TITLE 64
LEGISLATIVE RULES
DEPARTMENT OF HEALTH

SERIES 3
PUBLIC WATER SUPPLY REGULATIONS

§64-3-1. General.

1.1. Scope. -- These legislative rules establish the rules and minimum requirements of the West Virginia state board of health governing owners and operators of public drinking water systems, and the production and distribution of bottled drinking water

1.2. Authority. -- W. Va. Code §16-1-7, §16-1-9

1.3. Filing Date. -- March 1, 1982

1.4. Effective Date. -- April 2, 1982

§64-3-2. Supersession or repeal of former regulations.

2.1. These legislative rules supersede and repeal state board of health "Public Water Supply Regulations" Chapter 1, Article 5, 1978

§64-3-3. Application and enforcement

3.1. Application. -- These legislative rules apply to owners and operators of public drinking water systems, and the production and distribution of bottled drinking water.

3.2. Enforcement. -- The enforcement of these legislative rules is vested with the director, West Virginia department of health or his lawful designee.

§64-3-4. Definitions.

4.1. Director. -- Director of the state department of health or his designee.

4.2. Person -- Individual, partnership, association, syndicate, company, firm, trust, corporation, government corporation, institution, department, division, bureau, agency, federal agency or any other entity recognized by law.

4.3. Public Water System. -- Any water system or supply which regularly supplies or offers to supply, piped water to the public for human consumption, if serving at least an average of twenty five (25) individuals per day for at least sixty (60) days per year, or which has at least fifteen (15) service connections, and shall include: (1) Any collection, treatment, storage, and distribution facilities under the control of the owner or operator of such system and used primarily in connection with such system, and (2) Any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. A public water system shall not include a system which meets all of the following conditions: (1) Which consists only of distribution and storage facilities (and does not have any collection and treatment facilities); (2) which obtains all of its water from, but is not owned or operated by a public water system which otherwise meets the definition; (3) which does not sell water to any person; and (4) which is not a carrier conveying passengers in interstate commerce

4.4. Permit -- A written document issued by the director giving a designated person permission to construct and/or operate, alter, or renovate a specific public water supply or system, or bottled water plant

4.5. Operator -- A person who has been granted a certificate issued by the director to operate a specific class of public water supply.

4.6. Source water. -- Any surface or ground water supply used as a source of water for a public water system.

4.7. Drinking water. -- Water free from biological, chemical, physical and radiological contaminants which cause disease or harmful physiological effects. The minimum quality of the water shall conform to

these regulations and applicable standards of the state department of health.

4.8. Contaminant. -- Any physical, chemical, microbiological, or radiological substance or matter in water.

4.9. Secondary contaminants. -- Any contaminants in drinking water which are not directly related to health but contribute to undesirable taste, odor, appearance or other consumer acceptability parameters.

4.10. Maximum contaminant level. -- The maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system, except in the case of turbidity where the maximum permissible level is measured at the point of entry to the distribution system. Contaminants added to the water under circumstances controlled by the user, except those resulting from corrosion of piping and plumbing caused by water quality, are excluded from this definition.

4.11. Public water system treatment plant. -- Facilities provided for the treatment of water by anyone or any combination of the controlled processes of coagulation, sedimentation, absorption, filtration, disinfection or other processes which produce drinking water consistently meeting the requirements of the state department of health

4.12. Bottled water. -- Any natural or artificial mineral, spring, well, distilled or other water bottled or containerized for use primarily as drinking water.

4.13. Community water system. -- A public water system which serves at least fifteen (15) service connections used by year round residents or regularly serves at least twenty-five (25) year round residents.

4.14. Non-community water system. -- Any public water system that is not a community water system.

4.15. Dose equivalent. -- 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).

4.16. REM. -- 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.

4.17. Gross alpha particle activity. -- The total radioactivity due to alpha particle emission as inferred from measurements on a dry sample.

4.18. Man made beta particle and photon emitters. -- All radionuclides emitting beta particles and/or photons listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure," NBS Handbook 69, except the daughter products of thorium-232, uranium-235 and uranium-238.

4.19. Gross beta particle activity. -- The total radioactivity due to beta particle emission as inferred from measurements on a dry sample.

4.20. Picocurie (pCi). -- That quantity of radioactive material producing 2.22 nuclear transformations per minute.

4.21. Consecutive system. -- A public water system whose drinking water is supplied entirely by another public water system.

4.22 Sanitary survey. -- An on-site review of the water source, facilities, equipment, operation and maintenance of a public water system for the purpose of evaluating the adequacy of such source, facilities, equipment, operation and maintenance for producing and distributing drinking water.

4.23. Certified laboratory. -- A laboratory that meets federal and state requirements including those established for personnel, work space, equipment and procedures, and certified by the director to analyze drinking water for specified contaminants.

4.24. Halogen. -- One (1) of the chemical elements chlorine, bromine or iodine.

4.25. Trihalomethane (THM). -- One (1) of the family of organic compounds, named as derivatives of methane, wherein three (3) of the four (4) hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure.

4.26. Total Trihalomethanes (TTHM). -- The sum

of the concentration in milligrams per liter of the trihalomethane compounds: trichloromethane (chloroform), dibromochlorometh, bromodichlorometh and tribromomethane (bromoform), rounded to two (2) significant figures.

4.27. Maximum total trihalomethane potential (MTP). -- The maximum concentration of total trihalomethanes produced in a given water containing a disinfectant residual after seven (7) days at a temperature of twenty-five (25) degrees C or above.

4.28. Disinfectant. -- 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.

§64-3-5. Permit to construct.

5.1. On and after the effective dates of these regulations, no person shall construct, or award a contract for any construction, except as provided for in Section 5.4 of these regulations, to a public water system, without obtaining a permit to construct from the director.

5.2. No person shall begin construction, alter or renovate a public water system without first submitting plans and specifications to the director for review and approval at least forty-five (45) days prior to the date on which approval by the director is desired. The public water system shall be constructed, altered or renovated in accordance with the plans and specifications as approved by the director, and in accordance with the West Virginia state department of health's "Design Standards for Public Water Supply Systems" (Bulletin #EW-99). To the extent practicable, all new or expanded facilities should be located outside of the one hundred (100) year flood plain.

5.3. Application for permit to construct shall be made to the director on forms prescribed by the director and shall be accompanied by an engineering report, maps, detailed plans and specifications of the public water system prepared by or under the direction of a registered professional engineer.

5.4. A permit to construct will not be required for any minor addition to, extension of, or alteration of an existing distribution system which will not affect the quality or quantity of water supply service rendered, providing the work is done in accordance with the provisions of the West Virginia state department of health Bulletin EW-99, "Design Standards for Public Water Supply Systems."

5.5. The director shall have the authority to issue an order requiring a change in the source of the water supply or in the manner of collection, treatment, storage, or distribution facilities of the supply before delivery to the consumer as may be necessary to safeguard the public health.

5.6. A permit to construct may be revoked by the director for failure to comply with the provisions of the permit or all applicable provisions of these regulations.

5.7. A permit to construct, unless revoked, shall be valid for a period of two (2) years from date of issuance.

§64-3-6. Permit to operate.

6.1. Application for a permit to operate a water system shall be made to the director at least thirty (30) days before the scheduled operation of the public water system. Applications shall be on forms prescribed by the director, and signed by the applicant or his authorized representative.

6.2. No person directly or indirectly shall manage, operate or maintain a public water system in the state of West Virginia without first making an application to, and receiving from the director a permit to operate.

6.3. In the event of an intended change, or an actual change in ownership of a public water system, a written application for a permit to operate shall be made to the director by the current owner at least fifteen (15) days before the proposed or actual change.

6.4. A permit to operate shall be posted in a conspicuous place at the public water system's treatment plant or main office.

§64-3-7. Inspections.

7.1. Each community water system utilizing surface source water shall be inspected by the director at least once per year. Other public water systems shall be inspected as scheduled by the director.

7.2. The operator of the public water system shall,

upon the request of the director, permit access to all parts of the system and shall furnish all information and records required to be kept by Section 16 of these regulations.

§64-3-8. Microbiological quality requirements. maximum contaminant levels: sampling technique and monitoring frequency.

8.1. Disinfection with chlorine shall be required of all public water systems, unless otherwise approved in writing by the director.

8.2. Chlorine or any other approved disinfectant shall be applied at a point before entering the distribution system which will provide effective contact time; the minimum contact time shall be thirty (30) minutes to the first consumer, unless otherwise stipulated in writing by the director or the "Design Standards for Public Water Supply Systems" (Bulletin #EW-99). At the end of the contact time, the minimum free chlorine residuals at the various PH values shall comply with the requirements of the following table unless otherwise stipulated in writing by the director:

PH VALUE	FREE CHLORINE RESIDUAL
up to 7.0	0.4 mg/l
7.1 to 8.0	0.6 mg/l
8.1 to 9.0	1.0 mg/l

8.3. The owner or operator of a public water system shall determine the amount of residual disinfectant in the drinking water at the treatment plant and in the distribution system at least once per day, or more often if deemed necessary by the director.

8.4. Chlorine residual testing equipment shall enable measurement of free and total residuals to the nearest 0.2 mg/l in the range of 0.0 mg/l to 2.0 mg/l.

8.5. At least a trace of total chlorine residual shall be maintained throughout the distribution system at all times, unless otherwise approved in writing by the director.

8.6. Water samples of at least 100 ml shall be collected by a representative of the public water system for microbiological analysis. Samples shall be collected from representative areas of each public water distribution system and submitted to the West Virginia state hygienic laboratory or a certified laboratory in standard sterilized water containers provided by said laboratory.

8.7. The frequency of water sample collection and microbiological examination for coliform bacteria for community water systems shall be in proportion to the population served as found in Table 64-3A at the end of this regulation.

8.8. For community and non-community systems that are required to sample at a rate of less than four (4) times per month, compliance with maximum microbiological contaminant levels may be based on sampling during a three (3) month period at the discretion of the director.

8.9. Based on a history of no coliform bacterial contamination and on a sanitary survey by the director, showing the water system to be supplied solely by a protected ground water source and free of sanitary defects, a community water system serving twenty-five (25) to one thousand (1,000) persons, with written permission of the director, may reduce its sampling frequency, except that in no case shall it be reduced to less than one (1) sample per quarter.

8.10. The supplier of water for a noncommunity water system shall sample for coliform bacteria once during each calendar quarter during which the system provides water to the public unless the director determines that some other frequency is more appropriate, based on a sanitary survey.

8.11 The maximum contaminant levels for coliform bacteria are as follows:

8.11.1. When the membrane filter technique is used, the number of coliform bacteria shall not exceed any of the following:

8.11.1.1 One per one hundred (100) milliliters as the arithmetic mean of all samples examined per compliance period; except that, at the director's discretion, systems required to take ten (10) or fewer samples per month may be authorized to exclude one (1) positive sample per month from the monthly calculation if:

(a) As approved on a case by case basis, the director determines and indicates in writing to the public water system that no unreasonable risk to health existed under the conditions of this modification. This determination should be based upon a number of factors not limited to the following: (1) the

system provided and had maintained an active disinfectant residual in the distribution system, (2) the potential for contamination as indicated by a sanitary survey, and (3) the history of the water quality at the public water system (e.g., MCL or monitoring violations).

(b) The supplier collects two (2) resamples from the same sampling point within twenty-four (24) hours after being notified that the routine sample is positive, and each of these resamples is negative; and

(c) The original positive routine sample is reported by the supplier pursuant to Sections 14 and 16 of these regulations. The supplier shall report to the director its compliance with the conditions specified in this paragraph and report the action taken to resolve the prior positive sample result. If a positive routine sample is not used for the monthly calculation, another routine sample must be analyzed for compliance purposes. This provision may be used only once during two (2) consecutive compliance periods.

8.11.1.2. Four (4) per one hundred (100) milliliters in more than one (1) sample when less than twenty (20) are examined per month; or

8.11.1.3. Four (4) per one hundred (100) milliliters in more than five percent (5%) of the samples when twenty (20) or more are examined per month.

8.11.2. When the fermentation tube method and ten (10) milliliter standard portions are used. coliform bacteria shall not be present in any of the following:

8.11.2.1. More than ten percent (10%) of the portions examined in any month; except that at the director's discretion, systems required to take ten (10) or fewer samples per month may be authorized to exclude one (1) positive routine sample resulting in one (1) or more positive tubes per month from the monthly calculation if:

(a) As approved on a case by case basis, the director determines and indicates in writing to the public water system that no unreasonable risk to health existed under the conditions of this modification. This determination should be based upon a number of factors not limited to the following: (1) the system provided and had maintained an active disinfectant residual in the distribution system, (2) the potential for contamination as indicated by a sanitary survey, and (3) the history of the water quality at the public water system (e.g., MCL or monitoring violations);

(b) The supplier collects two (2) resamples from the same sampling point within twenty-four (24) hours after being notified that the routine sample is positive, and each of these resamples is negative; and

(c) The original positive routine sample is reported and recorded by the supplier pursuant to Sections 14 and 16. The supplier shall report to the director its compliance with the conditions specified in this paragraph and report the action taken to resolve the prior positive sample result. If a positive routine sample is not used for the monthly calculation, another routine sample must be analyzed for compliance purposes. This provision may be used only once during two (2) consecutive compliance periods.

8.11.2.2. Three (3) or more portions in more than one (1) sample when less than twenty (20) samples are examined per month; or

8.11.2.3. Three (3) or more portions in more than five percent (5%) of the samples when twenty (20) or more samples are examined per month.

8.11.3. When the fermentation tube method and one hundred (100) milliliter standard portions are used, coliform bacteria shall not be present in any of the following:

8.11.3.1. More than sixty percent (60%) of the portions examined in any month; except that, at the director's discretion, systems required to take ten (10) or fewer samples per month may be authorized to exclude one (1) or more positive tubes per month from the monthly calculation if:

(a) As approved on a case-by-case basis, the director determines and indicates in writing to the public water system that no unreasonable risk to health existed under the conditions of this modification. This determination should be based upon a number of factors not limited to the following: (1) the system provided and had maintained an active disinfectant residual in the distribution system, (2) the potential for contamination as indicated by a sanitary survey, and (3) the history of the water quality at the public water system (e.g., MCL or monitoring viola-

tions).

(b) The supplier collects two (2) resamples from the same sampling point within twenty-four (24) hours after being notified that the routine sample is positive, and each of these resamples is negative; and

(c) The original positive routine sample is reported and recorded by the supplier pursuant to Sections 14 and 16. The supplier shall report to the director the system's compliance with the conditions specified in this paragraph and a summary of the corrective action taken to resolve the prior positive sample result. If a positive routine sample is not used for the monthly calculation, another routine sample must be analyzed for compliance purposes. This provision may be used only once during two (2) consecutive compliance periods.

8.11.3.2. Five (5) portions in more than one (1) sample when less than five (5) samples are examined per month or,

8.11.3.3. Five (5) portions in more than twenty percent (20%) of the samples when five (5) or more samples are examined per month.

8.11.3.4. If an average MCL violation is caused by a single sample MCL violation, then the case shall be treated as one violation with respect to the public notification requirements of Section 15

8.12. If coliform bacteria found in a single sample exceed four (4) per one hundred (100) milliliters when the membrane filter technique is used, at least two (2) consecutive resamples shall be collected from the same sampling point within twenty-four (24) hours after being notified that the routine sample is positive. Additional resamples shall be collected daily, or at a frequency established by the director, until the results obtained from at least two (2) consecutive resamples show less than one (1) coliform bacterium per one hundred (100) milliliters.

