

CHAPTER 6
DRINKING WATER

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Article 1
Guam Primary Safe Drinking Water Regulations

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§6101. Authority. Title 10 Guam Code Annotated §53104 authorizes the Guam Environmental Protection Agency to prescribe rules and regulations as may be necessary to implement the Safe Drinking Water Act.

§6102. Definitions. (a) *Act* means the Safe Drinking Water Act, 10 GCA, Chapter 53.

(b) *Administrator* means the Administrator of the Guam Environmental Protection Agency.

(c) *Agency* means the Guam Environmental Protection Agency as established by 10 GCA, Chapter 45.

(d) *Board* means the Board of Directors of the Guam Environmental Protection Agency.

(e) *Contaminant* means any physical, chemical, biological or radiological substance or matter in water which, as determined by the Agency, may have an adverse effect upon human health or may be harmful to the public welfare.

(f) *Dose Equivalent* means the product of the absorbed dose from ionizing radiation and such factors as to 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).

(g) *Federal Regulations* means the Safe Drinking Water Act, U.S. Public Law 93-523, and all amendments thereto up to and including the Safe Drinking Water Act amendments of 1986, PL 99-339.

(h) *Federal Administrator* means the Administrator of the United States Environmental Protection Agency.

(i) *Federal Agency* means any department, agency or instrumentality of the United States.

(j) *Gross Alpha Particle Activity* means the total radioactivity due to alpha particle emission as inferred from measurements on a dry sample.

(k) *Gross Beta Particle Activity* means the total radioactivity due to beta particle emission as informed from measurements on a dry sample.

(l) *Injection* means the subsurface emplacement of any material, gaseous, liquid or solid, or any admixture thereof, which may add a contaminant to underground waters.

(m) *Man-Made Beta Particle and Photon Emitters* means all radionuclides emitting beta particles and/or photons listed in Maximum Permissible Body Burdens and Maximum Permissible 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.

(n) *Maximum Contaminant Level* means 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.

(o) *Person* means an individual, corporation, company, association, partnership, federal agency or subdivision or agency of the government of Guam.

(p) *Picocurie (pCi)* means that quantity of radioactive material producing 2.22 nuclear transformations per minute.

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

(1) any collection, treatment, storage and distribution facilities under control of the 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 is either a *community water system* or a *non-community water system*:

(1) *Community Water System* means 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.

(2) *Non-Community Water System* means a public water system that is not a community water system.

(3) *Non-Transient non-community water system* or *NTNCWS* means a public water system that is not a community water system and that regularly serves at least 25 of the same persons over 6 months per year. It shall also mean any water system used for production of consumable products or bottled water.

(r) *Rem* means the unit of dose equivalent from ionizing radiation to the total body of any internal organ or organ system. A millirem (mrem) is 1/1000 of a rem.

(s) *Sanitary Survey* means 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, distributing safe drinking water.

(t) *Standard Sample* means the aliquot of finished drinking water that is examined for the presence of coliform bacteria.

(u) *Substantial Alterations to an Existing Water System* means:

(1) Any physical modification to the source, storage, collection, treatment or distribution facilities of the system which is determined by the Agency to have an actual or potential significant impact on the quality of water delivered to users of the system; and

(2) Any modification which will cause an existing system, which is not a public water system before such modification, to become a public water system.

The term excludes repair of, or the addition of valves, meters or similar appurtenances to a water collection, treatment or distribution facility. The term also excluded service connections.

(v) *Supplier of Water* means any person who owns or operates a public water system.

(w) *Treatment Technique Requirement* means a requirement of these Primary Drinking Water Regulations which specifies for a contaminant a specific treatment technique(s) known to the Administrator which leads to a reduction in the level of such a contaminant sufficient to comply with the requirements of these regulations.

(x) *Halogen* means one of the chemical elements of chlorine, bromine or iodine.

(y) *Trihalomethane (THM)* means 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.

(z) *Total Trihalomethanes (TTHM)* means the sum of the concentration in milligrams per liter of the trihalomethane compounds (trichloromethane [chloroform], dibromochloromethane, bromodichloromethane and tribromomethane (bromoform), rounded to two (2) significant figures.

(aa) *Maximum Total Trihalomethane Potential (MTP)* means the maximum concentration of total trihalomethanes produced in a given water containing a disinfectant residual after seven (7) days at a temperature of 25° or above.

(bb) *Disinfectant* means any oxidant, including but not limited to chlorine, chlorine dioxide, chloramines and ozone added to water in any part of the treatment or distribution process, that is intended to kill or inactivate pathogenic microorganisms.

(cc) *Best Available Technology or BAT* means the best technology, treatment techniques, or other means which the Administrator finds, after examination for efficacy under field conditions and not solely under laboratory conditions, are available (taking cost into consideration). For the purpose of setting MCLs for synthetic organic chemicals, any BAT must be at least as effective as granular activated carbon stripping.

(dd) *Point-of-entry treatment device* means a treatment device applied to the drinking water entering a house or building for the purpose of reducing contaminants in the drinking water distributed throughout the house or building.

(ee) *Point-of-use treatment device* means a treatment device applied to a single tap used for the purpose of reducing contaminants in drinking water at that one tap.

(ff) *Maximum contaminant level goal or MCLG* means the maximum level of a contaminant in drinking water at which no known or anticipated adverse effect on the health of persons would occur, and which allows an adequate margin of safety. Maximum contaminant level goals are non-enforceable health goals.

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

(hh) *Acute risk to human health* means that one or more contaminants have been identified or are reasonably suspected to be, in all or a portion of any drinking water supply, due to any cause, the exposure to which, the concentrations, determined or suspected, may cause adverse health effects in all or part of the population served by the drinking water supply so affected. It shall furthermore mean the conditions that exist upon failure or shutdown of disinfection equipment required by these regulations, for any reason, unless the water source or sources so affected are/or have proven to be free of biological contamination.

(ii) *Coagulation* means a process using coagulation chemicals and mixing by which colloidal and suspended materials are destabilized and agglomerated into flocs.

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

(kk) *Conventional filtration treatment* means a series of processes including coagulation, flocculation, sedimentation, and filtration resulting in substantial particulate removal.

(ll) *CT or CTcalc* means the product of "residual disinfectant concentration" (C) in mg/i determined before or at the first customer, and the corresponding "disinfectant contact time" (T) in minutes, i.e., "C" x "T". If a public water system applies disinfectants at more than one

point prior to the first customer, it must determine the CT of each disinfectant sequence before or at the first customer to determine the total percent inactivation or "total inactivation ratio."

In determining the total inactivation ratio, the public water system must determine the residual disinfectant concentration of each disinfection sequence and corresponding contact time before any subsequent disinfection application point (5). "CT 99.9" is the CT value required for 99.9 percent (3- log) inactivation of *Giardia lamblia* cysts. CT99.9 for a variety of disinfectants and conditions appear in Tables 1.1 - 1.6, 2.1, and 3.1 of §6141(b)(3)

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

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

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

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

(mm) *Diatomaceous earth filtration* means a process resulting in substantial particulate removal in which (1) a precoat cake of diatomaceous earth filter media is deposited on a support membrane (septum), and (2) while the water is filtered by passing through the cake on the septum, additional filter media known as body feed is continuously added to the feed water to maintain the permeability of the filter cake.

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

(oo) *Disinfectant contact time (T in CT calculations)* means the time in minutes that it takes for water to move from the point of disinfectant application or the previous point of disinfectant residual measurement to a point

before or at the point where residual disinfectant concentration (C) is measured. Where only one C is measured, T is the time in minutes that it takes for water to move from the point of disinfectant application to a point before or at where residual disinfectant concentration (C) is measured. Where more than one C is measured, T is (a) for the first measurement of C , the time in minutes that it takes for water to move from the first or only point of disinfectant application to a point before or at the point where the first C is measured and (b) for subsequent measurements of C , the time in minutes that it takes for water to move from the previous C measurement point to the C measurement point for which the particular T is being calculated. Disinfectant contact time in pipelines must be calculated based on *plug flow* by dividing the internal volume of the pipe by the maximum hourly flow rate through that pipe. Disinfectant contact time within mixing basins and storage reservoirs must be determined by tracer studies or an equivalent demonstration.

(pp) *Disinfection* means a process which inactivates pathogenic organisms in water by chemical oxidants or equivalent agents.

(qq) *Domestic or other non-distribution system plumbing problem* means a coliform contamination problem in a public water system with more than one service connection that is limited to the specific service connection from which the coliform-positive sample was taken.

(rr) *Filtration* means a process for removing particulate matter from water by passage through porous media.

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

(tt) *Ground water under the direct influence of surface water* means any water beneath the surface of the ground with (1) significant occurrence of insects or other microorganisms, algae, or large diameter pathogens such as *Giardia lamblia*, or (2) significant and relatively rapid shifts in water characteristics such as turbidity, temperature, conductivity, or pH which closely correlate to climatological or surface water conditions. Direct influence must be determined for individual sources in accordance

with criteria established by the Agency. The Agency's determination of direct influence may be based on site-specific measurements of water quality and/or documentation of well construction characteristics and geology with field evaluation.

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

(vv) *Point of disinfectant application* means the point where the disinfectant is applied and water downstream of that point is not subject to recontamination.

(ww) *Residual disinfectant concentration ("C" in CT calculation)* means the concentration of disinfectant measured in mg/i in a representative sample of water.

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

(yy) *Sedimentation* means a process for removal of solids before filtration by gravity or separation.

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

(aaa) *Surface water* means all water which is open to the atmosphere and subject to surface runoff.

(bbb) *System with a single service connection* means a system which supplies drinking water to consumers via a single service line.

(ccc) *Too numerous to count* means that the total number of bacterial colonies exceeds 200 on a 47-mm diameter membrane filter used for coliform detection.

