each notice must include the telephone number of the supplier or a designee as a source of additional information concerning the notice. Where appropriate, the notice must be multi-lingual.

BOARD NOTE: Derived from 40 CFR 141.32(d) (1989).

#### Section 611.855 Mandatory Health Effects Language

When providing the information on potential adverse health effects required by Section 611.853(b) in notices of violations of MCLs or treatment technique requirements, or notices of the granting or the continued existence of adjusted standards or variances, or notices of failure to comply with a variance or adjusted standard schedule, the supplier shall include the language specified in Appendix A for each contaminant. (If language for a particular contaminant is not specified at the time notice is required, this Section does not apply).

BOARD NOTE: Derived from 40 CFR 141.32(e) (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989, and at 54 Fed. Reg. 27562, June 29, 1988.

Section 611.856 Fluoride Notice

Notice of violations of the MCL for fluoride, notices of variances and adjusted standards from the MCL for fluoride and notices of failure to comply with variance and adjusted standard schedules for the MCL for fluoride must consist of the public notice prescribed Appendix A plus a description of any steps which the supplier is taking to come into compliance.

BOARD NOTE: Derived from 40 CFR 141.32(f) and (g) (1989).

Section 611.858 Fluoride Secondary Standard

If a CWS exceeds the secondary standard for fluoride in Section 611.300(c), as determined by the last single sample taken in accordance with Section 611.607, but does not exceed the MCL in Section 611.300(b), the supplier shall provide the fluoride notice in Appendix A to:

- a) All billing units annually;
- b) All billing units at the time service begins; and
- c) The local public health department.

BOARD NOTE: Derived from 40 CFR 143.5 (1989).

Section 611.860 Record Maintenance

A supplier shall retain on its premises or at a convenient location near its premises the following records:

- a) Records of bacteriological analyses made pursuant to this Part must be kept for not less than 5 years. Records of chemical analyses made pursuant to this Part must be kept for not less than 10 years. Actual laboratory reports may be kept, or data may be transferred to tabular summaries, provided that the following information is included:
  - 1) The date, place and time of sampling, and the name of the person who collected the sample;
  - 2) Identification of the sample as to whether it was a routine distribution system sample, check sample, raw or process water sample or other special purpose sample;
  - 3) Date of analysis;
  - 4) Laboratory and person responsible for performing analysis;
  - 5) The analytical technique or method used; and
  - 6) The results of the analysis.
- b) Records of action taken by the supplier to correct violations of this Part must be kept for a period not less than 3 years after the last

action taken with respect to the particular violation involved.

- c) Copies of any written reports, summaries or communications relating to sanitary surveys of the system conducted by the supplier itself, by a private consultant, by USEPA, the Agency or a unit of local government delegated pursuant to Section 611.108, must be kept for a period not less than 10 years after completion of the sanitary survey involved.
- d) Records concerning a variance or adjusted standard granted to the supplier must be kept for a period ending not less than 5 years following the expiration of such variance or adjusted standard.

BOARD NOTE: Derived from 40 CFR 141.33 (1989).

#### Section 611.870 List of 36 Contaminants

- a) This Section applies to only the contaminants listed in Section 611.650.
- b) A CWS or NTNCWS supplier who is required to monitor under Section 611.650 shall send a copy of the results of such monitoring within 30 days of receipt and any public notice under subsection (d) to the Agency or, for non-CWSs, Public Health.
- c) See Section 611.100(e).
- d) The supplier shall notify persons served by the PWS of the availability of the results of sampling conducted under Section 611.650 by including a notice in the first set of water bills issued by the supplier after the receipt of the results or written notice within three months. The notice must identify a person and supply the telephone number to contact for information on the monitoring results. For surface water systems, public notification is required only after the first quarter's monitoring and must include a statement that additional monitoring will be conducted for three more quarters with the results available upon request.

BOARD NOTE: Derived from 40 CFR 141.35 (1989).

#### 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 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 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 enter 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.

BOARD NOTE: Derived from 40 CFR 141.32(e) (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989, and at 54 Fed. Reg. 27562, June 29, 1989.

- 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 \_\_\_\_\_ 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 \_\_\_\_\_ at your water system.

BOARD NOTE: Derived from 40 CFR 143.5 (1989).

- 10) Microbiological contaminants (for use when there is a violation of the treatment technique requirements for filtration and disinfection in Subpart B). 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].

BOARD NOTE: Derived from 40 CFR 141.32(e) (1989), as amended at 54 Fed. Reg. 27526, June 29, 1989, and at 54 Fed. Reg. 27562, June 29, 1989.