8.13. If coliform bacteria occur in three (3) or more ten (10) milliliter portions of a single sample, when the fermentation tube method and ten (10) milliliter standard portions are used, at least two (2) consecutive resamples shall be collected from the same sampling point within twenty-four (24) hours after being notified that the routine sample is positive. Additional resamples shall be collected daily, or at a frequency established by the director until the results obtained from at least two (2) consecutive resamples show no positive tubes.

8.14. If coliform bacteria occur in all five (5) of the one hundred (100) ml portions of a single sample when the fermentation tube method and one hundred (100) milliliter standard portions are used, at least two (2) consecutive resamples shall be collected from the same sampling point within twenty-four (24) hours after being notified that the routine sample is positive. Additional resamples shall be collected daily or at a frequency established by the director until the results obtained from at least two (2) consecutive resamples show no positive tubes. The location at which the resamples were taken pursuant to Sections 8.12, 8.13 and 8.14 above, shall not be eliminated from future sampling without approval of the director.

8.15. The results from all coliform bacterial analysis performed pursuant to this section, except for those results obtained from resamples and special purpose samples, shall be used to determine compliance with the maximum contaminant levels for coliform bacteria, or in calculating the total number of samples taken each month to determine compliance with the requirements of sampling as set forth in Sections 8.7 and 8.11.

8.16. When the monitoring requirements of Section 8.7 are violated or the maximum contaminant levels (including resamples) listed in Section 8.11 are exceeded, the system owner or operator shall report to the director in accordance with Section 14 and notify the public as prescribed in Section 15.

8.17. A system owner or operator of a community water system or a non-community water system may, based on a sanitary survey and with the approval of the director, substitute the use of free chlorine residual monitoring for not more than seventy percent (70%) of the samples required to be taken, provided, that the system owner or operator makes the free chlorine residual determinations at points which are representative of the conditions within the distribution system at the frequency of at least four (4) residual determinations for each substituted microbiological sample. When the system owner or operator exercises the option provided in this paragraph, they shall maintain no less than 0.2 mg/l free chlorine throughout the distribution system and shall make at least daily determinations of free chlorine residual. When a particular sampling point has been shown to have a

free chlorine residual less than 0.2 mg/l, the water at the location shall be retested as soon as practicable and in any event within one (1) hour. If the original analysis is confirmed, this fact shall be reported to the director within forty-eight (48) hours. Also, if the residual analysis is confirmed, a sample for microbiological analysis must be collected from that sampling point as soon as practicable and preferably within one (1) hour, and the results of such analysis reported to the director within forty-eight (48) hours after the results are known to the supplier of water. Analysis for residual chlorine shall be made using DPD test in accordance with Section 13. The director may withdraw approval of the use of chlorine residual substitution at any time.

§64-3-9. Inorganic chemical requirements: maximum contaminant levels: Monitoring Frequency

9.1. The maximum contaminant level for nitrate is applicable to both community and non-community water systems except as provided by Section 9.7. The levels for other inorganic chemicals apply to all community water systems and other systems as determined by the director. Analysis for maximum contaminant levels shall be made in accordance with Section 13. Monitoring shall be in accordance with Section 19.

9.2. The following are the maximum contaminant levels for inorganic chemicals other than fluoride: (See Table 64-3B found at the end of this regulation.)

9.3. Based on the annual average of the maximum daily air temperatures, the maximum contaminant levels for fluoride at public water systems (except public schools) are:

TEMPERATURE DEGREES FAHRENHEIT	MILLIGRAMS PER LITER
53.8 to 58.3	2.2
58.4 to 63.8	1.8
63.9 to 70.6	1.8

9.4. If the result of an analysis indicates that the level of any inorganic contaminant listed exceeds the maximum contaminant level, the system owner or operator shall report same to the director within seven (7) days and initiate three (3) additional analysis at the same sampling point within one (1) month.

9.5. When the average of four (4) analysis made pursuant to Section 9.4, rounded to the same number of significant figures as the maximum contaminant level for the substance in question, exceeds the maximum contaminant level, the system owner or operator shall notify the director pursuant to Section 14 and give notice to the public pursuant to Section 15. Monitoring after public notification shall be at a frequency designated by the director and shall continue until the maximum contaminant level has not been exceeded in two (2) successive samples or until a monitoring schedule as a condition to a variance, exemption or enforcement action shall become effective.

9.6. Notwithstanding the provisions of Sections 9.4 and 9.5 compliance with the maximum contaminant level for nitrate shall be determined on the basis of the average of two (2) analysis. When a level exceeding the maximum contaminant level for nitrate is found, a second analysis shall be initiated within twenty-four (24) hours, and if the average of the two (2) analysis exceeds the maximum contaminant level, the system owner or operator shall report their findings to the director pursuant to Section 14 and shall notify the public pursuant to Section 15.

9.7. At the discretion of the director, nitrate levels not to exceed twenty (20) mg/l may be allowed in a non-community water supply if the supplier of water demonstrates to the satisfaction of the director that:

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

9.7.2. There will be continuous posting of the fact that nitrate levels exceed 10 mg/l and the potential health effects of exposure; and

9.7.3. The director will be notified annually of nitrate levels that exceed ten (10) mg/l; and

9.7.4. No adverse health effects shall result.

§64-3-10. Organic chemical requirements: maximum contaminant levels: monitoring frequency.

10.1. The maximum contaminant level for organic chemicals applies only to community water systems. Analysis for maximum contaminant levels shall be made in accordance with Section 13. Monitoring shall be in accordance with Section 19.

10.2. The maximum contaminant levels for organic chemicals are found in Table 64-3C.

10.3. If the result of an analysis made pursuant to Section 19 indicates that the level of any contaminant listed in Section 10.2 under ".01" and ".02" exceeds the maximum contaminant level, the system owner or operator shall report to the director within seven (7) days and initiate three (3) additional analysis within one (1) month.

10.4. When the average of four (4) analysis made pursuant to Section 10.3 rounded to the same number of significant figures as the maximum contaminant level for the substance in question, exceeds the maximum contaminant level, the system owner or operator shall report to the director and notify the public a frequency designated by the director and shall continue until the maximum contaminant level has not been exceeded in two (2) successive samples or until a monitoring schedule as a condition to a variance, exemption, or enforcement action shall become effective.

10.5. The regulations for total trihalomethanes set forth in Section 10 shall take effect November 29, 1981, for community water systems serving seventy-five thousand (75,000) or more individuals, and November 29, 1983, for communities serving ten thousand (10,000) to seventy-four thousand nine hundred ninety-nine (74,999) individuals.

10.6. Community water systems utilizing surface water sources in whole or in part, and for all community water systems utilizing only ground water sources, an analysis for total trihalomethanes shall be performed at quarterly intervals on at least four (4) water samples for each treatment plant used by the system. At least twenty-five percent (25%) of the samples shall be taken at locations within the distribution system reflecting the maximum residence time of the water in the system. The remaining seventy-five percent (75%) of the samples shall 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 analysis per quarter shall be arithmetically averaged and reported to the director. All samples collected shall be used in the computation of the average unless the analytical results are invalidated for technical reasons. All samples taken within an established frequency shall be collected within a twenty-four (24) hour period.

10.7. Upon written request of a community water system, the monitoring frequency required by Section 10.6 may be reduced by the director to a minimum of one (1) sample analyzed per quarter taken at a point in the distribution system reflecting the maximum residence time of the water in the system, upon a written determination by the director that the data from at least one (1) year of monitoring in accordance with Section 10.6 and local conditions demonstrate that total trihalomethane concentrations will be consistently below the maximum contaminant level.

Upon written request to the director, a community water system utilizing only ground water sources may seek to have the monitoring frequency required reduced to a minimum of one (1) sample for maximum TTHM potential per year for each treatment plant used by the system. The system shall submit to the director the results of at least one sample analyzed for maximum TTHM potential for each treatment plant used by the system taken at a point in the distribution system reflecting the maximum residence time of the water in the system. The system's monitoring frequency may only be reduced upon a written determination by the director that, based upon the data submitted by the system, the system has a maximum TTHM potential of less than 0.10 mg/l and that, based upon an assessment of the local conditions of the system, the system is not likely to approach or exceed the maximum contaminant level for total TTHMs.

10.8. If at any time during which the reduced monitoring frequency prescribed under this section applies, the results from any analysis exceed 0.10 mg/l of TTHMs and such results are confirmed by at least one (1) resample taken promptly after such results are received, or if the system makes any significant change to its source of water or treatment program, the system shall immediately begin monitoring in accordance with the requirements of Section 10.6. Monitoring shall continue for at least one (1) year before the frequency may be reduced again. In the event of any significant change to the system's raw water or treatment program, the system shall immediately analyze an additional sample for maximum TTHM potential in accordance with Sections 10.6 and 10.7.

Compliance with Section 10.2 shall be determined based on a running annual average of samples collected by the system as prescribed in Section 10.6. If the average of samples covering any twelve (12) month period exceeds the maximum contaminant level, the supplier of water shall report to the director pursuant to Section 14.2 and notify the public pursuant to Section 15 Monitoring after public notification shall be

at a frequency designated by the director and shall continue until a monitoring schedule as a condition to a variance, exemption or enforcement action shall be come effective.

10.9. Before a community water system makes any significant modifications to its existing treatment process for the purposes of achieving compliance with Section 10.2, such a system must submit and obtain approval from the director of 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 such system will not be adversely affected by such modification. Each system shall comply with the provisions set forth in the director's approved plan At a minimum, the director's approved plan shall require the system modifying its disinfection practice to:

10.9.1. Evaluate the water system for sanitary defects and evaluate the source water for biological quality;

10.9.2. Evaluate its existing treatment practices and consider improvements that will minimize disinfectant demand and optimize finished water quality throughout the distribution system;

10.9.3. 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° C and 20° C, phosphate, ammonia nitrogen and total organic carbon Virus studies should be required where source waters are heavily contaminated with sewage effluent,

10.9.4. 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. Additional monitoring should also be required by the director for chlorate, chlorite and chlorine dioxide when chlorine dioxide is used as a disinfectant;

10.9.5. Demonstrate an active disinfectant residual throughout the distribution system at all times during and after the modification.

§64-3-11. Radiological requirements: maximum contaminant levels: monitoring frequency.

11 1. The maximum contaminant levels for radioactive materials apply only to community water systems. Analyses for maximum contaminant levels shall be made in accordance with Section 13. Monitoring shall be in accordance with Section 19.

11.2. The following are the maximum contaminant levels for radium-226, radium-228; and gross alpha particle radioactivity:

11.2.1. Combined radium-226 and radium-228: 5 pCi/l.

11.2.2. Gross alpha particle activity (including radium-226 but excluding radon and uranium): 15 pCi/l.

11.3. The following are the maximum contaminant levels for beta particle and photon radioactivity from man-made radiouclides:

11.3.1. 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 four (4) millirem/year.

11.3.2. Except for the radionuclides listed below, the concentration of man-made radionuclides causing four (4) mrem/year total body or organ dose equivalents shall be calculated on the basis of a two (2) liters per day drinking water intake using the one hundred sixty-eight (168) hour data listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure," NBS Handbook 69 as amended August, 1963, United States Department of Commerce. If two (2) or more radionuclides are present, the sum or their annual dose equivalent to the total body or to any organ shall not exceed four (4) mrem/year. (See Table 64-3D found at the end of this regulation.)

11.4. The monitoring frequency and requirements for gross alpha particle activity, radium-226 and radium-228 are as follows:

11.4.1. Compliance shall be based on the analysis of an annual composite of four (4) consecutive quarterly samples or the average of the analysis of four (4) samples obtained at quarterly intervals.

11.4.1.1. 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 ninety-five percent (95%) (1.65 sigma, where sigma is the standard deviation of the sample).

11.4.1.2. 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.

11.4.2. System owners or operators shall monitor at least once every four (4) years following the procedure required by Section 11.4.1. At the discretion of the director, when an annual record taken in conformance with Section 11.4.1 has established that the average annual concentration is less than half the maximum contaminant levels established by Section 11.5, analysis of a single sample may be substituted for the quarterly sampling procedure required by Section 11.4.1.

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

11.4.2.2. A system owner or operator shall monitor in conformance with Section 11.4.1 within one (1) year after the introduction of a new water source for a community water system. More frequent monitoring shall be conducted when ordered by the director in the event of possible contamination or when changes in the distribution system or a treatment process occur which may increase the concentration of radioactivity in finished water.

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

11.4.2.4. Monitoring for compliance with Section 11.2 after the initial period need not include radium-228 except when required by the director, provided that the average annual concentration of radium-228 has been assayed at least once using the quarterly sampling procedure required by Section 11.4.1.

11.4.2.5. If the average annual maximum contaminant level for gross alpha particle activity or total radium as set forth in Section 11.2 is exceeded, the owner or operator of a community water system shall give notice to the director pursuant to Section 14 and notify the public as required by Section 15.

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.

11.5. The monitoring frequency and requirements for man-made beta particle and photon radioactivity are as follows:

11.5.1. Community water systems using surface water sources and serving more than one hundred thousand (100,000) persons and such other systems as the director may designate shall be monitored for compliance with Section 11 3 by analysis of a composite of four (4) consecutive quarterly samples or analysis of four (4) quarterly samples. Compliance with Section 11.3 may be 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 11.3.2, provided that if both radionuclides are present the sum of their annual dose equivalents to bone marrow shall not exceed 4 mrem/year

11 5.1.1 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 shall be calculated to determine compliance with Section 11.3.

11.5.1.2. Suppliers of water shall conduct such additional monitoring as ordered by the director.

11.5.2. System owners or operators utilizing only ground waters may be required to monitor for man-made radioactivity as ordered by the director.

11.5.3. System owners or operators required to monitor shall do so at least once every four (4) years following the procedures in Section 11.5.1.

11.5.4. System owners or operators utilizing

water contaminated by effluents from nuclear facilities shall monitor quarterly for gross beta particle and iodine-131 radioactivity and annually for strontium-90 and tritium.

11.5.4.1. Quarterly monitoring for gross beta particle activity shall be based on the analysis of monthly samples or the analysis of a composite of three (3) monthly samples. 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 Section 11.3.

11.5.4.2. For iodine-131, a composite of five (5) consecutive daily samples shall be analyzed once each quarter. As ordered by the director, more frequent monitoring shall be conducted when iodine- 131 is identified in the finished water.

11.5.4.3. Annual monitoring for strontium-90 and tritium shall be conducted by means of the analysis of a composite of four (4) consecutive quarterly samples or analyses of four (4) quarterly samples.

11.5.5. If the average annual maximum contaminant level for man-made radioactivity set forth in Section 11.3 is exceeded, the system owners or operators shall notify the director pursuant to Section 14 and notify the public as required by Section 15. Monitoring at monthly intervals shall be continued until the 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.

§64-3-12. Turbidity requirements: maximum contaminant levels: monitoring frequency.