(ddd) *Waterborne disease outbreak* means the significant occurrence of acute infectious illness, epidemiologically

associated with the ingestion of water from a public water system which is deficient in treatment, as determined by the Department of Public Health and Social Services or the Agency.

(eee) *Virus* means a virus of fecal origin which is infectious to humans by waterborne transmission.

§6103. Coverage. These Regulations shall apply to each public water system, unless the public water system meets all of the following conditions:

(a) Consists only of distribution and storage facilities (and does not have any collection and treatment facilities);

(b) Obtains all of its water, but is not owned by, a public water system to which such regulations apply;

(c) Does not sell water to any person; and

(d) Is not a carrier which conveys passengers in interstate commerce.

§6104. Siting Requirements and Plan Review. (a) Before any person may enter into a financial commitment for or initiate construction of a new public water system, or increase the capacity of an existing public water system, he shall notify the Administrator and, to the extent practicable, avoid locating part of or all of the new or expanded facility at a site which:

(1) Is subject to a significant risk from earthquakes, floods, fires or other disasters which could cause a breakdown of the public water system or a portion thereof; or

(2) Except for intake structures, is within the floodplain of a 100-year flood or is lower than any recorded high tide where appropriate records exist.

(b) No new water system or substantial alterations to an existing water system may be constructed or operated without approval issued by the Administrator:

(1)(A) The Administrator may require any or all of the following prior to giving his approval to proceed with construction: Drawings indicating extent and location of project; complete engineering plans and specifications of the new or altered system including system design capacity, schedule of materials and equipment to be installed, information on the quality of the raw water sources and proposed treatment, if any, and information demonstrating that the systems will be adequately operated and maintained. Two (2) complete sets of engineering drawings shall be submitted to the Administrator at approximately the 30 percent, 60 percent, and 90 percent completion stages of design for his approval prior to any notice to proceed to the next design stage, and the 100 percent design prior to commencement of construction.

(B) No modifications to the final plans and specifications shall be made unless two sets of drawings and specifications indicating the modifications are submitted to the Administrator for approval. Such submittal must be timely enough to permit full review and analysis with a minimum lead time of two (2) weeks. Approval shall be by stamp signed by the Administrator upon the design drawings.

(2) The Administrator may inspect any new or altered Public Water System during construction and prior to such water system being placed into operation to verify that construction conforms with the approved plans and specifications. The owner of the water system shall make arrangements as required by the Administrator to inspect the system or modification and shall notify the Administrator prior to placing the system into operation. No new or altered water system may be put into operation without a signed approval from the Administrator. As-built plans shall be submitted to the Administrator within sixty days after project acceptance.

(c) The Administrator shall not approve:

(1) Plans for any new public water system or substantial alteration to an existing public water

system until the Agency determines that the system, including any proposed treatment facility, has been designed to assure that the system will be capable of complying with these regulations.

(2) New or substantially altered water systems which do not conform with approved plans and specifications required in subsection (b) of this section.

(d) Request for review of the Administrator's decision will be provided for by procedures outlined in "Public Hearings on Variances, Variance Schedules and Exemptions," §6134 of these Regulations.

(e) The Administrator may require payment of compensation for plan reviews and inspections performed by the Agency.

§6105. Maximum Contaminant Levels for Inorganic Contaminants. (a) The maximum contaminant level for nitrate is applicable to both community water systems and non-community water systems except as provided by subsection (d) of this section. The levels for the other inorganic chemicals apply only to community water systems. Compliance with maximum contaminant levels for inorganic chemicals is calculated pursuant to §6112 of these regulations.

(b) The following are the maximum contaminant levels for inorganic chemicals other than Fluoride:

CONTAMINANTS	LEVELS, MILLIGRAMS PER LITER
Arsenic	0.05
Barium	1.0
Cadium	0.010
Chromium	0.05
Lead	0.05
Mercury	0.002
Nitrate (as N)	10.0
Selenium	0.01
Silver	0.05

(c) The maximum contaminant level for fluoride is 4.0 mg/l.

(d) At the discretion of the Administrator, nitrate levels not to exceed 20 mg/i may be allowed in a non-community water system if the supplier of water demonstrates to the satisfaction of the Administrator that:

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

(2) There will be continuous posting of the fact that nitrate levels exceed 10 mg/i and the potential health effects of exposure; and

(3) The Department of Public Health and Social Services, Government of Guam and GEPA will be notified annually of nitrate levels that exceed 10 mg/i; and

(4) No adverse health effects shall result.

§6106. Maximum Contaminant Levels for Organic Chemicals. The following are the maximum contaminant levels for organic chemicals. They apply to all community water systems, except that the maximum contaminant level for total trihalomethanes applies only to community water systems which serves a population of ten thousand (10,000) or more individuals and which add a disinfectant (oxidant) to the water in any part of the drinking water treatment process. Compliance with maximum contaminant levels for organic chemicals is calculated pursuant to §6113.

LEVELS,
MILLIGRAMS
PER LITER

(a) Chlorinated hydrocarbons:

Endrin (1, 2, 3, 4, 10, 10 hexachloro-6, 7-epoxy-1 4, 4a, 5, 6, 7, 8, 8a-Octahydro-i, 4-endo,-5, 8-di-methane naphthene).	0.0002
Lindane (1, 2, 3, 4, 5, 6-hexachloro-cyclo-hexane, 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

(b) Chlorophenoxy:

2, 4-D, (2, 4-Dichlorophenoxyacetic acid).	0.1
2, 4, 5-TP Silvex (2, 4, 5-Trichlorophenoxy-propionic acid).	

(c) Total THM (the sum of the concentrations of bromodichloromethane, dibromochloromethane, tribromomethane and trichloromethane).

(d) Volatile Organic Chemicals (VOCs)

(1) The following maximum contaminant levels (MCLs) for organic contaminants apply to community water systems and non-transient non community water systems

CASE NO.	MAXIMUM CONTAMINANT	CONTAMINANT LEVEL MILLIGRAM PER LITER
71-43-2	Benzene	0.005
75-01-4	Vinyl Chloride	0.002
56-23-3	Carbon Tetrachloride	0.005
107-06-2	1, 2-dichloroethane	0.005
79-01-6	Trichloroethylene	0.005
75-35-4	1, 1-dichloroethylene	0.007
71-55-6	1, 1, 1-Trichloroethane	0.20
106-46-7	para-Dichlorobenzene	0.075

§6107. Maximum Contaminant Levels for Turbidity.

The requirements in this section apply to unfiltered systems until December 31, 1991, unless the Administrator has determined prior to that date, that filtration is required. The requirements in this chapter apply to filtered systems until June 29, 1993. The requirements in this chapter apply to unfiltered systems that the Administrator has determined, must install filtration, until June 29, 1993, or until filtration is installed, whichever is later.

The maximum contaminant levels for turbidity are applicable to both community water systems and non-community water Systems using surface and ground water sources in whole or in part. The maximum contaminant levels for turbidity in drinking water, measured at a representative entry point(s) to the distribution system are:

(a) One Turbidity Unit (TU), as determined by a monthly average pursuant to Chapter 11 of these regulations except that five or fewer turbidity units may be allowed if the supplier of water can demonstrate to the Administrator that the higher turbidity does not do any of the following:

(1) Interfere with disinfection;

(2) Prevent maintenance of an effective disinfectant agent throughout the distribution system; or

(3) Interfere with microbiological determinations.

(b) Five turbidity units based on an average for two consecutive days pursuant to §6102 of these regulations.

§6108. Maximum Contaminant Levels (MCL's) for Microbiological Contaminants. (a) MCL is based on the presence or absence of total coliforms in a sample, rather than coliform density.

(b) Violation Determination.

(1) Violation that can be incurred under this regulations include "acute MCL violations", "monthly MCL violations", and "monitoring and reporting violations". The two types of violations are incurred through different violation processes, but both count similarly toward determination of the requirement to install filtration treatment under the Surface Water Treatment Rule.

(A) Acute MCL violation

(i) Case 1 - A routine sample is positive, the fecal coliform or E. Coli test is positive, and one or more of the three or four repeat samples is total coliform positive.

(ii). Case 2 - A routine sample is positive, the fecal coliform or E. Coli test is negative, and one or more of the three or four repeat samples is total coliform positive and, the total coliform-positive repeat sample is fecal coliform or E. coli positive.

(B) Monthly MCL Violation.

(i) Systems required to take less than 40 samples per month - If greater than one sample test total coliform, the system will

incur a monthly MCL violation. Both routine and repeat coliform samples count toward the total.

(ii) Systems required to take 40 or more samples per month - If greater than 5.0% of the samples taken in z month, tests total coliform-positive, the system will incur a monthly MCL violations. Both routine and repeat coliform samples count toward the total.

(C) Monitoring and Reporting Violation.

(i) Routine Sample

(a) Failure to take a routine sample.

(b) Failure to report the results of a total coliform tests for routine sample.

(c) Failure to report the results of fecal coliform/E. coli test for routine sample.

(ii) Repeat Sample

(a) Failure to take repeat sample.

(b) Failure to report the results of a total coliform test for repeat sample.

(c) Failure to report the results of a fecal coliform/E. coli test for a repeat sample.

(c) The owner of a public water system must determine compliance with the MCL for total coliform in subsections (a) and (b) of this section for each month in which it is required to monitor for total coliform.

(d) The Federal Administrator, pursuant to §1412 of the Federal SDWA, hereby identifies the following as the best technology, treatment techniques, or other means available for achieving compliance with the maximum

contaminant level for total coliform in subsections (a) and (b) of this section:

- (1) Protection of wells from contamination by coliform by appropriate placement and construction;
- (2) Maintenance of a disinfectant residual throughout the distribution system;
- (3) Proper maintenance of the distribution system including appropriate pipe replacement and repair procedures, main flushing programs, proper operation and maintenance of storage tanks and reservoirs, and continual maintenance of positive water pressure in all parts of the distribution system;
- (4) Filtration and/or disinfection of surface water, as described in §6139 or disinfection of ground water using strong oxidants such as chlorine, chlorine dioxide, or ozone; or
- (5) The development and implementation of a U.S.EPA approved Guam Wellhead Protection Program under §1423 of the Federal SDWA.