Section 611.Appendix B Percent Inactivation of G. Lamblia Cysts

CT-99.9 FOR 99.9 PERCENT INACTIVATION OF GIARDIA LAMBLIA CYSTS BY FREE CHLORINE AT 0.5 DEGREES C OR LOWER

These CT values achieve greater than a 99.99 percent inactivation of viruses. CT values between the indicated pH values may be determined by linear interpolation. CT values between the indicated temperatures of different tables may be determined by linear interpolation. If no interpolation is used, use the CT 99.9 value at the lower temperature and at the higher pH.

Free Residual (mg/L)	pH						
	<=6.0	6.5	7.0	7.5	8.0	8.5	<=9.0
<=0.4	137	163	195	237	277	329	390
0.6	141	168	200	239	286	342	407

0.8	145	172	205	246	295	354	422
1.0	148	176	210	253	304	365	437
1.2	152	180	215	259	313	276	451
1.4	155	184	221	266	321	387	464
1.6	157	189	226	273	329	397	477
1.8	162	193	231	279	338	407	489
2.0	165	197	236	286	346	417	500
2.2	169	201	242	297	353	426	511
2.4	172	205	247	296	361	435	522
2.6	175	209	252	304	368	444	533
2.8	178	213	257	310	375	452	543
3.0	181	217	261	316	382	460	552

CT-99.9 FOR 99.9 PERCENT INACTIVATION OF GIARDIA LAMBLIA CYSTS  
BY FREE CHLORINE AT 5.0 DEGREES C

These CT values achieve greater than a 99.99 percent inactivation of viruses. CT values between the indicated pH values may be determined by linear interpolation. CT values between the indicated temperatures of different tables may be determined by linear interpolation. If no interpolation is used, use the CT 99.9 value at the lower temperature and at the higher pH.

Free Residual (mg/L)	pH						
	<=6.0	6.5	7.0	7.5	8.0	8.5	<=9.0
<=0.4	97	117	139	166	198	236	279
0.6	100	120	143	171	204	244	291
0.8	103	122	146	175	210	252	301
1.0	105	125	149	179	216	260	312
1.2	107	127	152	183	221	267	320
1.4	109	130	155	187	227	274	329
1.6	111	132	158	192	232	281	337
1.8	114	135	162	196	238	287	345
2.0	116	138	165	200	243	294	353
2.2	118	140	169	204	248	300	361
2.4	120	143	172	209	253	306	368
2.6	122	146	175	213	258	312	375
2.8	124	148	178	217	263	318	382
3.0	126	151	182	221	268	324	369

CT-99.9 FOR 99.9 PERCENT INACTIVATION OF GIARDIA LAMBLIA CYSTS  
BY FREE CHLORINE AT 10.0 DEGREES C

These CT values achieve greater than a 99.99 percent inactivation of viruses. CT values between the indicated pH values may be determined by linear interpolation. CT values between the indicated temperatures of different tables may be determined by linear interpolation. If no interpolation is used, use the CT 99.9 value at the lower temperature and at the higher pH.

Free Residual (mg/L)	pH						
	<=6.0	6.5	7.0	7.5	8.0	8.5	<=9.0
<=0.4	73	88	104	125	149	177	209

0.6	75	90	107	128	153	183	210
0.8	78	92	110	131	158	189	220
1.0	79	94	112	134	162	195	234
1.2	80	95	114	137	166	200	240
1.4	82	98	116	140	170	206	247
1.6	83	99	119	144	174	211	253
1.8	86	101	122	147	179	215	259
2.0	87	104	124	150	182	221	265
2.2	89	105	127	153	186	225	271
2.4	90	107	129	157	190	230	276
2.6	92	110	131	160	194	234	281
2.8	93	111	134	163	197	239	287
3.0	95	113	137	166	201	243	292

CT-99.9 FOR 99.9 PERCENT INACTIVATION OF GIARDIA LAMBLIA CYSTS  
BY FREE CHLORINE AT 15.0 DEGREES C

These CT values achieve greater than a 99.99 percent inactivation of viruses. CT values between the indicated pH values may be determined by linear interpolation. CT values between the indicated temperatures of different tables may be determined by linear interpolation. If no interpolation is used, use the CT 99.9 value at the lower temperature and at the higher pH.