12.1. The maximum contaminant levels for turbidity apply to both community and non- community water systems using surface water sources in whole or in part. The levels may apply to special ground water situations specified by the director. The maximum contaminant levels for turbidity in drinking water, measured daily in accordance with Section 19, at a representative entry point to the distribution system are:

12.1.1. One (1) nephelometric turbidity unit (NTU), as determined by a monthly average pursuant to Section 12.3, except that five (5) or fewer turbidity units may be allowed if the supplier of water can demonstrate to the director that the higher turbidity does not do any of the following:

12.1.1.1. Interfere with disinfection;

12.1.1.2. Prevent maintenance of an effective disinfectant agent throughout the distribution system; or

12.1.1.3. Interfere with microbiological determination.

12.1.2. Five (5) nephelometric turbidity units based on an average for two (2) consecutive days pursuant to Section 12.3.

12.2. Analysis for maximum turbidity contaminant levels shall be made by the Nephelometric Method in accordance with Section 13.

12.3. If the result of a turbidity analysis indicates that the maximum allowable limit has been exceeded, the sampling and measurement shall be confirmed by resampling as soon as practicable and preferably within one (1) hour. If the resample analysis confirms that the maximum allowable limit has been exceeded, the system owner or operator shall report to the director within forty-eight (48) hours. The resample shall 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 (2) samples taken on consecutive days exceeds 5 NTU, the system or operator shall report to the director and notify the public as directed in Sections 14 and 15. All averages must be rounded to the nearest whole number, thus, less than five tenths (0.5) becomes zero (0); greater than five tenths (0.5) becomes one (1).

12.4. As approved on a case by case basis, the director may indicate, in writing, that a reduced monitoring frequency may be implemented by a non- comajmunity system provided that the frequency does n pose any unreasonable risk to human health and the system practices disinfection procedures and maintains an active residual disinfectant in the distribution system.

§64-3-13. Approved analytical techniques and lab-

oratories.

13.1. For the purpose of determining compliance with the maximum microbiological, chemical and radiological contaminant levels and in accordance with Section 13.3, samples may be considered only if they have been analyzed by the state department of health's laboratories, or by a laboratory certified by the director.

13.2. For the purpose of determining measurements of turbidity and residual chlorine, samples may be considered only if they have been analyzed by a person approved by the director.

13.3. Analytical techniques shall comply with Tables 64-3E and 64-3F at the end of this regulation.

§64-3-14. Reporting requirements.

14.1. Except as specified below, a system owner or operator shall report results to the director within forty (40) days following a test, measurement, or analysis required to be made by these regulations.

14.2. Analytical results for Total Trihalomethane (TTHM) analysis shall be reported to the director within thirty (30) days of the system's receipt of such results.

14.3. A system owner or operator shall report to the director within forty-eight (48) hours the failure to comply with any drinking water regulation.

14.4. A system owner or operator is not required to report analytical results to the director in cases where the state health department's laboratories perform the analysis.

14.5. At least once per month, or as otherwise directed by the director, a system owner or operator shall submit to the director a written summary of the public water system operation, test data, and such other information as may be required by the director.

14.6. All reports and summaries required by Section 14 shall be submitted in a manner or form approved by the director.

14.7. The water supply system shall submit to the director a representative copy of each type of notice distributed, posted or made available to the public or media within seven (7) days following such public notification.

§64-3-15. Public notification.

15.1. The owner or operator of a public water system shall notify the public when any maximum contaminant level is exceeded; or when the system owner or operator fails to comply with applicable monitoring requirements, testing procedures, and analytical techniques provided in Sections 8, 9, 10, 11, 12, 13 and 19; or when maximum contaminant levels or schedules prescribed by a variance or exemption are exceeded; or when a variance or exemption is granted.

15.2. Community water systems shall notify the public by a notice on or with the first set of water bills issued by the system when the provisions of Section 15.1 have not been met.

15.3. The owner or operator of a community water system shall notify the public once every three (3) months, so long as the failure to comply for the reasons set out in Section 15.1 continue. In the event the system does not issue water bills at least every three (3) months, then the notice shall be made or supplemented by a form of direct mail.

15.4. In addition to the requirements of Section 15.2 and 15.3, if a community water system exceeds a maximum contaminant level, the system owner or operator shall:

15.4.1. Publish notice of the failure for three (3) consecutive days in a newspaper serving the general area. Notice shall be published within fourteen (14) days of learning of the failure.

15.4.2. Furnish a copy of the notice to radio and television stations in the area served by the system. Notice shall be furnished within seven (7) days of the failure.

15.4.3. If the area supplied by a community water system is not served by a daily newspaper of general circulation, notification required by paragraph

15.4.4. Herein shall be by publication for three (3) consecutive weeks in a weekly newspaper of general circulation in the area. If there is no weekly newspaper of general circulation in the area, notice shall be given by posting the notice in the courthouse in the area served by the system.

15.5. The requirements of Section 15.4 may be waived at the director's discretion if it is determined that the violation has been:

15.5.1. Corrected promptly after discovery;

15.5.2. The cause of the violation eliminated; and,

15.5.3. There is no longer a risk to public health.

15.6. If a non-community water system fails to comply with Section 15.1, the notice to the public shall be given by a continuous and conspicuous posting, in a location where it can be seen by consumers.

15.7. Notices shall fairly inform the users of the system, disclosing all material facts, including the nature of the problem, and where appropriate, a clear statement of the violation, and any preventive measures which should be taken by the public.

§64-3-16. Control tests and record maintenance.

16.1. Owners or operators of a public water system shall retain at a convenient location on or near its premises, records of microbiological, turbidity, radiological and chemical analysis, or a summary thereof. Microbiological, turbidity and radiological analytical records shall be kept for five (5) years. Chemical analytical records shall be kept for ten (10) years. Control tests and operational records shall be kept for five (5) years.

16.2. The records shall include the date, place and time of sampling, and the name of the person who collected the sample; identification as to whether it was a routine distribution system sample, resample, raw or drinking water sample, or other special purpose sample; the date of analysis; laboratory and person responsible for performing the analysis; analytical technique or method used; and results of analysis.

16.3. Records of action taken by the system to correct violations shall be kept for three (3) years after correction.

16.4. Copies of written reports relating to sanitary surveys of the system shall be kept for ten (10) years.

16.5. Records concerning a variance or exemption shall be kept for not less than five (5) years following the expiration of such variance or exemption.

§64-3-17. Variances.

17.1. The director may grant one (1) or more variances to a public water system from any requirement respecting a maximum contaminant level, upon a finding that:

17.1.1. Because of characteristics of the raw water sources which are reasonably available to the system, the system cannot meet the requirements respecting the maximum contaminant levels despite application of the best technology, treatment, techniques, or other means, which the director finds are generally available (taking costs into consideration); and

17.1.2. The granting of a variance will not result in an unreasonable risk to the health of persons served by the system.

17.2. An owner or operator may request the granting of a variance by submitting same in writing to the director. Owners or operators may submit a joint request for variances when they seek similar variances under similar circumstances. Written requests for a variance or variances shall include the following information:

17.2.1. The nature and duration of the variance requested.

17.2.2 Relevant analytical results of raw and treated quality sampling of the system, including results of tests conducted pursuant to the requirements of these regulations.

17.2.3. Variances shall include:

17.2.3.1. An explanation in full and evidence of the best available treatment, technology and techniques.

17.2.3.2. Relevant economic and legal factors.

17.2.3.3. A proposed compliance schedule, including the date each step toward compliance will be achieved. Such schedule shall include as a minimum the following dates.

(a) Date by which arrangement for alter-

native raw water source and/or improvement of existing raw water source will be completed.

(b) Date of initiation of the connection of the alternative raw water source and/or improvement of existing raw water source.

(c) Date by which final compliance is to be achieved.

17.2.3.4. A plan for the provision of safe drinking water in case of an excessive rise in the contaminant level for which the variance is requested.

17.2.3.5. A plan for interim control measures during the effective period of the variance.

17.2.3.6. Such other information as the director may require.

17.3. The director shall act on any variance request within ninety (90) days of receipt.

17.4.

17.4.1. The director shall notify the applicant if he decides to deny an application for a variance, by including a statement of reasons for the proposed denial, and shall offer the applicant an opportunity to present, within thirty (30) days of receipt of the notice, additional information or argument to the director. The director shall make a final determination on the request within thirty (30) days after receiving any such additional information or argument. If no additional information or argument is submitted by the applicant the application shall be denied.

17.4.2. The director shall notify the applicant, in writing, if an application for a variance is approved, by identifying the variance, the facility covered, and shall specify the maximum period of time for which the variance will be effective and any conditions which must be complied with.

17.4.3. The variance may be terminated at any time upon finding that the public water system has failed to comply with monitoring and other requirements prescribed by the director as a condition of a variance, and shall automatically terminate when the system comes into compliance with the applicable regulations.

17.4.4. For a variance, the director shall propose a schedule and control measures for compliance (including increments of progress) by the public water system for each maximum contaminant level requirement covered by the variance.

17.4.5. The proposed schedule for compliance shall specify dates by which steps towards compliance are to be taken, including, where applicable:

17.4.5.1. Date by which arrangement for an alternating raw water source or improvement of the existing raw water source will be completed.

17.4.5.2. Date of initiation of the connection for the alternative raw water source or improvement of the existing raw water source.

17.4.5.3. Date by which final compliance is to be achieved.

17.4.6. The proposed schedule may, if the public water system has no access to an alternative raw water source, and can effect or anticipate no adequate improvement of the existing raw water source, specify an indefinite time period for compliance until a new and effective treatment technology is developed at which time a new compliance schedule shall be prescribed by the director.

17.4.7. The proposed schedule for implementation of interim control measures during the period of variance, shall specify interim treatment techniques, methods and equipment, and dates by which steps toward meeting the interim control measures are to be met.

17.4.8. The schedule shall be prescribed by the director within one (1) year after the granting of the variance, subsequent to provision or opportunity for public hearing.

17.5.

17.5.1. Before a variance or a schedule proposed by the Director may take effect, the director shall provide notice and opportunity for public hearing on the variance or schedule.

17.5.2. Public notice of an opportunity for hearing on a variance or schedule shall be circulated in a manner designed to inform interested persons of the proposed variance or schedule and shall include at least the following:

17.5.2.1. Posting of a notice in the courthouse of each county served by the public water system, and publishing of a notice in a newspaper or newspapers of general circulation in the county served by the public water system.

17.5.2.2. Such notice shall include a summary of the proposed variance or schedule and shall inform interested persons that they may request a public hearing on the proposed variance or schedule.

17.5.2.3. Request for a hearing may be submitted by any interested person, within thirty (30) days after the public notices are issued. Frivolous or insubstantial requests may be denied by the director. A request shall include the following information:

17.5.2.3.1. Name, address and telephone number of the individual.

17.5.2.3.2. A brief statement of the interest of the person making the request in the proposed variance or schedule and the information that the requesting person intends to submit at such hearing.

17.5.2.3.3. The signature of the individual making the request or signature of the responsible person in the organization making the request.

17.5.2.3.4. The director shall give notice in the manner set forth in Section 17.5.2 of any public hearing to be held pursuant to a request or on his own motion. In addition, said notice shall be sent to the persons requesting a hearing The notice shall include a statement of purpose, time and location, name, address and telephone number where interested persons may obtain further information concerning the hearing.

17.5.3. A public hearing convened pursuant to this section shall be conducted informally, orderly and expeditiously. Oral testimony and written material may be received at the hearing.

17.5.4. The variance or schedule shall become effective thirty (30) days after notice is given for opportunity for a hearing.

17.6. Within thirty (30) days after the public hearing the director shall confirm, revise or rescind the proposed variance or schedule.

§64-3-18. Exemptions.

18.1. The director may grant an exemption to a public water system from any requirement respecting a maximum contaminant level or any treatment technique requirement, or both, upon finding that:

18.1.1. Due to compelling factors (which may include economic factors), the public water supply is unable to comply with such contaminant level or treatment technique requirement; and

18.1.2. The public water system was in operation on the effective date of such contaminant level or treatment technique requirement; and

18.1.3. The granting of an exemption will not result in an unreasonable risk to health.

18.2. An owner or operator may request the granting of an exemption for a public water system by submitting a request in writing to the director. Owners or operators may submit a joint request for exemptions when they seek similar exemptions under similar circumstances. Any written request for an exemption or exemptions shall include the following information:

18.2.1. The nature and duration of the exemption requested.

18.2.2. Relevant analytical results of water quality sampling of the system, including results of tests conducted pursuant to the requirements of these regulations.

18.2.3. Explanation of the compelling factors such as time or economic factors which prevent the system from achieving compliance.

18.2.4. Other pertinent information.

18.2.5. A proposed compliance schedule, including the date when each step toward compliance will be achieved.

18.2.6. Such other information as the director may require.

18.3. The director shall act on any exemption request submitted within ninety (90) days of receipt of the request.

18.3.1. The director shall consider the following factors:

18.3.1.1. Construction, installation, or modification of treatment equipment or systems.

18.3.1.2. The time needed to put into operation a new treatment facility to replace an existing system which is not in compliance.

18.3.1.3. Economic feasibility of compliance

18.4.

18.4.1. The director shall notify the applicant if he intends to deny an exemption request. Such notice shall include a statement of reasons for the proposed denial, and shall offer the applicant an opportunity to present within thirty (30) days of receipt of the notice, additional information or argument to the director. The director shall make a final determination on the request within thirty (30) days after receiving any such additional information or argument as submitted by the applicant.

18.4.2. If the director grants an exemption request submitted pursuant to Section 18.2, he shall notify the applicant of his decision in writing. The notice shall identify the facility covered, and shall specify the termination date of the exemption, and shall provide that the exemption may be terminated upon a finding by the director that the system has failed to comply with any requirement of a final schedule issued pursuant to Section 18.6. An exemption shall automatically terminate when the system comes into compliance with the applicable regulation.

18.4.3. The director shall propose a schedule for:

18.4.3.1. Compliance (including increments of progress) by the public water system with each maximum contaminant level requirement and treatment technique requirement covered by the exemption; and

18.4.3.2. Implementation by the public water system of such control measures as the director may require for each contaminant covered by the exemption.

18.4.4. The schedule shall be prescribed by the director within one (1) year after the granting of the exemption, subsequent to provision of opportunity for a hearing provided in Section 18.5.

18.5.

18.5.1. Before a schedule proposed by the director pursuant to Section 18.4 may take effect, the director shall provide notice and opportunity for public hearing on the schedule.

18.5.2. Public notice of an opportunity for a hearing on an exemption schedule shall be circulated in a manner designed to inform interested persons of the proposed schedule, and shall include at least the following:

18.5.2.1. Posting of a notice in the courthouse of each county served by the public water system, and publishing of a notice in a newspaper or newspapers of general circulation in the county served by the public water system.

18.5.2.2. Such notice shall include a summary of the proposed schedule and shall inform interested persons that they may request a public hearing on the proposed schedule.

18.5.3. Requests for a hearing may be submitted by any interested person. Frivolous or insubstantial requests for hearing may be denied by the director. Requests must be submitted to the director within thirty (30) days after issuance of the public notices provided for in paragraph 18.5.2. Such requests shall include the following information:

18.5.3.1. The name, address and telephone number of the individual, organization or other entity requesting a hearing.

18.5.3.2. A brief statement of the interest of the person making the request on the proposed exemption or schedule.

18.5.3.3. The signature of the individual making the request, or signature of the responsible person in the organization making the request.