(e) Maximum Contaminant Level Goals (MCLGS) for Microbiological Contaminants.

(1) MCLGs for the following contaminants are as indicated:

Contaminants	MCLG
1) Giardia lamblia	Zero
2) Viruses	Zero
3) Legionella	Zero
4) Total Coliforms (including fecal coliforms and Escherichia coli)	Zero

§6109. Maximum Contaminant Level for Radionuclides. (a) Maximum contaminant levels for radium-226, radium-228, and gross alpha particle radioactivity in community water Systems are as follows:

- (1) Combined radium-226 and radium-228---5 pCi/l.

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

(b) Maximum contaminant levels for beta particle and photon radioactivity from man-made radionuclides in community water systems are as follows:

(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.

(2) Except for the radionuclides listed in Table A, the concentration of man-made radionuclides causing 4 millirem total body or organ dose equivalents shall be calculated on the basis of a 2 liter per day drinking water intake using the 168 hour data listed in "Maximum Permissible Body Burdens and Maximum Permissible Concentration of Radionuclides in Air or Water for Occupational Exposure," NBS Handbook 69 as amended August 1963, U.S. Department of Commerce. If two or more radionuclides are present, the sum of their annual dose equivalent to the total body or to any organ shall not exceed 4 millirem/year.

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DIV. II - WATER CONTROL

AVERAGE ANNUAL CONCENTRATIONS ASSUMED
TO PRODUCE A TOTAL BODY OR ORGAN DOSE OF
4 MREM /YEAR

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

§6110. Microbiological Contaminant Sampling and Analytical Requirements. (a) Coliform Sampling.

(1) Routine monitoring.

(A) The owner of a public water system must collect total coliform samples at sites which are representative of water throughout the distribution system according to a written sample siting plan. These plans are subject to review and revision by the Agency.

(B) The monitoring frequency for total coliforms for community water systems is based on the population served by the system, as follows:

TOTAL COLIFORM MONITORING FREQUENCY FOR COMMUNITY WATER SYSTEMS			
Population Served			Minimum number of samples per month
25	to	1,000*	1
1,001	to	2,500	2
2,501	to	3,300	3
3,301	to	4,100	4
4,101	to	4,900	5
4,901	to	5,800	6
5,801	to	6,700	7
6,701	to	7,500	8
7,501	to	8,500	9
8,501	to	12,900	10
12,901	to	17,200	15
17,201	to	21,500	20
21,501	to	25,000	25
25,001	to	33,000	30
33,001	to	41,000	40
41,001	to	50,000	50
50,001	to	59,000	60
59,001	to	70,000	70
70,001	to	83,000	80
83,001	to	96,000	90
96,001	to	130,000	100

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130,001	to	220,000	120
220,001	to	320,000	150
320,001	to	450,000	180
450,001	to	600,000	210
600,001	to	780,000	240
780,001	to	970,000	270
970,001	to	1,230,000	300
1,230,001	to	1,520,000	330
1,520,001	to	1,850,000	360
1,850,001	to	2,270,000	390
2,270,001	to	3,020,000	420
3,020,001	to	3,960,000	450
3,960,001 or more			480

* Include public water systems which have at least 15 service connections, but serve fewer than 25 persons.

If a community water system serving 25 to 1,000 persons has no history of total coliform contamination in its current configuration and a sanitary survey conducted in the past five years shows that the system is supplied solely by a protected groundwater source and is free of sanitary defects, the Administrator may reduce the monitoring frequency specified above, except that in no case may the Administrator reduce the monitoring frequency to less than one sample per quarter. The Administrator must approve the reduced monitoring frequency in writing.

(C) The monitoring frequency for total coliforms for non-community water systems are as follows:

(i) The owner of a non-community water system using only ground water (except ground water under the direct influence of surface water, as defined in chapter two) and serving 1,000 persons or fewer must monitor each calendar quarter that the system provides water to the public, except that the Administrator may reduce this monitoring frequency, in writing, if a sanitary survey shows that the system is free of sanitary defects. Beginning June 29, 1994 the Administrator cannot

reduce the monitoring frequency for a non-community water system using only ground water (except ground water under the direct influence of surface water, as defined in §6102) and serving 1,000 persons or fewer to less than once per year.

(ii) The owner of a noncommunity water system using only ground water (except ground water under the direct influence of surface water, as defined in chapter two) and serving more than 1,000 persons during any month must monitor at the same frequency as a like-sized community water system, as specified in subsection (a)(1) of this section, except that the Administrator may reduce this monitoring frequency, in writing, for any month the system serves 1,000 persons or fewer. The Administrator cannot reduce the monitoring frequency to less than once per year. For systems using direct ground water under the direct influence of surface water, subsection (a)(1) of this section applies.

(iii) The owner of noncommunity water system using surface water, in total or in part, must monitor at the same frequency as a like-sized community water system, as specified in subsection (a)(1) of this section, regardless of the number of persons it serves.

(iv) The owner of a noncommunity water system using ground water under direct influence of surface water, as defined in chapter two, must monitor at the same frequency as a like-sized community water system, as specified in subsection (a)(1) of this

section. The system must begin monitoring at this frequency beginning six months after the Administrator determines that the ground water is under the direct influence of surface water.

(D) The owner of a public water system must collect samples at regular time intervals throughout the month, except that the system which uses ground water (except ground water under the direct influence of surface water, as defined in §6102), and serves 4,900 persons or fewer, may collect all required samples on a single day if they are taken from different sites.

(E) The owner of a public water system that uses surface water or ground water under the direct influence of surface water, as defined in chapter two, and does not practice filtration in compliance with §6139 must collect at least one sample near the first service connection each day the turbidity level of the source water, measured as specified in §6139(d), exceeds 1 NTU. This sample must be analyzed for the presence of total coliforms. When one or more turbidity measurements in any day exceed one (1) NTU, the system must collect this coliform sample within 24 hours of the first exceedance, unless the Administrator determines that the system, for logistical reasons outside the system's control, cannot have the sample analyzed within 30 hours of collection. Sample results from this coliform monitoring must be included in determining compliance with the MCL for total coliforms in §6108.

(F) Special purpose samples, such as those taken to determine whether disinfection practices are sufficient for pipe placement, replacement, or repair, shall not be used to determine compliance with the MCL for total coliforms in §6108. Repeat samples taken pursuant to subsection (b) of this section are not considered special purpose samples, and must

be used to determine compliance with the MCL for total coliforms in §6108.

(2) Repeat Monitoring.

(A) If a routine sample is total coliform-positive, the owner of the public water system must collect a set of repeat samples within 24 hours of being notified of the positive result. A system which collects more than one routine sample per month must collect no fewer than three repeat samples for each total coliform-positive sample found. A system which collects one routine sample per month or fewer must collect no fewer than four repeat samples for each total coli form-positive sample found. The Administrator may extend the 24-hour limit on a case-by-case basis if the system has a logistical problem in collecting the repeat samples within 24 hours that is beyond its control. In the case of an extension, The Administrator must specify how much time the system has to collect the repeat samples.

(B) The owner of the system must collect at least one repeat sample from the sampling tap where the original total coliform-positive sample was taken, and at least one repeat sample at a tap within five service connections upstream and at least one repeat sample at a tap within five service connections downstream of the original sampling site. If a total coliform-positive sample is at the end of the distribution system, or one away from end of the distribution system, the Administrator may waive the requirement to collect at least one repeat sample upstream or downstream of the original sampling site.

(C) The owner of the system must collect all repeat samples on the same day, except that the Administrator may allow a system with a single service connection to collect the required set of repeat samples over a four-day period or to collect a larger volume repeat sample(s) in one or more sample containers of any size, as long as the total

volume collected is at least 400 ml (300 ml for systems which collect more than one routine sample per month).

(D) If one or more repeat samples in the set is total coliform-positive the owner of the public water system must collect an additional set of repeat samples in the manner specified in subsection (2)(a)-(c) of this section. The additional samples must be collected within 24 hours of being notified of the positive result, unless the Administrator extends the limit as provided in subsection (2)(a) of this section. The system must repeat this process until either total coliforms are not detected in one complete set of repeat samples or the system determines that the MCL for total coliforms in §6108 has been exceeded and notifies the Administrator.

(E) If a system of the supplier of water is collecting fewer than five routine samples per month and has one or more total coliform-positive samples and the Administrator does not invalidate the sample(s) under subsection (a)(3) of this section, it must collect at least five routine samples during the next month the system provides water to the public, except that the Administrator may waive this requirement if the conditions of subsection (a)(2) of this section are met. The Administrator may not waive the requirement for a system to collect repeat samples in subsection (a)(2) of this section.

(i) The Administrator may waive the requirement to collect five routine samples the next month the system of the supplier of water provides water to the public if the Administrator or an agent approved by the Administrator performs a site visit before the end of the next month the system of the supplier of water provides water to the public. Although a sanitary survey need not be performed, the site visit must be

sufficiently detailed to allow the Agency to determine whether additional monitoring and/or any corrective action is needed. The Administrator cannot approve an employee of the supplier of water to perform this site visit, even if the employee is an agent approved by the Administrator to perform sanitary surveys.