Free Residual (mg/L)	pH						
	<=6.0	6.5	7.0	7.5	8.0	8.5	<=9.0
<=0.4	49	59	70	83	99	118	140
0.6	50	60	72	86	102	122	146
0.8	52	61	73	88	105	126	151
1.0	53	63	75	90	108	130	156
1.2	54	64	76	92	111	134	160
1.4	55	65	78	94	114	137	165
1.6	56	66	79	96	116	141	169
1.8	57	68	81	96	119	144	173
2.0	58	69	83	100	122	147	177
2.2	59	70	85	102	124	150	181
2.4	60	72	86	105	127	153	184
2.6	61	73	88	107	129	156	188
2.8	62	74	89	109	132	159	191
3.0	63	76	91	111	134	162	195

CT-99.9 FOR 99.9 PERCENT INACTIVATION OF GIARDIA LAMBLIA CYSTS  
BY FREE CHLORINE AT 20 DEGREES C

These CT values achieve greater than a 99.99 percent inactivation of viruses. CT values between the indicated pH values may be determined by linear interpolation. CT values between the indicated temperatures of different tables may be determined by linear interpolation. If no interpolation is used, use the CT 99.9 value at the lower temperature and at the higher pH.

Free Residual (mg/L)	pH						
	<=6.0	6.5	7.0	7.5	8.0	8.5	<=9.0

<=0.4	36	44	52	62	74	89	105
0.6	38	45	54	64	77	92	109
0.8	39	46	55	66	79	95	113
1.0	39	47	56	67	81	98	117
1.2	40	48	57	69	83	100	120
1.4	41	49	58	70	85	103	123
1.6	42	50	59	72	87	105	126
1.8	43	51	61	74	89	108	129
2.0	44	52	62	75	91	110	132
2.2	44	53	63	77	93	113	135
2.4	45	54	65	78	95	115	138
2.6	46	55	66	80	97	117	141
2.8	47	56	67	81	99	119	143
3.0	47	57	68	83	101	122	146

CT-99.9 FOR 99.9 PERCENT INACTIVATION OF GIARDIA LAMBLIA CYSTS  
BY FREE CHLORINE AT 25 DEGREES C AND HIGHER

These CT values achieve greater than a 99.99 percent inactivation of viruses. CT values between the indicated pH values may be determined by linear interpolation. CT values between the indicated temperatures of different tables may be determined by linear interpolation. If no interpolation is used, use the CT 99.9 value at the lower temperature and at the higher pH.

Free Residual (mg/L)	pH						
	<=6.0	6.5	7.0	7.5	8.0	8.5	<=9.0
<=0.4	24	29	35	42	50	59	70
0.6	25	30	36	43	51	61	73
0.8	26	31	37	44	53	63	75
1.0	26	31	37	45	54	65	78
1.2	27	32	38	46	55	67	80
1.4	27	33	39	47	57	69	82
1.6	28	33	40	48	58	70	84
1.8	29	34	41	49	60	72	86
2.0	29	35	41	50	61	74	88
2.2	30	35	42	51	62	75	90
2.4	30	36	43	52	63	77	92
2.6	31	37	44	53	65	78	94
2.8	31	37	45	54	66	80	96
3.0	32	38	46	55	67	81	97

CT-99.9 FOR 99.9 PERCENT INACTIVATION OF GIARDIA LAMBLIA CYSTS  
BY CHLORINE DIOXIDE AND OZONE

	<=1°C	5°C	10°C	15°C	20°C	>25°C
Chlorine dioxide	63.	26.	23.	19.	15.	11.
Ozone	2.9	1.9	1.4	0.95	0.72	0.48

CT-99.9 FOR 99.9 PERCENT INACTIVATION OF GIARDIA LAMBLIA CYSTS  
BY CHLORAMINES

	<=1°C	5°C	10°C	15°C	20°C	>25°C
Chloramines	3800.	2200.	1850.	1500.	1100.	750.

BOARD NOTE: Derived from 40 CFR 141.74(b) Tables, as adopted at 54 Fed. Reg. 27526, June 29, 1989.

Section 611. Appendix C Common Names of Organic Chemicals

The following common names are used for certain organic chemicals:

Common Name	CAS No.	CAS Name
Aldrin	309-00-2	1,4,5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a-hexahydro-, (1alpha, 4alpha, 4abeta, 5alpha, 8alpha, 8abeta)-
Bromoform	75-25-2	Methane, tribromo-
Chlordane	57-74-9	4,7-Methano-1H-indene, 1,2,4,5,6,7,8,8-octachloro-2,3,3a,4,7,7a-hexahydro-
Chloroform	67-66-3	Methane, trichloro-
2,4-D	94-75-7	Acetic acid, 2,4-dichlorophenoxy-
DDT	50-29-3	Benzene, 1,1'-(2, 2, 2-trichloroethylidene)bis[4-chloro-
Dieldrin	60-57-1	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha, 2beta, 2aalpha, 3beta, 6beta, 6aalpha, 7beta, 7aalpha)-
Endrin	72-20-8	2,7:3,6-Dimethanonaphth[2,3-b]oxirene, 3,4,5,6,9,9-hexachloro-1a,2,2a,3,6,6a,7,7a-octahydro-, (1aalpha, 2beta, 2abeta, 3alpha, 6alpha, 6abeta, 7beta, 7aalpha)-,
Heptachlor	76-44-8	4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-
Heptachlor epoxide	1024-57-3	2, 5-Methano-2H-indeno[1, 2b]oxirene, 2, 3, 4, 5, 6, 7, 7-heptachloro-1a, 1b, 5, 5a, 6, 6a-hexahydro-, (1a alpha, 1b beta, 2 alpha, 5 alpha, 5a beta, 6beta, 6a alpha)-
Lindane	58-89-9	Cyclohexane, 1,2,3,4,5,6-hexachloro-, (1 alpha, 2 alpha, 3 beta, 4 alpha, 5 alpha, 6 beta)-
Methoxychlor	72-43-5	Benzene, 1,1'-(2,2,2-

trichloroethylidene)bis[4-methoxy-  
 Silvex (2,4,5-TP)            93-72-1 Propanoic acid, 2-(2,4,5-trichlorophenoxy)-  
 Toxaphene                    8001-35-2 Toxaphene  
 TTHM                         Total trihalomethanes (See Section 611.101)  
 BOARD NOTE: Derived from 40 CFR 141.30 (1989), and 40 CFR 261, Appendix VIII (1989)

Section 611.Table A Total Coliform Monitoring Frequency

TOTAL COLIFORM MONITORING FREQUENCY FOR CWSS

Population Served		Minimum Number of Samples per month
25	to	1000..... 1
1001	to	2500..... 2
2501	to	3300..... 3
3301	to	4100..... 4
4101	to	4900..... 5
4901	to	5800..... 6
5801	to	6700..... 7
6701	to	7600..... 8
7601	to	8500..... 9
8501	to	12,900..... 10
12,901	to	17,200..... 15
17,201	to	21,500..... 20
21,501	to	25,000..... 25
25,001	to	33,000..... 30
33,001	to	41,000..... 40
41,001	to	50,000..... 50
50,001	to	59,000..... 60
59,001	to	70,000..... 70
70,001	to	83,000..... 80
83,001	to	96,000..... 90
96,001	to	130,000..... 100
130,001	to	220,000..... 120
220,001	to	320,000..... 150
320,001	to	450,000..... 180
450,001	to	600,000..... 210
600,001	to	780,000..... 240
780,001	to	970,000..... 270
970,001	to	1,230,000..... 300
1,230,001	to	1,520,000..... 330
1,520,001	to	1,850,000..... 360
1,850,001	to	2,270,000..... 390
2,270,001	to	3,020,000..... 420
3,020,001	to	3,960,000..... 450
3,960,001		or more..... 480

PWSs which have at least 15 service connections, but serve fewer than 25 persons are included are included in the entry for 25 to 1000 persons served.

BOARD NOTE: Derived from 40 CFR 141.21(a)(2), as amended at 54 Fed. Reg. 27562, June 29, 1989.

Section 611. Table B Fecal or Total Coliform Density Measurements

System Size (Persons Served)		Samples per Week
Less than	500.....	1
501 to	3300.....	2
3301 to	10,000.....	3
10,001 to	25,000.....	4
More than	25,000.....	5

Samples must be taken on separate days.

BOARD NOTE: Derived from 40 CFR 141.74(b)(1), as amended at 54 Fed. Reg. 27562, June 29, 1989.

Section 611. Table C Frequency of RDC Measurement

System Size (Persons Served)		Samples per Day
Less than	500.....	1
501 to	1000.....	2
1001 to	2,500.....	3
2501 to	3,300.....	4

The day's samples cannot be taken at the same time. The sampling intervals are subject to Agency review and approval by special exception permit.

BOARD NOTE: Derived from 40 CFR 141.74(b)(5) and (c)(2), as amended at 54 Fed. Reg. 27562, June 29, 1989.

IT IS SO ORDERED

I, Dorothy M. Gunn, Clerk of the Illinois Pollution Control Board, hereby certify that the above Order was adopted on the 9<sup>th</sup> day of August, 1990, by a vote of 6-0.

*Dorothy M. Gunn*  
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 Dorothy M. Gunn, Clerk  
 Illinois Pollution Control Board