18.5.3.4. The director shall give notice in the manner set forth in Section 18.5.2 of any hearing to be held pursuant to a request submitted by an interested person, or on his own motion. Notice of the hearing shall be sent to the person requesting the hearing, if any. Notice of the hearing shall include a statement of the purpose, time, and location of the hearing, and the address and telephone number where interested persons may obtain further information concerning

the hearing. Notice of the hearing shall be given not less than fifteen (15) days prior to the time scheduled for the hearing.

18.6.

18.6.1. Within thirty (30) days after the public hearing, the director may revise the proposed schedule as necessary and prescribe the final schedule for compliance and interim measures for the public water system granted an exemption under Section 18.3.

18.6.2. Such schedule shall require compliance by the public water system with each maximum contaminant level and treatment technique requirement prescribed, by no later than January 1, 1981.

18.6.3. If the public water system has entered into an enforceable agreement to become part of a regional system, as determined by the director, such schedule shall require compliance by the public water system with each maximum contaminant level and treatment technique requirement prescribed by not later than January 1, 1983.

§64-3-19. Effective dates for monitoring and minimum required monitoring frequency.

19.1. Community water systems will be required to monitor for maximum contaminants levels in accordance with Table 64-3G.

19.2. Non-community water systems will be required to monitor for maximum contaminant levels in accordance with Table 64-3H

19.3. Consecutive systems may be regarded as a single system for monitoring purposes, if approved by the director.

§64-3-20. Secondary contaminants.

20.1. Drinking water supplied by community public water supplies shall not contain chemical or physical characteristics (secondary contaminants) in excess of the following maximum concentrations, unless written approval is granted by the director. Maximum concentrations of secondary contaminants for non-community public water supplies may be established by the director. (See Table 64-3I found at the end of this regulation.)

20.2. Sections 13, 14, 15 and 19 of these regulations shall not apply to secondary contaminants. Secondary contaminants shall be monitored and reported in a manner specified by the director.

20.3. The director may establish policy and criteria to control the corrosivity of drinking water supplied by a public water system.

§64-3-21. Sodium

21.1. All community public water suppliers shall monitor for sodium concentration levels in accordance with:

21.1.1. Surface water supplies -- annually.

21.1.2. Ground water supplies -- every three (3) years.

21.2. The minimum number of samples required shall be based upon the number of treatment plants, except that at the discretion of the director, multiple wells drawing water from the same aquifer may be considered to be a single treatment plant. (See Table 64-3J found at the end of this regulation.)

21.3. Unless otherwise approved by the director, the water supply owner shall provide written notice of results to all state and local health officials within three (3) months.

§64-3-22. Fluoridation.

22.1. This Section applies to public water systems (except public schools) which add fluoride to the drinking water The director shall establish policy and criteria for water fluoridation at public schools.

22.2. The presence of fluoride in average concentrations shall be as found in Table 64-3J at the end of this regulation.

22.3. System owners or operators of fluoridated or defluoridated public water supplies shall monitor their drinking water once per day for fluoride concentration. Records for monitoring shall be maintained in accordance with Section 16.

22.4. At least once a month, a sample of drinking water shall be submitted to a certified laboratory for fluoride analysis.

22.5. Unless specified by the director, Sections 14

and 15 shall not be applicable to this Section.

§64-3-23. Bottled water.

23.1. No person shall manage, operate or maintain a bottled water treatment plant, or distribute bottled water in this state without receiving a permit from the director.

23.2. The procedure for applying for a permit or permits, shall be in accordance with Sections 5 and 6 of these regulations and the current "Bottled Water Design Standards" of the state department of health.

23.3. In addition to Section 23.2, operators of out-of-state bottled water treatment plants distributing water in West Virginia, shall include with their application, a copy of their most recent permit to operate from their state regulatory agency.

23.4. Source waters, plant facilities, treatment techniques, equipment, supplies, operations, and distribution methods shall be approved by the director and must be in accordance with the state health department's "Design Standards For Public Water Supply Systems" and "Bottled Water Design Standards."

23.5. Bottled water treatment plants shall comply with Sections 8, 9, 10, 11, 12, 20, 21 and 22 of these regulations as they apply to community water systems except that the monitoring frequency for microbiological contaminants shall be not less than once each week.

23.6. Each in-state bottled water treatment plan shall be inspected every six (6) months or as otherwise determined by the director.

23.7. A permit issued by the director may be revoked for failure to comply with provisions of these regulations.

§64-3-24. Severability.

If any provisions of these regulations or the application thereof to any person or circumstance shall be held invalid, such invalidity thereof shall not affect the provisions or application of these regulations which can be given effect without the invalid provisions or application and, to this end, the provisions of these regulations are declared to be severable.

§64-3-25. Penalties.

Any person who violates any provision of Chapter 16, Article 1, Section 9A, of the West Virginia Code of 1931, as amended, or orders issued pursuant thereto shall be guilty of a misdemeanor, and, upon conviction thereof, shall be fined not less than twenty-five dollars ($25.00) nor more than two hundred dollars ($200), and each day's violation shall constitute a separate offense. In addition thereto, the state director of health, or his authorized representative may seek injunctive relief in the circuit court of the county in which all or part of the public water system is situated for threatened or continuing violations. For a willful violation of this regulation or orders issued thereunder, a person, upon a finding thereof by the circuit court of the county in which the violation occurs, shall be subject to a civil penalty of not more than five thousand dollars ($5,000), and each day's violation shall be grounds for a separate penalty.

§64-3-26. Administrative due process.

Those persons adversely affected by the enforcement of these legislative rules desiring a contested case hearing to determine any rights, duties, interests or privileges shall do so in a manner prescribed in the Rules of Procedure for Contested Case Hearings and Declaratory Rulings, West Virginia Department of Health Procedural Rules, Series 1, 1983. The aforementioned procedural rules are incorporated herein by reference.

TABLE 64-3A (Cont'd.)

POPULATION SERVED	MINIMUM NUMBER OF SAMPLES PER MONTH
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
970,000 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
2,510,000 to 1,750,000	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 to 9,999,999	500

TABLE 64-3B

CONTAMINANT	MILLIGRAMS PER LITER
Arsenic	0.05
Barium	1.
Cadmium	0.010
Chromium	0.05
Lead	0.05
Mercury	0.002
Nitrate (as Nitrogen)	10.
Selenium	0.01
Silver	0.05

TABLE 64-3C

CONTAMINANT	MILLIGRAMS PER LITER
Chlorinated hydrocarbons; Endrin (1, 2, 3, 4, 10, 10-hexachloro-6, 7-epoxy-1, 4, 4a, 5, 6, 7, 8, 8a-octa-hydro-1, 4-endo, endo-5, 8, dimethano napthalene).	0.0002
Lindane (1, 2, 3, 4, 5, 6-hexachloro-cyclohexane, gamma isomer).	0.004
Methoxychlor (1, 1, 1-Trichloro-2, 2 - bis (p-methoxyphenyl) ethane.	0.1
Toxaphene ($C_{10}H_{10}Cl_8$-Technical chlorinated camphene, 67-69 percent chlorine).	0.005
Chlorophenoxys: 2,4 - D, (2, 4-Dichlorophenoxyacetic acid).	0.1
2, 4, 5-TP Silvex (2, 4, 5-Trichlorophenoxypropionic acid).	0.01
Total Trihalomethanes (TTHM)	0.10

TABLE 64-3D

RADIONUCLIDE	CRITICAL ORGAN	pCi PER LITER
Tritium	Total Body	20,000
Strontium-90	Bone Marrow	8

TABLE 64-3E

ANALYTICAL METHODS
REFERENCES FOR INORGANIC AND MICROBIOLOGICAL PARAMETERS

PARAMETERS	STANDARD METHODS[1]	METHODS OF CHEMICAL ANALYSIS FOR WATER & WASTES[2]	REFERENCES TECHNIQUES OF WATER[3]	ASTM STANDARDS[4]
ARSENIC	pp 159-162, 284-286	METHODS 206.2, 206.3, 206.4	pp 61-63	METHOD D-2972-78A
BARIUM	pp 152-155	METHODS 208.1, 208.2		METHOD 3357-78A or B
CADIMUM,	pp 148-152	METHODS 213.1, 213.2		METHOD D-16877-77 D
CHROMIUM	pp 148-152	METHODS 218.1, 218.2		
LEAD	pp 148-152	METHODS 239.1, 239.2		METHOD D-3559-78A or B
MERCURY	pp 156-159	METHODS 245.1, 245.2		METHOD D-3223-79
NITRATE (N)	pp 423-427, 427-429	METHODS 352.1, 353.3, 353.1, 353.2		METHOD D-992-71 D-3867-79A or B
SELENIUM	pp 159-162	METHODS 270.2, 270.3	pp 237-239	METHOD D-3859-79
SILVER	pp 148-151 159-162	METHODS 272.1,	pp 365-367	
FLUORIDES	pp 389-390, 391-393 393-394 614-616	METHODS 340.1, 340.2		METHOD 1179-72
TUBIDITY	pp 132-134	METHOD 180.1		
CHLORINE RESIDUAL	pp 316-332			
MICRO-BIOLOGICAL	pp 913-942			
SODIUM	pp 250	METHOD 273.3		METHOD 148-64 (a)

TABLE 64-3E (Cont'd.)

(1) (Standard Methods for the Examination of Water and Waste Water: 14th Edition, American Public Health Association, AWWA, WPCF, 1976

(2) "Methods of Chemical Analysis for Water and Wastes", EPA Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, 45268, (EPA - 600/4-79-020) March 1979

(3) Techniques of Water-Resources Investigation of the U. S. Geological Survey, Chapter A-1

(4) Annual Book of ASTM Standards, Part 31 Water, America Society for Testing and Materials, 1976 Race Street, Philadelphia, PA 19103

(5) "Fluoride in Water and Wastewater," Industrial Method #380-75WE Technicon Industrial Systems, Tarrytown, New York 10501, February 1976 or "Fluoride in Water and Wastewater Industrial Method #129-71W" Technicon Industrial Systems, Tarrytown, New York 10591, December

TABLE 64-3F

ANALYTICAL METHODS
REFERENCES FOR ORGANIC AND RADIOACTIVE CONTAMINANTS

CONTAMINANT		
ENDRIN	(1)	"Method for Organochlorine Pesticides and Chlorophenoxy Acid Herbicides in Drinking Water and Raw Source Water." ORD Publications, CERI, EPA, Cincinnati, OH 45268.
LINDANE	(2)	"Organochlorine Pesticides in Water" 1977 Annual Book of ASTM Standards, Part 31, Water Method D3088.
METHOXYCHLOR	(3)	"Standard Methods for the Examination of Water and Waste Water" 14th Edition, Method 509-A, APHA, AWWA, WPCF.
TOXAPHENE	(4)	"Gas Chromatographic Methods for Analysis of Organic Substances in Water", Techniques of Water-Resources Investigation of the USGS. Chapter A-5. Book 5. 1972.
	(1)	"Method for Organochlorine Pesticides and Chlorophenoxy Acid Herbicices in Drinking Water and Raw Source Water," Ibid.
2, 4-D	(2)	"Organochlorine Pesticides in Water", Method D3478, Ibid.
2, 4, 5, -TP Silvex	(3)	"Standard Methods for the Examination of Water and Waste Water", Method 509-B, Ibid.
TOTAL Trihalomethanes (TTHM)	(1)	"The Analysis of Trihalomethanes in Finished Waters by the Purge and Trap Method." Method 501.1, EMSL, EPA, Cincinnati, OH.
	(2)	"The Analysis of Trihalomethanes in Drinking Water by Liquid/Liquid Extraction" Method 501.2, EMSL, EPA, Cincinnati, OH.

Total Radium	Section 705	"Standard Methods for the Examination of Water and Wastewater", 14th Edition	"Interim Radio Chemical Methodology for Drinking Water," Environmental Monitoring and Support Laboratory. Cincinnati, OH 45268.
Radium 226	Section 706		
Alpha Particles	Section 703		
Beta Particles	Section 703		
Strontium 89, 90	Section 704		
Tritium	Section 707		

of or

TABLE 64-3F (Cont'd.)

ANALYTICAL METHODS
REFERENCES FOR ORGANIC AND RADIOACTIVE CONTAMINANTS

Photon Radioactivity		"Interim Radiochemical Methodology for Drinking Water," Ibid.
CESIUM	(1)	ASTM D-2459 "Gamma Spectrometry in Water." 1975 Annual Book of ASTM Standards, Water and Atmospheric Analysis, Part 31 American Society for Testing and Materials, Philadelphia, Pennsylvania, (1975).
	(2)	"Interim Radio Chemical Methodology for Drinking Water," Ibid.
URANIUM	(1)	ASTM D-2907 "Microquantities of Uranium in Water by Fluorometry," Ibid.
	(2)	"Interim Radiochemical Methodology for Drinking Water." Ibid.
Other Radionuclides	(1)	"Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions." H. L. Krieger and S. Gold, EPA, R4-73-014 USEPA, Cincinnati, Ohio, May 1973.
	(2)	HASL, "Procedure Manual" Edited by John H. Harley. NASL 300, ERDA Health and Safety Laboratory, New York, New York 1973.

TABLE 64-3G

COMMUNITY WATER SYSTEM MONITORYING REQUIREMENTS

	WATER SOURCE	INITIAL SAMPLING	MINIMUM FREQUENCY
Microbiological	Surface & Ground	Immediately	See Section 6.7
Inorganic Chemicals (Except Sodium & Nitrates)	Surface Ground	By June 24, 1978 By June 24, 1979	Every Year Every 3 Years
Sodium	Surface Ground	By Feb. 27, 1983 By Feb. 27, 1983	Every Year Every 3 Years
Nitrates	Surface Ground	By June 24, 1978 By June 24, 1979	Every Year Every 3 Years
Organic Chemicals (Except Total Trihalomethanes-TTHM)	Surface Ground	[1]By June 24, 1978 As ordered by the director	Every 3 Years As ordered by director
Total Trihalomethanes	Surface & Ground (Serving 10,000 to 74,999 individuals	By Nov. 29, 1982	[2]Quarterly
	Surface & Ground (Serving 75,000 or more individuals	By Nov. 29, 1980	[2]Quarterly
Turbidity	Surface Ground	Immediately [3]None	Once per day None
Radiological	Surface & Ground	By June 24, 1979	Every 4 Years

[1]Sampling for pesticides shall be done at a time of the year when contamination is most likely to occur.
[2]The director may modify the frequency in accordance with Section 10.
[3]Except in specific cases as ordered by the director.

TABLE 64-3H

NON-COMMUNITY WATER SYSTEM MONITORING REQUIREMENTS

	WATER SOURCE	INITIAL SAMPLING	MINIMUM FREQUENCY
Microbiological	Surface	By August 27, 1982	[1]Quarterly
	Ground	By August 27, 1982	[1]Quarterly
Inorganic Chemicals (except Nitrates)		DOES NOT APPLY	
Organic Chemicals		DOES NOT APPLY	
Turbidity	Surface	By June 24, 1979	[3]Once per day
	Ground	[2]Does not apply	[2]Does not apply
Nitrates	Surface	By Dec. 24, 1980	As ordered by the
	Ground	By Dec. 24, 1980	director
Radiological		DOES NOT APPLY	

[1]May be modified by the director based on a sanitary survey.
[2]Except in specific cases as ordered by the director.
[3]May be modified by the director in accordance with Section 12.4 of these regulations.