(ii) The Administrator may waive the requirement to collect five routine samples the next month the system of the supplier of water provides water to the public if the Administrator has determined why the sample was total coliform-positive and establishes that the system has corrected the problem before the end of the next month the system of the supplier of water serves water to the public. In this case, the Administrator must document this decision to waive the following month's additional monitoring requirement in writing, have it approved and signed by the supervisor of the agency who recommends such a decision, and make this document available to U.S.EPA and the public. The written documentation must describe the specific cause of the total coliform-positive sample and what action the system of the supplier of water has taken and/or will take to correct this problem. The Administrator cannot waive the requirement to collect five routine samples the next month the system of the supplier of water provides water to the public solely on the grounds that all repeat samples are total coliform-negative. Under this paragraph, a system must still take at least one routine sample before the end of the next month it

serves water to the public and use it to determine compliance with the MCL for total coliforms in chapter eight, unless the Administrator has determined that the supplier of water has corrected the contamination problem in the system before the supplier of water took the set of repeat samples in the system required in subsection (a)(2) of this section, and all repeat samples were total coliform-negative.

(F) After a supplier of water system collects a routine sample and before it learns the results of the analysis of that sample, if it collects another routine sample(s) from within five adjacent service connections of the initial sample, and the initial sample, after analysis, is found to contain total coliforms, then the supplier of water may count the subsequent sample(s) as a repeat sample of the system instead of as a routine sample.

(G) Results of all routine and repeat samples not invalidated by the Administrator must be included in determining compliance with the MCL for total coliforms in §6108.

(3) Invalidation of total coliform samples. A total coliform-positive sample invalidated under this subsection does not count towards meeting the minimum monitoring requirements of the chapter.

(A) The Administrator may invalidate a total coliform-positive sample only if the conditions of subsection (a)(3) (i), (ii) or (iii) of this section are met.

(i) The laboratory establishes that improper samples analysis caused the total coliform-positive result.

(ii) The Administrator, on the basis of the results of repeat samples collected as required by subsection

(a)(2)(1) through (4) of this chapter, determines that the total coliform-positive sample resulted from a domestic or other non-distribution system plumbing problem. The Administrator cannot invalidate a sample on the basis of repeat sample results unless all repeat sample(s) collected at the same tap as the original total coliform-positive sample are also total coliform-positive, and all repeat samples collected within five service connections of the original tap are total coliform-negative (e.g., an Administrator cannot invalidate a total coliform-positive sample on the basis of repeat samples if all the repeat samples are total coliform-negative, or if the public water has only one service connection).

(iii) The Administrator has substantial grounds to believe that a total coliform-positive result is due to a circumstance or condition which does not reflect water quality in the distribution system. In this case, the system must still collect all repeat samples required under subsection (a)(2)(1) through (4) of this section, and use them to determine compliance with the MCL for total coliforms in §6108. To invalidate a total coliform-positive sample under this paragraphs, the decision with the rationale for the decision must be documented in writing, and signed by the supervisor of the Agency who recommended the decision. The Administrator must make this document available to U.S.EPA and the public. The written documentation must state the specific cause of the total coliform- positive sample, and what action the system of a water supplier has taken, or will

take, to correct this problem. The Administrator may not invalidate a total coliform-positive sample solely on the grounds that all repeat samples are total coliform-negative.

(B) A laboratory must invalidate a total coliform sample (unless total coliforms are detected) if the sample produces a turbid culture in the absence of gas production and using an analytical method where gas formation is examined (e.g., the Multi-Tube Fermentation Technique), produces a turbid culture in the absence of an acid reaction in the Presence-Absence (P-A) Coliform Test, or exhibits confluent growth or produces colonies too numerous to count with an analytical method using a membrane filter (e.g., Membrane Filter Technique). If a laboratory invalidates a sample because of such interference, the system must collect another sample from the same location as the original sample within 24 hours of being notified of the interference problem, and have it analyzed for the presence of total coliforms. The system must continue to re-sample within 24 hours and have the samples analyzed until it obtains a valid result. The Administrator may waive the 24 hour time limit on a case-by-case basis.

(4) Sanitary surveys.

(A)(i) Water suppliers who do not collect five or more routine samples per month must undergo an initial sanitary survey by June 29, 1994 for community public systems and June 29, 1999 for non-community water systems. Thereafter, systems must undergo another sanitary survey every five years, except that non-community water systems using only protected and disinfected ground water, as defined by the Administrator, must undergo subsequent sanitary surveys at least every ten years after the

initial sanitary survey. The Administrator must review the results of each sanitary survey to determine whether the existing monitoring frequency is adequate and what additional measures, if any, the system needs to undertake to improve drinking water quality.

(ii) In conducting a sanitary survey of a system using ground water, information on sources of contamination within the delineated wellhead protection area that was collected in the course of developing and implementing the wellhead program should be considered instead of collecting new information, if the information was collected since the last time the system was subject to a sanitary survey.

(B) Sanitary surveys must be performed by the Agency or an agent approved by the Administrator. The system is responsible for ensuring that survey takes place.

**(5) Fecal Coliforms/*Escherichia coli* (*E. coli*);
Heterotrophic Bacteria (HPC) testing.**

(A) If any routine or repeat sample is total coliform-positive, the system must analyze that total coliform-positive culture medium to determine if fecal coliforms are present, except that the system may test for *E. coli* in lieu of fecal coliforms. If fecal coliforms or *E. coli* are present, the supplier of water must notify the Administrator by the end of the day when the supplier of water is notified of the test result, unless the supplier of water is notified of the result after the Agency's office is closed, in which case the supplier of water must notify the Administrator before the end of the next business day.

(B) If any repeat sample is fecal coliform-or *E. coli*-positive, or if a fecal

coliform-or E. coli-positive original sample is followed by a total coliform-positive sample is not invalidated, the system is in violation of the MCL for total coliforms. This is an acute violation of the MCL for total coliforms.

(C) The Administrator has the discretion to allow a public water system, on a case-by-case basis, to forgo fecal coliform or E. coli testing on a total coliform-positive sample if the system assumes that the total coliform-positive sample is fecal coliform-positive or E. coli-positive. Accordingly, the supplier of water must notify the Administrator as specified in subsection (a)(5)(A) of this section and the provisions of §6108(b) apply.

(D) State invalidation of the routine total coliform-positive sample invalidates subsequent fecal coliform or E. coli-positive results on the same sample.

(E) Heterotrophic bacteria can interfere with total coliform analysis. Therefore, if the total coliform samples produces: (1) a turbid culture in the absence of gas production using Multiple Tube Fermentation (MTF) Technique; (2) a turbid culture in the absence of an acid reaction using the Presence-Absence (P-A) Coliform Test; (3) confluent growth or a colony number that is "too numerous to count" using the Membrane Filter (MF) Technique, the sample is invalid (unless total coliforms are detected, in which case, the sample is valid). The system must collect another sample within 24 hours of being notified of the result from the same location as the original sample and have it analyzed for total coliforms. In such cases, GEPA recommends using media less prone to interference from heterotrophic bacteria for analyzing the replacement sample.

(6) Analytical methodology.

(A) The standard sample volume required for total coliform analysis, regardless of analytical method used, is 100 ml.

(B) Public water systems need only determine the presence or absence of total coliforms; a determination of total coliform density is not required.

(C) Public water systems must conduct total coliform analyses in accordance with one of the following analytical methods:

(i) Multi-Tube Fermentation (MTF) Technique, as set forth in Standard Methods for the Examination of Water and Wastewater, latest edition American Public Health Association et al., 16th edition. Method 908, 908A, and 908B - pp.870- 878, except that 10 fermentation tubes must be used; or Microbiological Methods for Monitoring the Environment, Water and Wastes, U.S.EPA, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio, 45268 (EPA-600/8-784)17, December 1978, available from ORD Publications, CERL, U.S.EPA Cincinnati, Ohio 45268), Part III, Section B.4.1 - 4.6.4, pp., 114-118 (Most Probable Number Method), except that 10 fermentation tubes must be used; or

(ii) Membrane Filter (MF) Technique, as set forth in Standard Methods for the Examination of Water and Wastewater, latest edition, a Public Health Association et al., 16th edition, Method 909, 909A and 909B-pp. 886-896; or Microbiological Methods for monitoring the environment, Water and Wastes, U.S.EPA, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268 (EPA- 600/8-78-017, December 1978, available from ORD Publications, CERL, U.S.EPA, Cincinnati, Ohio 45268), Part III, Section B(2.1)- (2.6), pp.108-112; or

(iii) Presence-Absence (P-A) Coliform Test, as set forth in Standard Methods for the Examination of Water and Wastewater, latest edition, American Public Health Association et al., 16th edition, Method 908E--pp. 882-886; or

(iv) Minimal Medium ONPG-MUG (MMO-MUG) Test, as set forth in the article "National Field Evaluation of a Defined Substrate Method for the Simultaneous Detection of Total Coliforms and Escherichia coli from Drinking Water Comparison with Presence-Absence Techniques" (Edberg et al.), Applied Environmental Microbiology, Volume 55, pp. 1003-1008, April 1989, (Note: The MMO-MUG Test is sometimes referred to as Autoanalysis Colilert System.)

(D) In lieu of the 10-Tube MTF Technique specified in subsection (a)(6) of this section, a public water system may use the MTF Technique using either five tubes (20-ml sample portions) or a single culture bottle containing the culture medium for the MTF Technique, i.e., lauryl tryptose broth (formulated as described in Standard Methods for the Examination of Water and Wastewater, latest edition, American Public Health Association et al., 16th edition, Method 908A--pp. 872), as long as a 100-ml water sample is used in the analysis.

(E) A public water system must conduct fecal coliform analysis in accordance with the following procedure: When the MTF Technique or Presence-Absence (P-A) Coliform Test is used to test for total coliforms, shake the lactose-positive presumptive tube or P-A bottle vigorously and transfer the growth with a sterile 3-mm loop or sterile applicator stick into brilliant green lactose bile broth and EC medium to determine the presence of total and fecal coliforms respectively. For U.S.EPA

approved analytical methods which use a membrane filter, remove the membrane containing the total coliform colonies from the substrate with a sterile forceps and carefully curl and insert the membrane into a tube of EC medium. The laboratory may first remove a small portion of selected colonies for verification.) Gently shake the inoculated EC tubes to insure adequate mixing and incubate in a waterbath at 44.5 ± 0.2 degrees C for 24 + hours. Gas production of any amount in the inner fermentation tube of the EC medium indicates a positive fecal coliform test. The preparation of EC medium is described in Standard Methods for the Examination of Water and Wastewater, American Public Health Association, 16th Edition, Method 908C-pp. 879, paragraph 1(a). Public water systems need only determine the presence or absence of fecal coliforms; a determination of fecal coliform density is not required.