TABLE 64-3I

SUBSTANCE	CONCENTRATION IN mg/l
Alkyl Benzene Sulfonate	0.5
Chloride (Cl)	250.0
Color	15 (color units)
Copper (Cu)	1.0
Hydrogen Sulfide	0.05
Iron (Fe)	0.3
Manganese (Mn)	0.05
Odor	3 (threshold odor number units)
Phenols	0.001
Sulfate (SO_4)	250.0
Total Dissolved Solids	500.0
Zinc (Zn)	5.0

TABLE 64-3J

ANNUAL AVERAGE OF MAXIMUM DAILY AIR TEMPERATURE	FLUORIDE CONCENTRATION IN MILLIGRAMS PER LITER		
	Lower	Optimum	Upper
53.8 - 58.3°F 12.1 - 14.6°C	0.8	1.1	1.5
58.4 - 63.8°F 14.7 - 17.7°C	0.8	1.0	1.3
63.9 - 70.6°F 17.7 - 21.4°C	0.7	0.9	1.2

TABLE 64-3A

POPULATION SERVED			MINIMUM NUMBER OF SAMPLES PER MONTH
25	to	1,000	1
1,000	to	2,500	2
2,501	to	3,300	3
3,301	to	4,100	4
4,401	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

WEST VIRGINIA LEGISLATIVE RULES
BOARD OF HEALTH

Public Water Supply Regulations

Chapter 16-1
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WEST VIRGINIA LEGISLATIVE RULES
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WEST VIRGINIA LEGISLATIVE RULES
BOARD OF HEALTH

Chapter 16-1
Series 3
(1983)

Subject: Public Water Supply Regulations

Section 1. General

1.1. Scope - These legislative rules establish the rules and minimum requirements of the West Virginia state board of health governing owners and operators of public drinking water systems, and the production and distribution of bottled drinking water.

1.2. Authority - These legislative rules are issued under the authority of Chapter 16, Article 1, Section 7 and are related to Chapter 16, Article 1, Section 9 of the West Virginia Code, 1931, as amended.

1.3. Filing Date - These legislative rules were promulgated on the 9th day of October 1980, and were filed on the 1st day of March 1982, in the Secretary of State's Office.

1.4. Effective Date - These legislative rules became effective on the 2nd day of April 1982.

1.5. Refiling Date - These legislative rules were refiled pursuant to Chapter 29A, Article 2, Section 5 of the West Virginia Code of 1931, as amended on the 30th day of December 1982, in the Secretary of State's Office.

Section 2. Supersession or Repeal of Former Regulations

2.1. These legislative rules supersede and repeal state board of health "Public Water Supply Regulations" Chapter 1, Article 5, 1978.

Section 3. Application and Enforcement

3.1. Application - These legislative rules apply to owners and opera-

tors of public drinking water systems, and the production and distribution of bottled drinking water.

3.2. Enforcement - The enforcement of these legislative rules is vested with the director, West Virginia department of health or his lawful designee.

Section 4. Definitions

4.1. Director - Director of the state department of health or his designee.

4.2. Person - Individual, partnership, association, syndicate, company, firm, trust, corporation, government corporation, institution, department, division, bureau, agency, federal agency or any other entity recognized by law.

4.3. Public Water System - Any water system or supply which regularly supplies or offers to supply, piped water to the public for human consumption, if serving at least an average of twenty-five individuals per day for at least sixty days per year, or which has at least fifteen service connections, and shall include: (1) Any collection, treatment, storage, and distribution facilities under the control of the owner or operator of such system and used primarily in connection with such system, and (2) Any collection or pretreatment storage facilities not under such control which are used primarily in connection with such system. A public water system shall not include a system which meets all of the following conditions: (1) Which consists only of distribution and storage facilities (and does not have any collection and treatment facilities); (2) which obtains all of its water from, but is not owned or operated by a public water system which other-

wise meets the definition; (3) which does not sell water to any person; and (4) which is not a carrier conveying passengers in interstate commerce.

4.4. Permit - A written document issued by the director giving a designated person permission to construct and/or operate, alter, or renovate a specific public water supply or system, or bottled water plant.

4.5. Operator - A person who has been granted a certificate issued by the director to operate a specific class of public water supply.

4.6. Source Water - Any surface or ground water supply used as a source of water for a public water system.

4.7. Drinking Water - Water free from biological, chemical, physical and radiological contaminants which cause disease or harmful physiological effects. The minimum quality of the water shall conform to these regulations and applicable standards of the state department of health.

4.8. Contaminant - Any physical, chemical, microbiological, or radiological substance or matter in water.

4.9. Secondary Contaminants - Any contaminants in drinking water which are not directly related to health but contribute to undesirable taste, odor, appearance or other consumer acceptability parameters.

4.10. Maximum Contaminant Level - The maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system, except in the case of turbidity where the maximum permissible level is measured at the point of entry to the distribution system. Contaminants added to the water under circumstances controlled by the user, except those resulting from corrosion of piping and plumbing caused by water quality, are excluded from this definition.

4.11. Public Water System Treatment Plant - Facilities provided for the treatment of water by anyone or any combination of the controlled processes of coagulation, sedimentation, absorption, filtration, disinfection or other processes which produce drinking water consistently meeting the requirements of the state department of health.

4.12. Bottled Water - Any natural or artificial mineral, spring, well, distilled or other water bottled or containerized for use primarily as drinking water.

4.13. Community Water System - A public water system which serves at least fifteen (15) service connections used by year-round residents or regularly serves at least twenty-five (25) year-round residents.

4.14. Non-Community Water System - Any public water system that is not a community water system.

4.15. Dose Equivalent - 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).

4.16. REM - 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.

4.17. Gross Alpha Particle Activity - The total radioactivity due to alpha particle emission as inferred from measurements on a dry sample.

4.18. Man-made Beta Particle and Photon Emitters - All radionuclides emitting beta particles and/or photons listed in "Maximum Permissible Body

Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure," NBS Handbook 69, except the daughter products of thorium-232, uranium-235 and uranium-238.

4.19. Gross Beta Particle Activity - The total radioactivity due to beta particle emission as inferred from measurements on a dry sample.

4.20. Picocurie (pCi) - That quantity of radioactive material producing 2.22 nuclear transformations per minute.

4.21. Consecutive System - A public water system whose drinking water is supplied entirely by another public water system.

4.22. Sanitary Survey - An on-site review of the water source, facilities, equipment, operation and maintenance of a public water system for the purpose of evaluating the adequacy of such source, facilities, equipment, operation and maintenance for producing and distributing drinking water.

4.23. Certified Laboratory - A laboratory that meets federal and state requirements including those established for personnel, work space, equipment and procedures, and certified by the director to analyze drinking water for specified contaminants.

4.24. Halogen - One of the chemical elements chlorine, bromine or iodine.

4.25. Trihalomethane (THM) - One of the family of organic compounds, named as derivatives of methane, wherein three of the four hydrogen atoms in methane are each substituted by a halogen atom in the molecular structure.

4.26. Total Trihalomethanes (TTHM) - The sum of the concentration

in milligrams per liter of the trihalomethane compounds: trichloromethane (chloroform), dibromochloromethane, bromodichloromethane and tribromomethane (bromoform), rounded to two significant figures.

4.27. Maximum Total Trihalomethane Potential (MTP) - The maximum concentration of total trihalomethanes produced in a given water containing a disinfectant residual after 7 days at a temperature of 25 degrees C or above.

4.28. Disinfectant - 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.

Section 5. Permit to Construct

5.1. On and after the effective dates of these regulations, no person shall construct, or award a contract for any construction, except as provided for in Section 5.4, to a public water system, without obtaining a permit to construct from the director.

5.2. No person shall begin construction, alter or renovate a public water system without first submitting plans and specifications to the director for review and approval at least 45 days prior to the date on which approval by the director is desired. The public water system shall be constructed, altered or renovated in accordance with the plans and specifications as approved by the director, and in accordance with the West Virginia state department of health's "Design Standards for Public Water Supply Systems" (Bulletin #EW-99). To the extent practicable, all new or expanded facilities should be located outside of the 100 year flood plain.

5.3. Application for permit to construct shall be made to the director on forms prescribed by the director and shall be accompanied by an engineering report, maps, detailed plans and specifications of the public water system prepared by or under the direction of a registered professional engineer.

5.4. A permit to construct will not be required for any minor addition to, extension of, or alteration of an existing distribution system which will not affect the quality or quantity of water supply service rendered, providing the work is done in accordance with the provisions of the West Virginia state department of health Bulletin EW-99, "Design Standards for Public Water Supply Systems."

5.5. The director shall have the authority to issue an order requiring a change in the source of the water supply or in the manner of collection, treatment, storage, or distribution facilities of the supply before delivery to the consumer as may be necessary to safeguard the public health.

5.6. A permit to construct may be revoked by the director for failure to comply with the provisions of the permit or all applicable provisions of these regulations.

5.7. A permit to construct, unless revoked, shall be valid for a period of two years from date of issuance.

Section 6. Permit to Operate

6.1. Application for a permit to operate a water system shall be made to the director at least 30 days before the scheduled operation of the public water system. Applications shall be on forms prescribed by the director, and signed by the applicant or his authorized representative.

6.2. No person directly or indirectly shall manage, operate or maintain a public water system in the state of West Virginia without first making an application to, and receiving from the director a permit to operate.

6.3. In the event of an intended change, or an actual change in ownership of a public water system, a written application for a permit to operate shall be made to the director by the current owner at least 15 days before the proposed or actual change.

6.4. A permit to operate shall be posted in a conspicious place at the public water system's treatment plant or main office.

Section 7. Inspections

7.1. Each community water system utilizing surface source water shall be inspected by the director at least once per year. Other public water systems shall be inspected as scheduled by the director.

7.2. The operator of the public water system shall, upon the request of the director, permit access to all parts of the system and shall furnish all information and records required to be kept by Section 16 of these regulations.

Section 8. Microbiological Quality Requirements: Maximum Contaminant Levels: Sampling Technique and Monitoring Frequency

8.1. Disinfection with chlorine shall be required of all public water systems, unless otherwise approved in writing by the director.

8.2. Chlorine or any other approved disinfectant shall be applied at a point before entering the distribution system which will provide effective contact time; the minimum contact time shall be 30 minutes to the first consumer, unless otherwise stipulated in writing by the director or the "Design

Standards for Public Water Supply Systems" (Bulletin #EW-99). At the end of the contact time, the minimum free chlorine residuals at the various PH values shall comply with the requirements of the following table unless otherwise stipulated in writing by the director:

PH VALUE	FREE CHLORINE RESIDUAL
up to 7.0	0.4 mg/l
7.1 to 8.0	0.6 mg/l
8.1 to 9.0	1.0 mg/l

8.3. The owner or operator of a public water system shall determine the amount of residual disinfectant in the drinking water at the treatment plant and in the distribution system at least once per day, or more often if deemed necessary by the director.

8.4. Chlorine residual testing equipment shall enable measurement of free and total residuals to the nearest 0.2 mg/l in the range of 0.0 mg/l to 2.0 mg/l.

8.5. At least a trace of total chlorine residual shall be maintained throughout the distribution system at all times, unless otherwise approved in writing by the director.

8.6. Water samples of at least 100 ml shall be collected by a representative of the public water system for microbiological analysis. Samples shall be collected from representative areas of each public water distribution system and submitted to the West Virginia state hygienic laboratory or a certified laboratory in standard sterilized water containers provided by said laboratory.

8.7. The frequency of water sample collection and microbiological

examination for coliform bacteria for community water systems shall be in proportion to the population served as follows:

POPULATION SERVED	MINIMUM NUMBER OF SAMPLES PER MONTH
25 to 1,000	1
1,000 to 2,500	2
2,501 to 3,300	3
3,301 to 4,100	4
4,401 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
56,001 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

MINIMUM NUMBER OF POPULATION SERVED	SAMPLES PER MONTH
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
970,000 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
2,510,000 to 1,750,000	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 to 9,999,999	500

8.8. For community and non-community systems that are required to sample at a rate of less than 4 times per month, compliance with maximum

microbiological contaminant levels may be based on sampling during a 3 month period at the discretion of the director.

8.9. Based on a history of no coliform bacterial contamination and on a sanitary survey by the director, showing the water system to be supplied solely by a protected ground water source and free of sanitary defects, a community water system serving 25-1,000 persons, with written permission of the director, may reduce its sampling frequency, except that in no case shall it be reduced to less than one sample per quarter.

8.10. The supplier of water for a non-community water system shall sample for coliform bacteria once during each calendar quarter during which the system provides water to the public unless the director determines that some other frequency is more appropriate, based on a sanitary survey.

8.11. The maximum contaminant levels for coliform bacteria are as follows:

8.11.1. When the membrane filter technique is used, the number of coliform bacteria shall not exceed any of the following:

8.11.1.1. One per 100 milliliters as the arithmetic mean of all samples examined per compliance period; except that, at the director's discretion, systems required to take 10 or fewer samples per month may be authorized to exclude one (1) positive sample per month from the monthly calculation if:

(a.) As approved on a case-by-case basis, the director determines and indicates in writing to the public water system that no unreasonable risk to health existed under the conditions of this modification. This determination should be based upon a number of factors not limited to the

following: (1) the system provided and had maintained an active disinfectant residual in the distribution system. (2) the potential for contamination as indicated by a sanitary survey, and (3) the history of the water quality at the public water system (e.g. MCL or monitoring violations).

(b.) The supplier collects two (2) resamples from the same sampling point within 24 hours after being notified that the routine sample is positive, and each of these resamples is negative; and

(c.) The original positive routine sample is reported by the supplier pursuant to Sections 14 and 16. The supplier shall report to the director its compliance with the conditions specified in this paragraph and report the action taken to resolve the prior positive sample result. If a positive routine sample is not used for the monthly calculation, another routine sample must be analyzed for compliance purposes. This provision may be used only once during two consecutive compliance periods.

8.11.1.2. Four per 100 milliliters in more than one sample when less than 20 are examined per month; or

8.11.1.3. Four per 100 milliliters in more than five percent of the samples when 20 or more are examined per month.

8.11.2. When the fermentation tube method and 10 milliliter standard portions are used, coliform bacteria shall not be present in any of the following:

8.11.2.1. More than 10 percent of the portions examined in any month; except that at the director's discretion, systems required to take 10 or fewer samples per month may be authorized to exclude one positive

routine sample resulting in one or more positive tubes per month from the monthly calculation if:

(a.) As approved on a case-by-case basis, the director determines and indicates in writing to the public water system that no unreasonable risk to health existed under the conditions of this modification. This determination should be based upon a number of factors not limited to the following: (1) the system provided and had maintained an active disinfectant residual in the distribution system. (2) the potential for contamination as indicated by a sanitary survey, and (3) the history of the water quality at the public water system (e.g. MCL or monitoring violations);

(b.) The supplier collects two (2) resamples from the same sampling point within 24 hours after being notified that the routine sample is positive, and each of these resamples is negative; and

(c.) The original positive routine sample is reported and recorded by the supplier pursuant to Sections 14 and 16. The supplier shall report to the director its compliance with the conditions specified in this paragraph and report the action taken to resolve the prior positive sample result. If a positive routine sample is not used for the monthly calculation, another routine sample must be analyzed for compliance purposes. This provision may be used only once during two consecutive compliance periods.