(F) These incorporations by reference were approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and I CFR Part 51. Copies of the analytical methods cited in Standard Methods for the Examination of Water and Wastewater may be obtained from the American Public Health Association et al., 1015 Fifteenth Street, NW.; Washington, DC 20005. Copies of the methods set forth in Microbiological Methods for Monitoring the Environment, Water and Wastes may be obtained from ORD Publications, U.S. EPA, 26 W Martin Luther King Drive, Cincinnati, Ohio 45268. Copies of the MMO-MUG Test as set forth in the article "National Field Evaluation of a Defined Substrate Method for the Simultaneous Enumeration of Total Coliforms and Escherichia coli from Drinking Water. Comparison with the Standard Multiple Tube Fermentation Method" (Edberg et al.) may be obtained from the American Waster Works Association Research Foundation, 6666 West Quincy Avenue, Denver, CO 80235, Copies may be inspected at EPA's Drinking Water Docket; 401 M Street, SW.; Washington, DC 20460, or at

the Office of the Federal Register; 1100 L Street,
NW,; Room 8401; Washington, DC 20403.

(7) Response to violation.

(A) A public water system which has exceeded the MCL for total coliform in §6108 must report the violation to the Administrator no later than the end of the next business day after it learns of the violation, and notify the public in accordance with §6119 of these regulations.

(B) A public water system which has failed to comply with a coliform monitoring requirement, including the sanitary survey requirement, must report the monitoring violation to the Administrator within ten (10) days after the system discovers the violation, and notify the public in accordance with §6119 of these regulations.

(C) A public water system which has exceeded the MCL for total coliform in §6108 must report the violation to the Administrator at the end of the month or when the supplier realizes a positive sample result will cause him to exceed the 5% monthly limit and notify the public in accordance with §6109 of these regulations.

§6111. Turbidity Sampling and Analytical Requirements. (a) The requirements in this section apply to unfiltered systems until December 30, 1991, unless the Administrator has determined prior to that date, that filtration is required. The requirements in this section apply to filtered systems until June 29, 1993. The requirements in this section apply to unfiltered Systems that the Administrator has determined must install filtration, until June 29, 1993, or until filtration is installed, which ever is later.

Samples shall be taken by suppliers of water for both community and non-community water systems at a representative entry point(s) to the water distribution system at least once per day, for the purpose of making turbidity measurements to determine compliance with

§6107 of these regulations. If the Administrator determines that a reduced sampling frequency in a non-community system will not pose a risk to public health, the required sampling frequency can be reduced. The option of reducing the turbidity sampling frequency shall be permitted only in those public water systems that practices disinfectant in the distribution system, and in those cases where the Administrator has indicated in writing that no unreasonable risk to health existed under the circumstances of this option. The turbidity measurements shall be made by the Nephelometric Method in accordance with the recommendations set forth in "Standard Methods for Examination of Water and Wastewater", American Public Health Association, latest edition; or Methods of Chemical Analysis of Water and Wastes", EPA Environmental Monitoring and Support Laboratory, March 1979, Method 180.1 - Nephelometric Method. Calibration of the turbidimeter shall be made either by the use of a formazine standard as specified in the cited references or a styrene divinylbenzene polymer standard (Amco- AEPA-1 Polymer) commercially available from Amco Standards International, Inc., 230 Polaris Avenue, No.. C, Mountain View, California 94043.

(b) If the result of a turbidity analysis 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 repeat sample confirms that the maximum allowable limit has been exceeded, the supplier of water shall report to the Administrator within 48 hours. The repeat sample 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 samples taken on consecutive days exceeds 5 TU, the supplier of water shall report to the Administrator and notify the public as directed in §6118 and §6119 of these regulations.

(c) The requirements of this §6111 shall apply only to public water systems which use water obtained in whole or in part from surface sources.

(d) The Administrator has the authority to determine compliance or initiate enforcement action based upon analytical results or other information compiled by Agency sanctioned representatives and other agencies.

§6112. Inorganic Chemical Sampling and Analytical Requirements. (a) Analyses for the purpose of determining compliance with §6105, Maximum Contaminant Levels for Inorganic Chemicals, are required as follows:

(1) Analyses for all community water systems utilizing surface water sources shall be as a minimum, repeated at yearly intervals.

(b) Analyses for all community water systems utilizing only groundwater sources shall be, as a minimum, repeated at three-year intervals.

(c) For non-community water systems, whether supplied by surface or groundwater sources, analyses for nitrate shall be repeated at intervals determined by the Administrator.

(d) The Administrator has the authority to determine compliance or initiate enforcement action based upon analytical results or other information compiled by Agency sanction representatives and other agencies.

(b) If the result of the analysis made pursuant to subsection (a) of this section, indicates that the level of any contaminant listed in §6105 of these regulations exceeds the maximum contaminant level, the supplier of water shall report to the Administrator within seven (7) days and initiate three additional analysis at the same sampling point within one month.

(c) When the average of four analyses made pursuant to subsection (b) of this section, exceeds the maximum contaminant level, the supplier of water shall notify the Administrator pursuant to §6118 of these regulations and give notice to the public pursuant to §6119 of these regulations. Monitoring after public notification shall be at a frequency designated by the Administrator 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.

(d) The provisions of subsections (b) and (c) of this section, notwithstanding, compliance with the maximum contaminant level for nitrate shall be determined on the basis of the mean 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 mean of the two analyses exceeds in maximum contaminant level, the supplier of water shall report his findings to the Administrator pursuant to §6118, of these regulations, and shall notify the public pursuant to §6119 of these regulations.

(e) Analyses conducted to determine compliance with §6105 shall be made in accordance with the methods found in the following editions or the latest editions approved by the Federal Administrator.

(1) Arsenic-Method ¹206.2, Atomic Absorption furnace Technique; or Method ¹206.3, or Method ⁴D2972-78B, or Method ²301.A VII, pp. 159-162, or Method I-³1062-78, pp. 61-63, Atomic Absorption-gaseous Hydride; or Method ¹206.4, or Method ⁴D2092-78A, or Method ²404-A and 404-B(4), Spectrophotometric, Silver Diethyldithiocarbamate.

(2) Barium-Method ¹208.1, or Method ²301-A IV, pp. 152-155, Atomic Absorption-Direct Aspiration; or Method ¹208.2, Atomic Absorption Furnace Technique.

(3) Cadmium-Method ¹213.1, or Method ⁴3557-78A or B, Method ²301-A II or III, pp. 148-152, Atomic Absorption Direct Aspiration; or Method ¹213.2, Atomic Absorption Furnace Technique.

(4) Chromium-Method ¹218.1 or Method ⁴D-1678-77D, or Method ²301-A II or III, pp. 148-152, Atomic Absorption-Direct Aspiration; or Chromium Method ¹218.2, Atomic Absorption Furnace Technique.

(5) Lead-Method ¹230.1, or Method ⁴D-3559-78A or B., or Method ²301-A II or III, pp. 148-152, Atomic Absorption-Direct Aspiration; or Method ¹230.2, Atomic Absorption Furnace Technique.

(6) Mercury-Method ¹245.1, or Method ⁴D-3223-79, or Method ²301-A VI, pp. 156-159, Manual Cold Vapor Technique; or Method 245.2, Automated Cold Vapor Technique.

(7) Nitrate-Method ¹352-1, or Method ⁴D-992-71, or Method ²419-D, pp. 427-429, Colorimetric Brucine, or Method ¹353.C, Method ⁴D-3867-79B, or Method ²419-C, pp. 423-427, Spectrometric, Cadmium Reduction; Method ¹353.1, Automated Hydrazine Reduction; or Method 353.2, or Method ⁴D-3867-79A, or Method ²605, pp. 620-624, Automated Cadmium Reduction.

Selenium-Method ¹270.2, Atomic Absorption Furnace Techniques; or Method ¹270.3; or Method ³I-1667-78, pp. 237-239, or Method ⁴D3859-79, or Method ²301-A VII, pp. 159-162, Hydride Generation-Atomic Absorption Spectrophotometry.

(8) Silver-Method ¹272.1 or Method ²301-A II, pp. 148-151, Atomic Absorption-Direct Aspiration; or Method 272.2, Atomic Absorption Furnace Technique.

(9) Fluoride Method ¹340.1, Method ²414-A and 414-C, or Method ⁴D-1179-72A, Colorimetric Method with Preliminary Distillation; or Method ¹340.2, Method ²414-B, or Method ⁴D-1179-72B. Potentiometric Ion Selective Electrode; or method ³I-3325-78, pp. 365-367. Colorimetric Etiochrome Cyanine R Method; or Method ¹340.3, Method ²603. Automated Complexone Method (Alizarin Fluoride Blue), pp.614-616; or Industrial Method #12971W, Fluoride in Water and Wastewater, Technicon Industrial Systems, Tarrytown, NY 10591, Dec. 1792; or Industrial Method *380-75WE. Automated Electrode Method, Fluoride in Water and Wastewater. Technicon Industrial Systems, Tarrytown, NY, February 1976.

¹"Methods of Chemical Analysis of Water and Wastes,"EPA Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268 (EPA-600/4-79-020), March 1979. Available from ORD Publications, CERL, EPA, Cincinnati, Ohio 45268. For

approved analytical procedures for metals, the technique applicable to total metals must be used.

²“Standard Methods for the Examination of the Water and Wastewater, “Latest Edition, American Public Health Association, American Water Works Association, Water Pollution Control Federation, 1976.

³“Techniques of Water-Resources Investigation of the United States Geological Survey, Chapter A-1, “Methods for Determination of Inorganic Substances in Water and Fluvial Sediments,” Book 5, 1979, Stock #024-001-03177-9. Available from Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402.

⁴“Annual Book of ASTM Standards, part 31 Water, American Society for Testing and Materials, 1916, Race Street, Philadelphia, Pennsylvania 19103.”

⁵“Techniques of Water-Resources Investigation of the United States Geological Survey, Chapter A-3, Methods for Analysis of Organic Substances in Water.” Book 5, 1972, Stock #2401-1227. Available from Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402.

(f)(1) **Fluoride.** In to complying with subsections (a) through (e) of this section, systems monitoring for Fluoride must comply with requirements of these paragraphs.

(i) Where the system draws water from one source, the supplier of water shall take one sample at the entry point to the distribution system in accordance with the frequency requirements of §6102(a).

(ii) Where the system draws water from more than one source, the supplier of water must sample each source at the entry points to the distribution system in accordance with the frequency requirements of §6102(a).

(iii) If the system draws water from more than one source and sources are combined before the distribution system, the supplier of water must sample at an entry point to the distribution system during periods representative of the Maximum Contaminant Level occurring under normal operating conditions.

(2) The Administrator may alter the frequencies for fluoride monitoring as set out in subsection (a)(1) of this section to increase or decrease such frequency considering the following factors:

(i) Reported concentrations from previously required monitoring,

(ii) The degree of variation in reported concentrations, and

(iii) Other factors which may affect fluoride concentrations such as changes in pumping rates in ground water supplies or significant changes in the system configuration, operating procedures, source of water, and changes in stream flows.

(3) Monitoring may be decreased from the frequencies specified in subsection (f)(1) of this section upon application in writing by water systems if the Administrator determines the system is unlikely to exceed the MCL, considering the factors listed in subsection (f)(2) of this section. Such determination shall be provided to the Administrator. In no case shall monitoring be reduced to less than one sample every 10 years. For systems monitoring once every 10 years, the Administrator shall review the monitoring results every 10 years to determine whether more frequent monitoring is necessary.

(4) Analyses for fluoride under this section shall only be used for determining compliance if conducted by laboratories that have analyzed Performance Evaluation samples to within plus or minus 10% of the reference value at fluoride concentrations from 1.0 mg/l to 10.0 mg/l, within the last 12 months.

(5) Compliance with the MCL shall be determined based on each sampling point. If any sampling point is determined to be out of compliance, the system is deemed to be out of compliance.

(g) Special Monitoring for Sodium.

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

(2) The supplier of water shall report to the Administrator the results of the analyses for sodium within the first 10 days of the month following the month in which the sample results were received or within the first 10 days following the end of the required monitoring period as stipulated by the Administrator, whichever of these is first. If more than annual sampling is required the supplier shall report the average sodium concentration within 10 days of the month following the month in which the analytical results of the last sample used for the annual average was received.

(3) The supplier of water shall notify appropriate local public health officials of the sodium levels by written notice by direct mail within three months. A copy of each notice required to be provided by this paragraph shall be sent to the Administrator within 10 days of its issuance. The supplier of water is not required to notify appropriate local public health officials of the sodium levels where the Administrator provides such notices in lieu of the supplier.

(4) Analyses for sodium shall be performed by the flame photometric method in accordance with the procedures described in "Standard Methods for the Examination of Water and Wastewater," 14th Edition, pp. 250-253; or by Method 273.1, Atomic Absorption-Direct Aspiration or Method 273.2 Atomic Absorption-Graphite Furnace, in "Methods for Chemical Analysis of Water and Waste,": EMSL, Cincinnati, EPA, 1979; or by Method D1428-64(a) in Annual Book of ASTM Standards, Part 31, Water.

(h) **Special Monitoring for Corrosivity Characteristics.** The Administrator may designate any public water system to perform special monitoring for corrosivity characteristics.

(1) Supplies of water for community public water systems so designated shall collect samples from a representative entry point to the water distribution system for the purpose of analysis to determine the corrosivity characteristics of the water.

(A) The supplier of water so designated shall collect two samples per plant for analysis for each plant using surface water sources wholly or in part or more if required by the Administrator; one during January or February and one during July or August. The supplier of the water shall collect one sample per plant for analysis for each plant using ground water sources or more if required by the Administrator. The minimum number of samples required to be taken by the system shall be based on the number of treatment plants used by the system, except that multiple wells drawing raw water from a single aquifer

may, with the Administrator's approval be considered one treatment plant for determining the minimum number of samples.

(B) Determination of the corrosivity characteristics of the water shall include measurement of pH, calcium hardness, alkalinity, temperature, total dissolved solids total filterable residue), and calculation of the Langelier Index in accordance with subsection (h)(3) below. The determination of corrosivity characteristics shall only include one round of sampling (two samples per plant for surface water and one sample per plant for ground water sources). However, the Administrator may require more frequent monitoring as appropriate. In addition, the Administrator has the discretion to require monitoring for additional parameters which may indicate corrosivity characteristics, such as sulfates and chlorides. In certain cases, the Aggressive Index, as described in subsection (h)(3), can be used instead of the Langelier Index; the supplier of the water shall request in writing to the Administrator and the Administrator will make this determination.

(2) The supplier of water so designated shall report to the Administrator the results of the analyses for the corrosivity characteristics within the first 10 days of the month following the month in which the sample results were received. If more frequent sampling is required by the Administrator, the supplier of water can accumulate the data and shall report each value within 10 days of the month following the month in which the analytical results of the last sample was received.

(3) Analyses conducted to determine the corrosivity of the water shall be made in accordance to the following methods:

(A) Langelier Index-' Standard Methods for the Examination of Water & Wastewater," Latest Edition.

(B) Aggressive Index-"AWWA Standard for Asbestos-Cement Pipe, 4 in. through 24 in. for Water and Other Liquids," AWWA C400-77, Revision of C400-75, AWWA, Denver, Colorado.

(C) Total Filterable Residue-"Standard Methods for the Examination of Water and Wastewater," Latest Edition, or "Methods for Chemical Analysis of Water and Waste," Method 160.1.

(D) Temperature- "Standard Methods for the Examination of Water and Wastewater," Latest Edition.

(E) Calcium-EDTA Titrimetric Method "Standard Methods for the Examination of Water and Wastewater," 14th Edition, Method 306C, pp. 189-191; or "Annual Book of ASTM Standards," Method D1126-6713; "Methods for Chemical Analysis of Water and Wastes." Method 215.2.

(F) Alkalinity-Methyl Orange end point pH 4.5, "Standard Methods for the Examination of Water and Wastewater," Latest Edition; or "Annual Book of ASTM Standards," Method D1067-70B; or Methods for Chemical Analysis of Water and Wastes," Method 310.1.

(G) pH-"Standard Methods for the Examination of Water and Wastewater," Latest Edition; or "Methods for Chemical Analysis of Water and Wastes," Method 150.1; or "Annual Book of ASTM Standards," Method D1293-78A or B.

(H) Chloride-Potentiometric Method, "Standard Methods for Examination of Water and Wastewater," Latest Edition.

(I) Sulfate-Turbidimetric Method, "Methods for Chemical Analysis of Water and Wastes," pp. 277-278, EPA, Office of Technology Transfer, Washington, D.C. 20460, 1974, or

"Standard Methods for the Examination of Water and Wastewater," Latest Edition.

(4) Community water supply systems so designated shall identify whether the following construction materials are present in their distribution system and report to the Administrator:

- * Lead from piping, solder, caulking, interior lining of distribution mains, alloys and home plumbing.
- * Copper from piping and alloys, service lines, and home plumbing.
- * Galvanized piping, service lines, and home plumbing.
- * Ferrous piping materials such as cast iron and steel.
- * Asbestos cement pipe.

In addition, the Administrator may require identification and reporting of other materials of construction present in distribution systems that may contribute contaminants to the drinking water, such as:

- * Vinyl lined asbestos cement pipe.
- * Coal tar lined pipes and tanks.

(p) Prohibition on Use of Lead Pipes, Solder, and Flux.

(1) In general

(A) Prohibition. No non-lead-free materials are permitted in any pipe, solder, or flux, which is used in the installation or repair of:

(i) Any public water system, or

(ii) Any plumbing in a residential or non-residential facility providing water for human consumption which is connected to a public water system. Such plumbing shall be lead free as defined in subsection (i)(3) of this section. This paragraph shall not apply to lead joints necessary for the repair of cast iron pipes.

(B) Each public water system shall identify and provide notice to persons that may be affected by the lead contamination of their drinking water where such contamination results from either or both of the following:

(i) The lead content in the construction materials of the public water distribution system.

(ii) Corrosivity of the water supply sufficient to cause leaching of lead. Notice shall be provided notwithstanding the absence of a violation of any drinking water standard. The manner and form of notice are specified in §6119 of this part.

(2) **Enforcement of Prohibition.** The Administrator shall enforce the requirements of subsections (i)(1) and (i)(2) through the approval process for building permits or occupancy permits, or such other means of enforcement as the Administrator may determine to be appropriate.

(3) **Definition of Lead Free.** For purposes of this section, the term lead free means:

(A) When used with respect to solders and flux refers to solders and flux containing not more than 0.2 percent of lead, and

(B) When used with respect to pipes and pipe fittings refers to pipes and pipe fittings containing not more than 8.0 percent lead.

§6113. Organic Chemicals, Other Than Total Trihalomethanes, Sampling and Analytical Requirements. (a) For organic chemicals included in §6106(a) and (b): An analysis of substances for the purpose of determining compliance with §6106, shall be made as follows:

(1) For all community water systems utilizing surface water sources, samples analyzed shall be collected during the period of the year designated by the Administrator as the period when contamination by pesticides is most likely to occur. These analyses shall be repeated at intervals specified by the Administrator but in no event, less frequently than at three-year intervals.