8.11.2.2. Three or more portions in more than one sample when less than 20 samples are examined per month; or

8.11.2.3. Three or more portions in more than five percent of the samples when 20 or more samples are examined per month.

8.11.3. When the fermentation tube method and 100 milliliter standard

portions are used, coliform bacteria shall not be present in any of the following:

8.11.3.1. More than 60 percent of the portions examined in any month; except that, at the director's discretion, systems required to take 10 or fewer samples per month may be authorized to exclude one or more positive tubes per month from the monthly calculation if:

(a.) As approved on a case-by-case basis, the director determines and indicates in writing to the public water system that no unreasonable risk to health existed under the conditions of this modification. This determination should be based upon a number of factors not limited to the following: (1) the system provided and had maintained an active disinfectant residual in the distribution system, (2) the potential for contamination as indicated by a sanitary survey, and the history of the water quality at the public water system (e.g. MCL or monitoring violations).

(b.) The supplier collects two (2) resamples from the same sampling point within 24 hours after being notified that the routine sample is positive, and each of these resamples is negative; and

(c.) The original positive routine sample is reported and recorded by the supplier pursuant to Sections 14 and 16. The supplier shall report to the director the system's compliance with the conditions specified in this paragraph and a summary of the corrective action taken to resolve the prior positive sample result. If a positive routine sample is not used for the monthly calculation, another routine sample must be analyzed for compliance purposes. This provision may be used only once during two consecutive compliance periods.

8.11.3.2. Five portions in more than one sample when less than five samples are examined per month or;

8.11.3.3. Five portions in more than 20 percent of the samples when five or more samples are examined per month.

8.11.3.4. If an average MCL violation is caused by a single sample MCL violation, then the case shall be treated as one violation with respect to the public notification requirements of Section 15.

8.12. If coliform bacteria found in a single sample exceed four per 100 milliliters when the membrane filter technique is used, at least two consecutive resamples shall be collected from the same sampling point within twenty-four (24) hours after being notified that the routine sample is positive. Additional resamples shall be collected daily, or at a frequency established by the director, until the results obtained from at least two consecutive resamples show less than one coliform bacterium per 100 milliliters.

8.13. If coliform bacteria occur in three or more 10 milliliter portions of a single sample, when the fermentation tube method and 10 milliliter standard portions are used, at least two consecutive resamples shall be collected from the same sampling point within twenty-four (24) hours after being notified that the routine sample is positive. Additional resamples shall be collected daily, or at a frequency established by the director until the results obtained from at least two consecutive resamples show no positive tubes.

8.14. If coliform bacteria occur in all five of the 100 ml portions of a single sample when the fermentation tube method and 100 milliliter standard

portions are used, at least two consecutive resamples shall be collected from the same sampling point within twenty-four (24) hours after being notified that the routine sample is positive. Additional resamples shall be collected daily or at a frequency established by the director until the results obtained from at least two consecutive resamples show no positive tubes. The location at which the resamples were taken pursuant to Sections 8.12, 8.13 and 8.14 above, shall not be eliminated from future sampling without approval of the director.

8.15. The results from all coliform bacterial analyses performed pursuant to this section, except for those results obtained from resamples and special purpose samples, shall be used to determine compliance with the maximum contaminant levels for coliform bacteria, or in calculating the total number of samples taken each month to determine compliance with the requirements of sampling as set forth in Sections 8.7 and 8.11.

8.16. When the monitoring requirements of Section 8.7 are violated or the maximum contaminant levels (including resamples) listed in Section 8.11 are exceeded, the system owner or operator shall report to the director in accordance with Section 14 and notify the public as prescribed in Section 15.

8.17. A system owner or operator of a community water system or a non-community water system may, based on a sanitary survey and with the approval of the director, substitute the use of free chlorine residual monitoring for not more than 75 percent of the samples required to be taken, provided, that the system owner or operator makes the free chlorine residual determinations at points which are representative of the conditions

within the distribution system at the frequency of at least four residual determinations for each substituted microbiological sample. When the system owner or operator exercises the option provided in this paragraph, they shall maintain no less than 0.2 mg/l free chlorine throughout the distribution system and shall make at least daily determinations of free chlorine residual. When a particular sampling point has been shown to have a free chlorine residual less than 0.2 mg/l, the water at the location shall be retested as soon as practicable and in any event within one hour. If the original analysis is confirmed, this fact shall be reported to the director within 48 hours. Also, if the residual analysis is confirmed, a sample for microbiological analysis must be collected from that sampling point as soon as practicable and preferably within one hour, and the results of such analysis reported to the director within 48 hours after the results are known to the supplier of water. Analysis for residual chlorine shall be made using DPD test in accordance with Section 13. The director may withdraw approval of the use of chlorine residual substitution at any time.

Section 9. Inorganic Chemical Requirements: Maximum Contaminant Levels: Monitoring Frequency

9.1. The maximum contaminant level for nitrate is applicable to both community and non-community water systems except as provided by Section 9.7. The levels for other inorganic chemicals apply to all community water systems and other systems as determined by the director. Analyses for maximum contaminant levels shall be made in accordance with Section 13. Monitoring shall be in accordance with Section 19.

9.2. The following are the maximum contaminant levels for inorganic chemicals other than fluoride:

CONTAMINANT	MILLIGRAMS PER LITER
Arsenic	0.05
Barium	1.
Cadmium	0.010
Chromium	0.05
Lead	0.05
Mercury	0.002
Nitrate (as Nitrogen)	10.
Selenium	0.01
Silver	0.05

9.3. Based on the annual average of the maximum daily air temperatures, the maximum contaminant levels for fluoride at public water systems (except public schools) are:

TEMPERATURE DEGREES FAHRENHEIT	MILLIGRAMS PER LITER
53.8 to 58.3	2.2
58.4 to 63.8	1.8
63.9 to 70.6	1.8

9.4. If the result of an analysis indicates that the level of any inorganic contaminant listed exceeds the maximum contaminant level, the system owner or operator shall report same to the director within 7 days and initiate three additional analyses at the same sampling point within one month.

9.5. When the average of four analyses made pursuant to Section 9.4, rounded to the same number of significant figures as the maximum contaminant level for the substance in question, exceeds the maximum contaminant level, the system owner or operator shall notify the director pursuant to Section 14 and give notice to the public pursuant to Section 15. Monitoring

after public notification shall be at a frequency designated by the director and shall continue until the maximum contaminant level has not been exceeded in two successive samples or until a monitoring schedule as a condition to a variance, exemption or enforcement action shall become effective.

9.6. Notwithstanding the provisions of Sections 9.4 and 9.5 compliance with the maximum contaminant level for nitrate shall be determined on the basis of the average of two analyses. When a level exceeding the maximum contaminant level for nitrate is found, a second analysis shall be initiated within 24 hours, and if the average of the two analyses exceeds the maximum contaminant level, the system owner or operator shall report their findings to the director pursuant to Section 14 and shall notify the public pursuant to Section 15.

9.7. At the discretion of the director, nitrate levels not to exceed 20 mg/l may be allowed in a non-community water supply if the supplier of water demonstrates to the satisfaction of the director that:

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

9.7.2. There will be continuous posting of the fact that nitrate levels exceed 10 mg/l and the potential health effects of exposure; and

9.7.3. The director will be notified annually of nitrate levels that exceed 10 mg/l; and

9.7.4. No adverse health effects shall result.

Section 10. Organic Chemical Requirements: Maximum Contaminant Levels: Monitoring Frequency

10.1. The maximum contaminant level for organic chemicals applies

only to community water systems. Analysis for maximum contaminant levels shall be made in accordance with Section 13. Monitoring shall be in accordance with Section 19.

10.2. The following are the maximum contaminant levels for organic chemicals:

	CONTAMINANT	MILLIGRAMS PER LITER
10.2.1.	Chlorinated hydrocarbons; Endrin (1, 2, 3, 4, 10, 10-hexachloro-6, 7-epoxy-1, 4, 4a, 5, 6, 7, 8, 8a-octa-hydro-1, 4-endo, endo-5, 8, dimethano napthalene)	0.0002
	Lindane (1, 2, 3, 4, 5, 6-hexachloro-cyclohexane, gamma isomer).	0.004
	Methoxychlor (1, 1, 1-Trichloro-2, 2 - bis (p-methoxyphenyl) ethane).	0.1
	Toxaphene ($C_{10}H_{10}Cl_8$-Technical chlorinated camphene, 67-69 percent chlorine).	0.005
10.2.2.	Chlorophenoxys: 2,4 - D, (2, 4-Dichlorophenoxyacetic acid).	0.1
	2, 4, 5-TP Silvex (2, 4, 5-Trichlorophenoxypropionic acid).	0.01
10.2.3.	Total Trihalomethanes (TTHM)	0.10

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10.3. If the result of an analysis made pursuant to Section 19 indicates that the level of any contaminant listed in Section 10.2 under ".01" and ".02" exceeds the maximum contaminant level, the system owner or operator shall report to the director within 7 days and initiate three additional analyses within one month.

10.4. When the average of four analyses made pursuant to Section 10.3 rounded to the same number of significant figures as the maximum con-

taminant level for the substance in question, exceeds the maximum contaminant level, the system owner or operator shall report to the director and notify the public pursuant to Sections 14 and 15. Monitoring after public notification shall be at a frequency designated by the director and shall continue until the maximum contaminant level has not been exceeded in two successive samples or until a monitoring schedule as a condition to a variance, exemption, or enforcement action shall become effective.

10.5. The regulations for total trihalomethanes set forth in Section 10 shall take effect November 29, 1981, for community water systems serving 75,000 or more individuals, and November 29, 1983, for communities serving 10,000 to 74,999 individuals.

10.6. Community water systems utilizing surface water sources in whole or in part, and for all community water systems utilizing only ground water sources, an analyses for total trihalomethanes shall 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 shall be taken at locations within the distribution system reflecting the maximum residence time of the water in the system. The remaining 75 percent of the samples shall 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 shall be arithmetically averaged and reported to the director. All samples collected shall be used in the computation of the average unless the analytical results are invalidated for technical reasons. All samples taken within an established frequency shall be collected within a 24 hour period.

10.7. Upon written request of a community water system, the monitoring frequency required by Section 10.6 may be reduced by the director to a minimum of one sample analyzed per quarter taken at a point in the distribution system reflecting the maximum residence time of the water in the system, upon a written determination by the director that the data from at least 1 year of monitoring in accordance with Section 10.6 and local conditions demonstrate that total trihalomethane concentrations will be consistently below the maximum contaminant level.

Upon written request to the director, a community water system utilizing only ground water sources may seek to have the monitoring frequency required reduced to a minimum of one sample for maximum TTHM potential per year for each treatment plant used by the system. The system shall submit to the director the results of at least one sample analyzed for maximum TTHM potential for each treatment plant used by the system taken at a point in the distribution system reflecting the maximum residence time of the water in the system. The system's monitoring frequency may only be reduced upon a written determination by the director that, based upon the data submitted by the system, the system has a maximum TTHM potential of less than 0.10 mg/l and that, based upon an assessment of the local conditions of the system, the system is not likely to approach or exceed the maximum contaminant level for total TTHMs.

10.8. If at any time during which the reduced monitoring frequency prescribed under this section applies, the results from any analysis exceed 0.10 mg/l of TTHMs and such results are confirmed by at least one resample taken promptly after such results are received, or if the system

makes any significant change to its source of water or treatment program, the system shall immediately begin monitoring in accordance with the requirements of Section 10.6. Monitoring shall continue for at least 1 year before the frequency may be reduced again. In the event of any significant change to the system's raw water or treatment program, the system shall immediately analyze an additional sample for maximum TTHM potential in accordance with Sections 10.6 and 10.7.

Compliance with Section 10.2 shall be determined based on a running annual average of samples collected by the system as prescribed in Section 10.6. If the average of samples covering any 12 month period exceeds the maximum contaminant level, the supplier of water shall report to the director pursuant to Section 14.2 and notify the public pursuant to Section 15. Monitoring after public notification shall be at a frequency designated by the director and shall continue until a monitoring schedule as a condition to a variance, exemption or enforcement action shall become effective.

10.9. Before a community water system makes any significant modifications to its existing treatment process for the purposes of achieving compliance with Section 10.2, such a system must submit and obtain approval from the director of 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 such system will not be adversely affected by such modification. Each system shall comply with the provisions set forth in the director's approved plan. At a minimum, the director's approved plan shall require the system modifying its disinfection practice to:

10.9.1. Evaluate the water system for sanitary defects and evaluate the source water for biological quality;

10.9.2. Evaluate its existing treatment practices and consider improvements that will minimize disinfectant demand and optimize finished water quality throughout the distribution system;

10.9.3. 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° C and 20° C, phosphate, ammonia nitrogen and total organic carbon. Virus studies should be required where source waters are heavily contaminated with sewage effluent;

10.9.4. 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. Additional monitoring should also be required by the director for chlorate, chlorite and chlorine dioxide when chlorine dioxide is used as a disinfectant;

10.9.5. Demonstrate an active disinfectant residual throughout the distribution system at all times during and after the modification.

Section 11. Radiological Requirements: Maximum Contaminant Levels: Monitoring Frequency

11.1. The maximum contaminant levels for radioactive materials apply only to community water systems. Analyses for maximum contaminant levels shall be made in accordance with Section 13. Monitoring shall be in accordance with Section 19.

11.2. The following are the maximum contaminant levels for radium-226; radium-228; and gross alpha particle radioactivity:

11.2.1. Combined radium-226 and radium-228: 5 pCi/l.

11.2.2. Gross alpha particle activity (including radium-226 but excluding radon and uranium): 15 pCi/l.

11.3. The following are the maximum contaminant levels for beta particle and photon radioactivity from man-made radiouclides:

11.3.1. 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.

11.3.2. Except for the radionuclides listed below, the concentration of man-made radionuclides causing 4 mrem/year total body or organ dose equivalents shall be calculated on the basis of a 2 liters 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," NBS Handbook 69 as amended August, 1963, U. S. Department of Commerce. If two or more radionuclides are present, the sum or their annual dose equivalent to the total body or to any organ shall not exceed 4 mrem/year.

RADIONUCLIDE	CRITICAL ORGAN	pCi PER LITER
Tritium	Total Body	20,000
Strontium-90	Bone Marrow	8

11.4. The monitoring frequency and requirements for gross alpha particle activity, radium-226 and radium-228 are as follows:

11.4.1. Compliance 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.

11.4.1.1. 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 sample).

11.4.1.2. 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.

11.4.2. System owners or operators shall monitor at least once every four years following the procedure required by Section 11.4.1. At the discretion of the director, when an annual record taken in conformance with Section 11.4.1 has established that the average annual concentration is less than half the maximum contaminant levels established by Section 11.5, analysis of a single sample may be substituted for the quarterly sampling procedure required by Section 11.4.1.

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

11.4.2.2. A system owner or operator shall monitor in conformance with Section 11.4.1 within one year after the introduction of a new water

source for a community water system. More frequent monitoring shall be conducted when ordered by the director in the event of possible contamination or when changes in the distribution system or a treatment process occur which may increase the concentration of radioactivity in finished water.