(2) For community water systems utilizing only groundwater sources, analyses shall be completed on those systems specified by the Administrator.

(3) The Administrator has the authority to determine compliance or initiate enforcement action based upon analytical results and other information compiled by the Agency sanctioned representatives.

(b) If the result of an analysis made pursuant to subsection (a) of this section indicates that the level of any contaminant listed in §6106 (a) and (b), exceeds the maximum contaminant level, the supplier of water shall report to the Administrator within seven (7) days and initiates three additional analyses within one (1) month.

(c) When the average of four analyses made pursuant to subsection (b) of this section, rounded to the same number of significant figures as the maximum contaminant level for the substance in question, exceeds the maximum contaminant level, the supplier of water shall report to the Administrator pursuant to §6118 and give Notice to the public pursuant to §6119. Monitoring after public notification shall be at a frequency designated by the Administrator and shall continue until the maximum contaminant level has not been exceed in two

successive samples or until a monitoring schedule as a condition to a variance, exemption or enforcement action shall become effective.

(d) Analyses made to determine compliance with §6101(a) shall be made in accordance with "Methods for Organochlorine Pesticides and Chlorophenoxy Acid Herbicides in Drinking Water and Raw Source Water," available from ORD Publications, CERL, EPA, Cincinnati, Ohio 45268; or "Organochlorine Pesticides in Water," Annual Book of ASTM Standards, Part 31, Water, Method D3088-79; or Method 509-A, pp. 555-565; or "Gas Chromatographic Methods for Analysis of Organic Substances in Water, USGS, Book 5, Chapter A-3, pp. 24-39.

(e) Analysis made to determine compliance with the maximum contaminant level for endrin in subsection (a) shall be made in accordance with EPA Method 505, "Analysis of Organohalide Pesticides and Commercial Polychlorinated Biphenyl Products (Aroclors) in Water by Microextraction and Gas Chromatography and 508, "Determination of Chlorinated Pesticides in Water by Gas Chromatography With an Electron Capture Detector." The Methods are initiated three additional analyses within one (1) month.

(f) Analysis of the contaminants listed in §6104(d) (VOCs) for purposes of determining compliance with the maximum contaminant levels shall be conducted as follows:

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

(2) Surface water system shall sample at points in the distribution system representative of each source or at entry points to the distribution system after any application of treatment. Surface water systems must sample each source every three months except as provided in subsection (f)(8)(B) of this

section. Sampling must be conducted at the same location or a more representative location each quarter.

(3) If the system draws water from more than one source and the sources are combined before distribution, the system must sample at an entry point to the distribution system during periods of normal operating conditions.

(4) All community water systems and non-transient, non-community water systems serving more than 10,000 people shall analyze all distribution or entry-point samples, as appropriate, representing all source waters beginning no later than January 1, 1988. All community water systems and non-transient non-community water systems serving from 3,300 to 10,000 people shall analyze all distribution or entry-point samples, as required in this §6113(f) representing source waters no later than January 1, 1989. All other community and non-transient, non-community water systems shall analyze distribution or entry-point samples, as required in this §6113(f), representing all source waters beginning no later than January 1, 1991.

(5) The Administrator may require confirmation samples for positive or negative results. If a confirmation sample(s) is required by Administrator, then the sample result(s) should be averaged with the first sampling result and used for compliance determination in accordance with subsection (g) of this section. Administrator have discretion to delete results of obvious sampling errors from this calculation.

(6) Analysis for vinyl chloride is required only for ground water systems that have detected one or more of the following two-carbon organic compounds: Trichloroethylene, tetrachloroethylene, 1,2-dichloroethane, 1,1,1-trichloroethane, cis-1,2-dichloroethylene, trans-1,2-dichloroethylene, or 1,1 dichloroethylene. The analysis for vinyl chloride is required at each distribution or entry point at which one or more of the two-carbon organic compounds were found. If the first analysis does not detect vinyl chloride, the Administrator may reduce the

frequency of vinyl chloride monitoring to once every three years for that sample location or other sample locations which are more representative of the same source. Surface water systems may be required to analyze for vinyl chloride at the discretion of the Administrator.

(7) The Administrator or individual public water systems may choose to composite up to five samples from one or more public water systems. Compositing of samples is to be done in the laboratory by the procedures listed below. Samples must be analyzed within fourteen days of collection. If any organic contaminant listed in §6106 VOC is detected in the original composite sample a sample from each source that made up the composite sample must be reanalyzed individually within fourteen days from sampling. The sample for reanalysis cannot be the original sample but can be a duplicate sample. If duplicates of the original samples are not available, new samples must be taken from each source used in the original composite and analyzed for VOCs. Reanalysis must be accomplished within fourteen days of the second sample. To composite samples, the following procedure must be followed:

(i) Compositing samples prior to GC analysis.

(A) Add 5 ml or equal larger amount of each sample (up to 5 samples are allowed) to a 25 ml glass syringe. Special precautions must be made to maintain zero headspace in the syringe.

(B) The samples must be cooled at -4 C during this step to minimize volatilization losses.

(C) Mix well and draw out a 5-ml aliquot for analysis.

(D) Follow sample introduction, purging, and desorption steps described in the method.

(E) If less than five samples are used for compositing, a proportionately smaller syringe may be used.

(ii) Compositing samples prior to GC/MS analysis.

(A) Inject 5-ml or equal larger amounts of each aqueous sample (up to 5 samples are allowed) into a 25-ml purging device using the sample introduction technique described in the method.

(B) The total volume of the sample in the purging device must be 25 ml

(C) Purge and desorb as described in the method.

(8) The Administrator may reduce the monitoring frequency specified in subsection (g) of this section, as explained in this paragraph.

(i) The following monitoring frequency for groundwater systems is as follows:

(A) When VOCs are not detected in the first sample (or any subsequent samples that may be taken) and the system is not vulnerable as defined in subsection (f) of this section, monitoring may be reduced to one sample and must be repeated every 5 years.

(B) When VOCs are not detected in the first sample (or any subsequent sample that may be taken) and the system is vulnerable as defined in subsection (g) of this section:

(1) Monitoring (i.e., one sample) must be repeated every 3 years for systems >500 connections.

(2) Monitoring (i.e. one sample) must be repeated every 5 years for system <500 connections.

(C) If VOCs are detected in the first sample (or any subsequent sample that may be taken), regardless of vulnerability, monitoring must be repeated every 3 months, as required under subsection (f) of this section.

(ii) The repeat monitoring frequency for surface water systems is as follows:

(A) When VOCs are not detected in the first year of quarterly sampling (or any other subsequent sample that may be taken) and the system is not vulnerable as defined in subsection (f), monitoring is only required at Administrator discretion.

(B) When VOCs are not detected in the first year of quarterly sampling (or any other subsequent sample that may be taken) and the system is vulnerable as defined in subsection (f) of this section,

(1) Monitoring must be repeated every three years (for systems >500 connections.)

(2) Monitoring must be repeated every five years (for systems <500 connections.)

(C) When VOCs are detected in the first year of quarterly sampling (or any other subsequent sample that

may be taken), regardless of vulnerability, monitoring must be repeated every 3 months, as required under subsection (f) of this section.

(iii) Administrator may reduce the frequency of monitoring to once per year for a groundwater system or surface water system detecting VOCs as levels consistently less than the MCL for three consecutive years.

(iv) Vulnerability of each public water system shall be determined by the Administrator based upon an assessment of the following factors:

(A) Previous monitoring results.

(B) Number of persons served by public water system.

(C) Proximity of a smaller system to a larger system.

(D) Proximity to commercial or industrial use, disposal, or storage of Volatile Synthetic Organic Chemicals.

(E) Protection of the Water source.

(v) A system is deemed to be vulnerable for a period of three years after any positive measurement of one or more contaminants listed in either §6106 (d) or §6122(e) or §6122(a), except for trihalomethanes or other demonstrated disinfection by-products.

(9) Compliance with §6104(d) shall be determined based on the results of running annual average of quarterly sampling for each sampling location. If one locations average is greater than the MCL then the system shall be deemed to be out of compliance. If a public water system has a distribution system separable from other parts of the distribution system with no interconnections, only

that part of the system that exceeds any MCL as specified in §6106(d) will be deemed out of compliance. Administrator may reduce the public notice requirement to that portion of the system which is out of compliance. If any one sample result would cause the annual average to be exceeded, then the system shall be deemed to be out of compliance immediately. For systems that only take one sample per location because no VOCs were detected, compliance shall be based on that one sample.

(10) Analysis under this paragraph shall be conducted using the following EPA methods or their equivalent as approved by EPA. These methods are contained in "Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Source Water," September 1988, available from Environmental and Support Laboratory (EMSL), EPA, Cincinnati, OH 45268 or the Administrator.

(i) Method 502.1, "Volatile Halogenated Organic Chemicals in Water by Purge and Trap Gas Chromatography."

(ii) Method 503.1, Volatile Aromatic and Unsaturated Organic Compounds in Water by Purge and Trap Gas Chromatography."

(iii) Method 524.1, "Volatile Organic Compounds in Water by Purge and Trap Gas Chromatography/Mass Spectrometry."

(iv) Method 502.2, "Volatile Organic Compounds in Water by Purge and Trap Capillary Column Gas Chromatography with Photoionization and Electrolytic Conductivity Detectors in Series."

(v) Method 524.2, "Volatile Organic Compounds in Water by Purge and Trap Capillary Column Gas Chromatography/Mass Spectrometry."

(11) Analysis under this section shall only be conducted by laboratories that have received

conditional approval by GEPA or the Administrator according to the following conditions:

(i) To receive conditional approval to conduct analyses for benzene, vinyl chloride, carbon tetrachloride, 1,2-dichloroethane, trichloroethylene, 1,1 -dichloroethylene, 1,1,1 -trichloroethane and para-dichlorobenzene the laboratory must:

(A) Analyze Performance Evaluation samples which include these substances provided by EPA Environmental Monitoring and Support Laboratory or equivalent samples provided by the Administrator.