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

11.4.2.4. Monitoring for compliance with Section 11.2 after the initial period need not include radium-228 except when required by the director, provided that the average annual concentration of radium-228 has been assayed at least once using the quarterly sampling procedure required by Section 11.4.1.

11.4.2.5. If the average annual maximum contaminant level for gross alpha particle activity or total radium as set forth in Section 11.2 is exceeded, the owner or operator of a community water system shall give notice to the director pursuant to Section 14 and notify the public as required by Section 15.

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.

11.5. The monitoring frequency and requirements for man-made beta particle and photon radioactivity are as follows:

11.5.1. Community water systems using surface water sources and

serving more than 100,000 persons and such other systems as the director may designate shall be monitored for compliance with Section 11.3 by analysis of a composite of four consecutive quarterly samples or analyses of four quarterly samples. Compliance with Section 11.3 may be assumed without further analyses 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 11.3.2, provided that if both radionuclides are present the sum of their annual dose equivalents to bone marrow shall not exceed 4 mrem/year.

11.5.1.1. 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 shall be calculated to determine compliance with Section 11.3.

11.5.1.2. Suppliers of water shall conduct such additional monitoring as ordered by the director.

11.5.2. System owners or operators utilizing only ground waters may be required to monitor for man-made radioactivity as ordered by the director.

11.5.3. System owners or operators required to monitor shall do so at least once every four years following the procedures in Section 11.5.1.

11.5.4. System owners or operators utilizing water contaminated by effluents from nuclear facilities shall monitor quarterly for gross beta particle and iodine-131 radioactivity and annually for strontium-90 and tritium.

11.5.4.1. Quarterly monitoring for gross beta particle activity shall

be based on the analyses 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 Section 11.3.

11.5.4.2. For iodine-131, a composite of five consecutive daily samples shall be analyzed once each quarter. As ordered by the director, more frequent monitoring shall be conducted when iodine-131 is identified in the finished water.

11.5.4.3. Annual monitoring for strontium-90 and tritium shall be conducted by means of the analysis of a composite of four consecutive quarterly samples or analyses of four quarterly samples.

11.5.5. If the average annual maximum contaminant level for man-made radioactivity set forth in Section 11.3 is exceeded, the system owners or operators shall notify the director pursuant to Section 14 and notify the public as required by Section 15. Monitoring at monthly intervals shall be continued until the 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.

Section 12. Turbidity Requirements: Maximum Contaminant Levels: Monitoring Frequency

12.1. The maximum contaminant levels for turbidity apply to both community and non-community water systems using surface water sources in

whole or in part. The levels may apply to special ground water situations specified by the director. The maximum contaminant levels for turbidity in drinking water, measured daily in accordance with Section 19, at a representative entry point to the distribution system are:

12.1.1. One (1) nephelometric turbidity unit (NTU), as determined by a monthly average pursuant to Section 12.3, except that five (5) or fewer turbidity units may be allowed if the supplier of water can demonstrate to the director that the higher turbidity does not do any of the following:

12.1.1.1. Interfere with disinfection;

12.1.1.2. Prevent maintenance of an effective disinfectant agent throughout the distribution system; or

12.1.1.3. Interfere with microbiological determination.

12.1.2. Five (5) nephelometric turbidity units based on an average for two (2) consecutive days pursuant to Section 12.3.

12.2. Analyses for maximum turbidity contaminant levels shall be made by the Nephelometric Method in accordance with Section 13.

12.3. If the result of a turbidity analysis indicates that the maximum allowable limit has been exceeded, the sampling and measurement shall be confirmed by resampling as soon as practicable and preferably within one hour. If the resample analysis confirms that the maximum allowable limit has been exceeded, the system owner or operator shall report to the director within 48 hours. The resample shall 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 (2) samples taken on consecutive days exceeds 5 NTU, the system or

operator shall report to the director and notify the public as directed in Sections 14 and 15. All averages must be rounded to the nearest whole number, thus, less than 0.5 becomes 0; greater than 0.5 becomes 1.

12.4. As approved on a case by case basis, the director may indicate, in writing, that a reduced monitoring frequency may be implemented by a non-community system provided that: the frequency does not pose any unreasonable risk to human health and the system practices disinfection procedures and maintains an active residual disinfectant in the distribution system.

Section 13. Approved Analytical Techniques and Laboratories

13.1. For the purpose of determining compliance with the maximum microbiological, chemical and radiological contaminant levels and in accordance with Section 13.3, samples may be considered only if they have been analyzed by the state department of health's laboratories, or by a laboratory certified by the director.

13.2. For the purpose of determining measurements of turbidity and residual chlorine, samples may be considered only if they have been analyzed by a person approved by the director.

13.3. Analytical techniques shall comply with Tables I and II.

Section 14. Reporting Requirements

14.1. Except as specified below, a system owner or operator shall report results to the director within 40 days following a test, measurement, or analysis required to be made by these regulations.

14.2. Analytical results for Total Trihalomethane (TTHM) analyses shall be reported to the director within 30 days of the system's receipt of such results.

14.3. A system owner or operator shall report to the director within 48 hours the failure to comply with any drinking water regulation.

14.4. A system owner or operator is not required to report analytical results to the director in cases where the state health department's laboratories perform the analysis.

14.5. At least once per month, or as otherwise directed by the director, a system owner or operator shall submit to the director a written summary of the public water system operation, test data, and such other information as may be required by the director.

14.2. All reports and summaries required by Section 14 shall be submitted in a manner or form approved by the director.

14.7. The water supply system shall submit to the director a representative copy of each type of notice distributed, posted or made available to the public or media within seven days following such public notification.

Section 15. Public Notification

15.1. The owner or operator of a public water system shall notify the public when any maximum contaminant level is exceeded; or when the

system owner or operator fails to comply with applicable monitoring requirements, testing procedures, and analytical techniques provided in Sections 8, 9, 10, 11, 12, 13 and 19; or when maximum contaminant levels or schedules prescribed by a variance or exemption are exceeded; or when a variance or exemption is granted.

15.2. Community water systems shall notify the public by a notice on or with the first set of water bills issued by the system when the provisions of Section 15.1 have not been met.

15.3. The owner or operator of a community water system shall notify the public once every three months, so long as the failure to comply for the reasons set out in Section 15.1 continue. In the event the system does not issue water bills at least every three months, then the notice shall be made or supplemented by a form of direct mail.

15.4. In addition to the requirements of Section 15.2 and 15.3, if a community water system exceeds a maximum contaminant level, the system owner or operator shall:

15.4.1. Publish notice of the failure for 3 consecutive days in a newspaper serving the general area. Notice shall be published within 14 days of learning of the failure.

15.4.2. Furnish a copy of the notice to radio and television stations in the area served by the system. Notice shall be furnished within 7 days of the failure.

15.4.3. If the area supplied by a community water system is not served by a daily newspaper of general circulation, notification required by paragraph 15.4.1 herein shall be by publication for three consecutive weeks

in a weekly newspaper of general circulation in the area. If there is no weekly newspaper of general circulation in the area, notice shall be given by posting the notice in the courthouse in the area served by the system.

15.5. The requirements of Section 15.4 may be waived at the director's discretion if it is determined that the violation has been:

15.5.1. Corrected promptly after discovery;

15.5.2. The cause of the violation eliminated; and,

15.5.3. There is no longer a risk to public health.

15.6. If a non-community water system fails to comply with Section 15.1, the notice to the public shall be given by a continuous and conspicuous posting, in a location where it can be seen by consumers.

15.7. Notices shall fairly inform the users of the system, disclosing all material facts, including the nature of the problem, and where appropriate, a clear statement of the violation, and any preventive measures which should be taken by the public.

Section 16. Control Tests and Record Maintenance

16.1. Owners or operators of a public water system shall retain at a convenient location on or near its premises, records of microbiological, turbidity, radiological and chemical analyses, or a summary thereof. Microbiological, turbidity and radiological analytical records shall be kept for five years. Chemical analytical records shall be kept for ten years. Control tests and operational records shall be kept for five years.

16.2. The records shall include the date, place and time of sampling, and the name of the person who collected the sample; identification as to whether it was a routine distribution system sample, resample, raw or

drinking water sample, or other special purpose sample; the date of analysis; laboratory and person rsponsible for performing the analysis; analytical technique or method used; and results of analysis.

16.3. Records of action taken by the system to correct violations shall be kept for three years after correction.

16.4. Copies of written reports relating to sanitary surveys of the system shall be kept for ten years.

16.5. Records concerning a variance or exemption shall be kept for not less than five years following the expiration of such variance or exemption.

Section 17. Variances

17.1. The director may grant one or more variances to a public water system from any requirement respecting a maximum contaminant level, upon a finding that:

17.1.1. Because of chracteristics of the raw water sources which are reasonably available to the system, the system cannot meet the requirements respecting the maximum contaminant levels despite application of the best technology, treatment, techniques, or other means, which the director finds are generally available (taking costs into consideration); and

17.1.2. The granting of a variance will not result in an unreasonable risk to the health of persons served by the system.

17.2. An owner or operator may request the granting of a variance by submitting same in writing to the director. Owners or operators may submit a joint request for variances when they seek similar variances under similar circumstances. Written requests for a variance or variances shall

include the following information:

17.1.2.1. The nature and duration of the variance requested.

17.1.2.2. Relevant analytical results of raw and treated quality sampling of the system, including results of tests conducted pursuant to the requirements of these regulations.

17.1.2.3. Variances shall include:

17.1.2.3.1. An explanation in full and evidence of the best available treatment, technology and techniques.

17.1.2.3.2. Relevant economic and legal factors.

17.1.2.3.3. A proposed compliance schedule, including the date each step toward compliance will be achieved. Such schedule shall include as a minimum the following dates.

(a) Date by which arrangement for alternative raw water source and/or improvement of existing raw water source will be completed.

(b) Date of initiation of the connection of the alternative raw water source and/or improvement of existing raw water source.

(c) Date by which final compliance is to be achieved.

17.1.2.3.4. A plan for the provision of safe drinking water in case of an excessive rise in the contaminant level for which the variance is requested.

17.1.2.3.5. A plan for interim control measures during the effective period of the variance.

17.2.3.4. Such other information as the director may require.

17.3. The director shall act on any variance request within 90 days of receipt.

17.4.

17.4.1. The director shall notify the applicant if he decides to deny an application for a variance, by including a statement of reasons for the proposed denial, and shall offer the applicant an opportunity to present, within 30 days of receipt of the notice, additional information or argument to the director. The director shall make a final determination on the request within 30 days after receiving any such additional information or argument. If no additional information or argument is submitted by the applicant the application shall be denied.

17.4.2. The director shall notify the applicant, in writing, if an application for a variance is approved, by identifying the variance, the facility covered, and shall specify the maximum period of time for which the variance will be effective and any conditions which must be complied with.

17.4.3. The variance may be terminated at any time upon finding that the public water system has failed to comply with monitoring and other requirements prescribed by the director as a condition of a variance, and shall automatically terminate when the system comes into compliance with the applicable regulations.

17.4.4. For a variance, the director shall propose a schedule and control measures for compliance (including increments of progress) by the public water system for each maximum contaminant level requirement covered by the variance.

17.4.5. The proposed schedule for compliance shall specify dates by which steps towards compliance are to be taken, including, where applicable:

17.4.5.1. Date by which arrangement for an alternating raw water source or improvement of the existing raw water source will be completed.

17.4.5.2. Date of initiation of the connection for the alternative raw water source or improvement of the existing raw water source.

17.4.5.3. Date by which final compliance is to be achieved.

17.4.6. The proposed schedule may, if the public water system has no access to an alternative raw water source, and can effect or anticipate no adequate improvement of the existing raw water source, specify an indefinite time period for compliance until a new and effective treatment technology is developed at which time a new compliance schedule shall be prescribed by the director.

17.4.7. The proposed schedule for implementation of interim control measures during the period of variance, shall specify interim treatment techniques, methods and equipment, and dates by which steps toward meeting the interim control measures are to be met.

17.4.8. The schedule shall be prescribed by the director within one year after the granting of the variance, subsequent to provision or opportunity for public hearing.

17.5.

17.5.1. Before a variance or a schedule proposed by the Director may take effect, the director shall provide notice and opportunity for public hearing on the variance or schedule.

17.5.2. Public notice of an opportunity for hearing on a variance or schedule shall be circulated in a manner designed to inform interested persons of the proposed variance or schedule and shall include at least the following:

17.5.2.1. posting of a notice in the courthouse of each county served by the public water system, and publishing of a notice in a newspaper or newspapers of general circulation in the county served by the public water system.

17.5.2.2. Such notice shall include a summary of the proposed variance or schedule and shall inform interested persons that they may request a public hearing on the proposed variance or schedule.

17.5.2.3. Request for a hearing may be submitted by any interested person, within 30 days after the public notices are issued. Frivolous or insubstantial requests may be denied by the director. A request shall include the following information:

17.5.2.3.1. Name, address and telephone number of the individual, organization, or other entity requesting a hearing.

17.5.2.3.2. A brief statement of the interest of the person making the request in the proposed variance or schedule and the information that the requesting person intends to submit at such hearing.

17.5.2.3.3. The signature of the individual making the request or signature of the responsible person in the organization making the request.

17.5.2.3.4. The director shall give notice in the manner set forth in Section 17.5.2 of any public hearing to be held pursuant to a request or on his own motion. In addition, said notice shall be sent to the persons requesting a hearing. The notice shall include a statement of purpose, time and location, name, address and telephone number where interested persons may obtain further information concerning the hearing.

17.5.3. A public hearing convened pursuant to this section shall be

conducted informally, orderly and expeditiously. Oral testimony and written material may be received at the hearing.

17.5.4. The variance or schedule shall become effective 30 days after notice is given for opportunity for a hearing.

17.6. Within 30 days after the public hearing the director shall confirm, revise or rescind the proposed variance or schedule.

Section 18. Exemptions

18.1. The director may grant an exemption to a public water system from any requirement respecting a maximum contaminant level or any treatment technique requirement, or both, upon finding that:

18.1.1. Due to compelling factors (which may include economic factors), the public water supply is unable to comply with such contaminant level or treatment technique requirement; and

18.1.2. The public water system was in operation on the effective date of such contaminant level or treatment technique requirement; and

18.1.3. The granting of an exemption will not result in an unreasonable risk to health.

18.2. An owner or operator may request the granting of an exemption for a public water system by submitting a request in writing to the director. Owners or operators may submit a joint request for exemptions when they seek similar exemptions under similar circumstances. Any written request for an exemption or exemptions shall include the following information:

18.2.1. The nature and duration of the exemption requested.

18.2.2. Relevant analytical results of water quality sampling of the

system, including results of tests conducted pursuant to the requirements of these regulations.

18.2.3. Explanation of the compelling factors such as time or economic factors which prevent the system from achieving compliance.

18.2.4. Other pertinent information.

18.2.5. A proposed compliance schedule, including the date when each step toward compliance will be achieved.

18.2.6. Such other information as the director may require.

18.3. The director shall act on any exemption request submitted within 90 days of receipt of the request.

18.3.1. The director shall consider the following factors:

18.3.1.1. Construction, installation, or modification of treatment equipment or systems.

18.3.1.2. The time needed to put into operation a new treatment facility to replace an existing system which is not in compliance.

18.3.1.3. Economic feasibility of compliance.

18.4.

18.4.1. The director shall notify the applicant if he intends to deny an exemption request. Such notice shall include a statement of reasons for the proposed denial, and shall offer the applicant an opportunity to present within 30 days of receipt of the notice, additional information or argument to the director. The director shall make a final determination on the request within 30 days after receiving any such additional information or argument as submitted by the applicant.

18.4.2. If the director grants an exemption request submitted pur-

suant to Section 18.2, he shall notify the applicant of his decision in writing. The notice shall identify the facility covered, and shall specify the termination date of the exemption, and shall provide that the exemption may be terminated upon a finding by the director that the system has failed to comply with any requirement of a final schedule issued pursuant to Section 18.6. An exemption shall automatically terminate when the system comes into compliance with the applicable regulation.

18.4.3. The director shall propose a schedule for:

18.4.3.1. Compliance (including increments of progress) by the public water system with each maximum contaminant level requirement and treatment technique requirement covered by the exemption; and

18.4.3.2. Implementation by the public water system of such control measures as the director may require for each contaminant covered by the exemption.

18.4.4. The schedule shall be prescribed by the director within one year after the granting of the exemption, subsequent to provision of opportunity for a hearing provided in Section 18.5.

18.5.

18.5.1. Before a schedule proposed by the director pursuant to Section 18.4 may take effect, the director shall provide notice and opportunity for public hearing on the schedule.

18.5.2. Public notice of an opportunity for a hearing on an exemption schedule shall be circulated in a manner designed to inform interested persons of the proposed schedule, and shall include at least the following:

18.5.2.1. Posting of a notice in the courthouse of each county served

by the public water system, and publishing of a notice in a newspaper or newspapers of general circulation in the county served by the public water system.

18.5.2.2. Such notice shall include a summary of the proposed schedule and shall inform interested persons that they may request a public hearing on the proposed schedule.

18.5.3. Requests for a hearing may be submitted by any interested person. Frivolous or insubstantial requests for hearing may be denied by the director. Requests must be submitted to the director within 30 days after issuance of the public notices provided for in paragraph 18.5.2. Such requests shall include the following information:

18.5.3.1. The name, address and telephone number of the individual, organization or other entity requesting a hearing.

18.5.3.2. A brief statement of the interest of the person making the request on the proposed exemption or schedule.

18.5.3.3. The signature of the individual making the request, or signature of the responsible person in the organization making the request.

18.5.3.4. The director shall give notice in the manner set forth in Section 18.5.2 of any hearing to be held pursuant to a request submitted by an interested person, or on his own motion. Notice of the hearing shall be sent to the person requesting the hearing, if any. Notice of the hearing shall include a statement of the purpose, time, and location of the hearing, and the address and telephone number where interested persons may obtain further information concerning the hearing. Notice of the hearing shall be given not less than 15 days prior to the time scheduled for the hearing.

18.6.

18.6.1. Within 30 days after the public hearing, the director may revise the proposed schedule as necessary and prescribe the final schedule for compliance and interim measures for the public water system granted an exemption under Section 18.3.

18.6.2. Such schedule shall require compliance by the public water system with each maximum contaminant level and treatment technique requirement prescribed, by no later than January 1, 1981.

18.6.3. If the public water system has entered into an enforceable agreement to become part of a regional system, as determined by the director, such schedule shall require compliance by the public water system with each maximum contaminant level and treatment technique requirement prescribed by not later than January 1, 1983.

Section 19. Effective Dates for Monitoring and Minimum Required Monitoring Frequency

19.1. Community water systems will be required to monitor for maximum contaminants levels in accordance with Table III.

19.2. Non-community water systems will be required to monitor for maximum contaminant levels in accordance with Table IV.

19.3. Consecutive systems may be regarded as a single system for monitoring purposes, if approved by the director.

Section 20. Secondary Contaminants

20.1. Drinking water supplied by community public water supplies shall not contain chemical or physical characteristics (secondary contaminants) in excess of the following maximum concentrations, unless written approval is granted by the director. Maximum concentrations of secondary contaminants for non-community public water supplies may be established by the director.

SUBSTANCE	CONCENTRATION IN mg/l
Alkyl Benzene Sulfonate	0.5
Chloride (Cl)	250.0
Color	15 (color units)
Copper (Cu)	1.0
Hydrogen Sulfide	0.05
Iron (Fe)	0.3
Manganese (Mn)	0.05
Odor	3 (threshold odor number units)
Phenols	0.001
Sulfate (SO_4)	250.0
Total Dissolved Solids	500.0
Zinc (Zn)	5.0

20.2. Sections 13, 14, 15 and 19 of these regulations shall not apply to secondary contaminants. Secondary contaminants shall be monitored and reported in a manner specified by the director.

20.3. The director may establish policy and criteria to control the corrosivity of drinking water supplied by a public water system.

Section 21. Sodium

21.1. All community public water suppliers shall monitor for sodium concentration levels in accordance with:

21.1.1. Surface water supplies - annually.

21.1.2. Ground water supplies - every 3 years.

21.2. The minimum number of samples required shall be based upon the number of treatment plants, except that at the discretion of the director, multiple wells drawing water from the same aquifer may be considered to be a single treatment plant.

21.3. Unless otherwise approved by the director, the water supply owner shall provide written notice of results to all state and local health officials within three months.

Section 22. Fluoridation

22.1. This Section applies to public water systems (except public schools) which add fluoride to the drinking water. The director shall establish policy and criteria for water fluoridation at public schools.

22.2. The presence of fluoride in average concentrations shall be as follows:

ANNUAL AVERAGE OF MAXIMUM DAILY AIR TEMPERATURE	FLUORIDE CONCENTRATION IN MILLIGRAMS PER LITER		
	Lower	Optimum	Upper
53.8 - 58.3°F 12.1 - 14.6°C	0.8	1.1	1.5
58.4 - 63.8°F 14.7 - 17.7°C	0.8	1.0	1.3
63.9 - 70.6°F 17.7 - 21.4°C	0.7	0.9	1.2

22.3. System owners or operators of fluoridated or defluoridated public water supplies shall monitor their drinking water once per day for fluoride concentration. Records for monitoring shall be maintained in accordance with Section 16.

22.4. At least once a month, a sample of drinking water shall be sub-

mitted to a certified laboratory for fluoride analysis.

22.5. Unless specified by the director, Sections 14 and 15 shall not be applicable to this Section.

Section 23. Bottled Water

23.1. No person shall manage, operate or maintain a bottled water treatment, plant, or distribute bottled water in this state without receiving a permit from the director.

23.2. The procedure for applying for a permit or permits, shall be in accordance with Sections 5 and 6 of these regulations and the current "Bottled Water Design Standards" of the state department of health.

23.3. In addition to Section 23.2, operators of out-of-state bottled water treatment plants distributing water in West Virginia, shall include with their application, a copy of their most recent permit to operate from their state regulatory agency.

23.4. Source waters, plant facilities, treatment techniques, equipment, supplies, operations, and distribution methods shall be approved by the director and must be in accordance with the state health department's "Design Standards For Public Water Supply Systems" and "Bottled Water Design Standards."

23.5. Bottled water treatment plants shall comply with Sections 8, 9, 10, 11, 12, 20, 21 and 22 of these regulations as they apply to community water systems except that the monitoring frequency for microbiological contaminants shall be not less than once each week.

23.6. Each in-state bottled water treatment plan shall be inspected every six months or as otherwise determined by the director.

23.7. A permit issued by the director may be revoked for failure to comply with provisions of these regulations.

Section 24. Severability - If any provisions of these regulations or the application thereof to any person or circumstance shall be held invalid, such invalidity thereof shall not affect the provisions or application of these regulations which can be given effect without the invalid provisions or application and, to this end, the provisions of these regulations are declared to be severable.

Section 25. Penalties - Any person who violates any provision of Chapter 16, Article 1, Section 9A, of the West Virginia Code of 1931, as amended, or orders issued pursuant thereto shall be guilty of a misdemeanor, and, upon conviction thereof, shall be fined not less than twenty-five dollars nor more than two hundred dollars, and each day's violation shall constitute a separate offense. In addition thereto, the state director of health, or his authorized representative may seek injunctive relief in the circuit court of the county in which all or part of the public water system is situated for threatened or continuing violations. For a willful violation of this regulation or orders issued thereunder, a person, upon a finding thereof by the circuit court of the county in which the violation occurs, shall be subject to a civil penalty of not more than five thousand dollars, and each day's violation shall be grounds for a separate penalty.

Section 26. Administrative Due Process - Those persons adversely affected by the enforcement of these legislative rules desiring a contested case hearing to determine any rights, duties, interests or privileges shall do so in a manner prescribed in the West Virginia Procedural Rules, Board of

Health, Chapter 16-1, Series I, 1981, Rules of Procedure for Contested Case Hearings and Declaratory Rulings. The aforementioned procedural rules are incorporated herein by reference.

TABLE IV

NON-COMMUNITY WATER SYSTEM MONITORING REQUIREMENTS

	WATER SOURCE	INITIAL SAMPLING	MINIMUM FREQUENCY
Microbiological	Surface	By August 27, 1982	[1]Quarterly
	Ground	By August 27, 1982	[1]Quarterly
Inorganic Chemicals (except Nitrates)		DOES NOT APPLY	
Organic Chemicals		DOES NOT APPLY	
Turbidity	Surface	By June 24, 1979	[3]Once per day
	Ground	[2]Does not apply	[2]Does not apply
Nitrates	Surface	By December 24, 1980	As ordered by the
	Ground	By December 24, 1980	director
Radiological		DOES NOT APPLY	

[1]May be modified by the director based on a sanitary survey.
[2]Except in specific cases as ordered by the director.
[3]May be modified by the director in accordance with Section 12.4 of these regulations.

TABLE I

ANALYTICAL METHODS - REFERENCES FOR INORGANIC AND MICROBIOLOGICAL PARAMETERS

PARAMETERS	REFERENCES			
	STANDARD METHODS(1)	METHODS OF CHEMICAL ANALYSIS FOR WATER AND WASTES	TECHNIQUES OF WATER(3)	ASTM STANDARDS(4)
ARSENIC	pp 159-162, 284-286	METHODS 206.2, 206.3 206.4	pp 61-63	METHOD D-2972-78A
BARIUM	pp 152-155	METHODS 208.1, 208.2		METHOD 3357-78A or B
CADIMUM	pp 148-152	METHODS 213.1, 213.2		METHOD D-16877-77 D
CHROMIUM	pp 148-152	METHODS 218.1, 218.2		
LEAD	pp 148-152	METHODS 239.1, 239.2		METHOD D-3559-78A or B
MERCURY	pp 156-159	METHODS 245.1, 245.2		METHOD D-3223-79
NITRATE (N)	pp 423-427, 427-429, 620-624	METHODS 352.1, 353.3 353.1, 353.2		METHODS D-992-71 D-3867-79A or B
SELENIUM	pp 159-162	METHODS 270.2, 270.3	pp 237-239	METHODS D-3859-79
SILVER	pp 148-151, 159-162	METHODS 272.1, 272.2	pp 365-367	
FLUORIDES	pp 389-390, 391-393 393-394, 614-616	METHODS 340.1, 340.2		METHOD 1179-72
TUBIDITY	pp 132-134	METHOD 180.1		
CHLORINE RESIDUAL	pp 316-332			
MICROBIOLOGICAL	pp 913-942			
SODIUM	pp 250	METHOD 273.3		METHOD 148-64 (a)

(1) (Standard Methods for the Examination of Water and Waste Waster: 14th Edition, American Public Health Association, AWWA, WPCF, 1976

(2) "Methods of Chemical Analysis for Water and Wastes", EPA Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, 45268, (EPA - 600/4-79-020) March 1979

(3) Techniques of Water-Resources Investigation of the U.S. Geological Survey, Chapter A-1 "Methods for Determination of Inorganic Substances in Water and Fluival Sediments", Book 5, 1979

(4) Annual Book of ASTM Standards, Part 31 Water, American Society for Testing and Materials, 1976 Race Street, Philadelphia, PA 19103

(5) "Fluoride in Water and Wastewater," Industrial Method #380-75WE Technicon Industrial Systems, Tarrytown, New York 10501, February 1976 or "Fluoride in Water and Wastewater Industrial Method #129-71W" Technicon Industrial Systems, Tarrytown, New York 10591, December

TABLE II
ANALYTICAL METHODS - REFERENCES FOR ORGANIC AND RADIOACTIVE CONTAMINANTS

CONTAMINANT	
ENDRIN LINDANE METHOXYCHLOR TOXAPHENE	(1) "Method for Organochlorine Pesticides and Chlorophenoxy Acid Herbicides in Drinking Water and Raw Source Water." ORD Publications, CERI, EPA, Cincinnati, OH 45268. (2) "Organochlorine Pesticides in Water" 1977 Annual Book of ASTM Standards, Part 31, Water Method D3088. (3) "Standard Methods for the Examination of Water and Waste Water" 14th Edition, Method 509-A, APHA, AWWA, WPCF. (4) "Gas Chromatographic Methods for Analysis of Organic Substances in Water", Techniques of Water-Resources Investigation of the USGS. Chapter A-5, Book 5, 1972.
2, 4-D 2, 4, 5, -TP Silvex	(1) "Method for Organochlorine Pesticides and Chlorophenoxy Acid Herbicides in Drinking Water and Raw Source Water," Ibid. (2) "Organochlorine Pesticides in Water", Method D3478, Ibid. (3) "Standard Methods for the Examination of Water and Waste Water, Method 509-B, Ibid. (4) "Gas Chromatographic Methods for Analysis of Organic Substances, in Water," Techniques of Water-Resources Investigation of the USGS, Chapter A-3, Book 5, 1972.
TOTAL Trihalomethanes (TTHM)	(1) "The Analysis of Trihalomethanes in Finished Waters by the Purge and Trap Method." Method 501.1, EMSL, EPA, Cincinnati, OH. (2) "The Analysis of Trihalomethanes in Drinking Water by Liquid/Liquid Extraction," Method 501.2, EMSL, EPA, Cincinnati, OH.
Total Radium Radium 226 Alpha Particles Beta Particles Strontium 89, 90 Tritium	Section 705 Section 706 OF Section 703 Section 703 Section 704 Section 707 "Standard Methods for the Examination of Water and Wastewater", 14th Edition OR "Interim Radio Chemical Methodology for Drinking water," Environmental Monitoring and Support Laboratory. Cincinnati, Ohio 45268.
Photon Radioactivity	"Interim Radiochemical Methodology for Drinking Water," Ibid.
CESIUM	(1) ASTM D-2459 "Gamma Spectrometry in Water." 1975 Annual Book of ASTM Standards, Water and Atmospheric Analysis, Part 31 American Society for Testing and Materials, Philadelphia, Pennsylvania, (1975). (2) "Interim Radio Chemical Methodology for Drinking Water," Ibid.
URANIUM	(1) ASTM D-2907 "Microquantities of Uranium in Water by Fluorometry," Ibid. (2) "Interim Radiochemical Methodology for Drinking Water." Ibid.
Other Radionuclides	(1) "Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous Solutions." H.L. Krieger and S. Gold, EPA, R4-73-014 USEPA, Cincinnati, Ohio, May 1973. (2) HASL, "Procedure Manual" Edited by John H. Harley. NASL 300, ERDA Health and Safety Laboratory, New York, New York 1973.