(B) Achieve the quantitative acceptance limits under paragraphs 13.7(II)(i)(C) and 13.7(11)(i)(C) of this section for at least six of the seven subject organic chemicals. Administrator may allow fewer than six of the seven.

(C) Achieve quantitative results on the analyses performed under 13.7(11)(i)(A) that are within +20 percent of the actual amount of the substances in the Performance Evaluation sample when the actual amount is greater than or equal to 0.01 mg/l.

(D) Achieve quantitative results on the analyses performed under 13.7(11)(i)(A) of this section that are within +40 percent of the actual amount of the substances in the Performance Evaluation sample when the active amount is less than 0.010 mg/l.

(E) Achieve a method detection limit of 0.0005 mg/l, according to the procedure in appendix B of part 136.

(F) Be currently approved by GEPA or Administrator for the analyses of trihalomethane under §6113.

(ii) To receive conditional approval for vinyl chloride, the laboratory must:

(A) Analyze Performance Evaluation samples provided by EPA Environmental Monitoring and Support Laboratory or equivalent samples provided by the Administrator.

(B) Achieve quantitative results on the analyses performed under subsection (f) of this section that are within +40 percent of the actual amount of vinyl chloride in the Performance Evaluation sample.

(C) Achieve a method detection limit of 0.0005 mg/l, according to the procedures in appendix B of part 136.

(D) Receive approval or be currently approved by GEPA or the Administrator under subsection (f) of this section.

(12) Administrator have the authority to allow the use of monitoring data collected after January 1, 1983, for purpose of monitoring compliance. If the data is consistent with the other requirements in this paragraph, Administrator may use that data to represent the initial monitoring if the system is determined by the Administrator not to be vulnerable under the requirements of this section. In addition, the results of GEPA Ground Water Supply Survey can be used in a similar manner for systems supplied by a single well.

(13) Administrator may increase required monitoring where necessary to detect variations within the system.

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

(15) Each approved laboratory must determine the method detection limit (MDL), as defined in appendix B to part 136, at which it is capable of detecting VOCs. The acceptable MDL is 0.0005 mg/l. This concentration is the detection level for purposes of subsections (f)(5), (f)(6), (f)(6) (f)(8) of this section.

(g) Total Trihalomethanes sampling, analytical, and other requirements. For other organic chemicals included in §6103(c).

(1) Community water systems which serve a population of 10,000 or more individuals and which add a disinfectant (oxidant) to the water in any part of the drinking water treatment process must have completed analysis for total trihalomethanes in accordance with this section and the following schedule:

(A) Systems serving 10,000 to 74,000 persons--- before November 30, 1982.

(B) Systems serving 75,000 or more individuals--within 30 days of implementation of these regulations.

For the purpose of this section, the minimum number of samples required to be taken by the system shall be based on the number of treatment plants used by the system, except that multiple wells drawing raw water from a single aquifer may, with the Administrator's approval, be considered one treatment plant for determining the minimum number of samples. All samples taken within an established frequency shall be collected within a 24-hour period.

(2)(A) For all community water systems utilizing either surface water or ground water or combination thereof, a minimum of four samples per plant shall be analyzed for total trihalomethanes at quarterly intervals. 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 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 Administrator within 30 days of the system's receipt of such results. Ml samples collected shall be used in the computation of the average, unless the analytical results are invalidated for technical reasons. Sampling and analyses shall be conducted in accordance with the methods listed in paragraph (e) of this section.

(B) Upon the written request of a community water system, the monitoring frequency required by paragraph (b)(1) of this section may be reduced by the Administrator to a minimum of one sample analyzed for TTHMs 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 Administrator that the data from at least 1 year of monitoring in accordance with paragraph (b)(1) of this section, which monitoring shall continue for at least 1 year before the frequency may be reduced again. At the option of the Administrator, a system's monitoring frequency may and should be increased above the minimum in those cases where it is necessary to detect variations of TTHM levels within the distribution system.

(3)(A) Upon written request to the Administrator, community water system utilizing only ground water sources may seek

to have the monitoring frequency required by subparagraph (1) of paragraph (1,) of this section reduced to a minimum of one sample for maximum TTHM potential per year for each treatment plant used by the system taken at a point in the distributions system reflecting maximum residence time of the water in the system. The system shall submit to the Administrator 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 Administrator that, based upon the data submitted by the system, the system has a maximum TTHM potential of less than 0.10 mg/i 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. The results of all analyses shall be reported to the Administrator within 30 days of the system's receipt of such results. All samples collected shall be used for determining whether the system must comply with the monitoring requirements of paragraph (b) of this section, unless the analytical results are invalidated for technical reasons. Sampling and analyses shall be conducted in accordance with the methods listed in paragraph (e) of this section.

(B) If at any time during which the reduced monitoring frequency prescribed under paragraph (C)(1) of this section applies, the results from any analysis taken by the system for maximum TTHM potential are equal to or greater than 0.10 mg/i, and such results are confirmed by at least one check sample taken promptly after such results are received, the system shall immediately begin monitoring in accordance with the requirements of paragraph (b) of this section and such monitoring shall continue for at least one 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 taken at a point in the distribution system reflecting maximum residence time of the water in the system for the purpose of determining whether the system must comply with the monitoring requirements of paragraph (b) of this section. At the option of the Administrator, monitoring frequencies may and should be increased above the minimum in those cases where this is necessary to detect variation of TTHM levels within the distribution system.

(4) Compliance with §6106(c) shall be determined based on a running annual average of quarterly samples collected by the system as prescribed in subparagraphs (1) or (2) of subsection (b) of this section. If the average of samples covering any 12 month period exceeds the Maximum Contaminant Level, the supplier of water shall report to the Administrator pursuant §6118 and notify the public pursuant to §6119. Monitoring after public notification shall be at a frequency designated by the Administrator and shall continue until a monitoring schedule as a condition to a variance, exemption of enforcement action shall become effective.

(5) Sampling and analysis made pursuant to this section shall be conducted by one of the following EPA approved methods:

(A) "The analysis of Trihalomethanes in Drinking Waters by the Purge and Trap Method," Method 501.1, EMSL, EPA, Cincinnati, Ohio. Samples for TTHM shall be dechlorinated upon collection to prevent further production of Trihalomethanes, according to the procedures described in the above two methods. Samples for maximum TTHM potential should not be dechlorinated, and should be held for seven days at 20 degrees centigrade prior to analysis.

(6) Before a community water system makes any significant modifications to its existing treatment process for the purpose of achieving compliance with

§6106(c), such system must submit and obtain the Administrator's approval 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 Territory- approved plan, at a minimum, a Territory approved plan shall require the system modifying its disinfection practice to:

(A) Evaluate the water system for sanitary defects and evaluate the source water of biological quality.

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

(C) Provide baseline water quality survey data of the distribution system. Such data should include the results from monitoring for coliform and fecal coliform bacteria, fecal streptococci, standard plate counts at 35 degrees centigrade and 20 degrees centigrade, phosphate, ammonia nitrogen and total organic carbon. Virus studies should be required where source waters are heavily contaminated with sewage effluent.

(D) Conduct additional monitoring to assure continued maintenance of optimal biological quality in finished water, for example, when chloramines are introduced as disinfectants or when pre-chlorination is being discontinued. Additional monitoring should also be required by the Administrator for chlorate, chlorite and chlorine dioxide when chlorine dioxide is used as a disinfectant. Standard plate count analyses should be required before and after any modifications,

(E) Demonstrate an active disinfectant residual throughout the

distribution system at all times during and after the modification.

This subsection (g)(6) shall become effective immediately.

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

§6114. Radionuclide Sampling and Analytical Requirements. (a) Analytical Methods for Radioactivity.

(1) The methods specified in "Interim Radiochemical Methodology for Drinking Water", Environmental Monitoring and Support Laboratory, EPA-600/4-75-008, U.S.EPA, Cincinnati, Ohio 45268, or those listed below or the latest methods approved by the Federal Administrator, are to be used to determine compliance with §9109(a) and §6109(b) (radioactivity) except in cases where alternate methods have been approved in accordance with §6115.

(A) Gross Alpha and Beta-Method 302 "Gross Alpha and Beta Radioactivity in Water "Standard Methods for the Examination of Water and Wastewater", Latest Edition, American Public Health Association, New York, N.Y., 1971.

(B) Total Radium-Method 304 "Radium in Water by Precipitation" Ibid.

(C) Radium 226- Method 305 "Radium 226 by Radon in Water" Ibid.

(D) Strontium 89, 90 - Method 303 "Total Strontium and Strontium-90 in Water Ibid.

(E) Tritium-Method 306 "Tritium in Water" Ibid.

(F) Cesium-134-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,
PA. (1975).

(G) Uranium-ASTM D-2907
"Microquantities of Uranium in Water by
Fluorometry," Ibid.

(2) When the identification and measurement of radionuclides other than those listed in subsection (a) is required, the following references are to be used or the latest methods approved by the Federal Administrator, except in cases where alternative methods have been approved in accordance with §6115.

(A) "Procedures for Radiochemical Analysis of Nuclear Reactor Aqueous solutions", H. L. Kriezer and S. Gold EPA-R4-73-014. U.S.EPA, Cincinnati, Ohio May 1973.

(B) HASL Procedure Manual", edited by John H. Harley, HASL 300, ERDA Health and Safety Laboratory, New York, N.Y. 1973.

(3) For the purpose of monitoring radioactivity concentrations in drinking water, the required sensitivity of the radion analysis is defined in terms of a detection limit. The detection limit shall be that concentration which can be counted with a precision of plus or minus 100 percent at the 95 percent confidence level (1.96 where is the standard deviation of the net counting rate of the sample).

(A) To determine compliance with §6109(a), determine compliance with §6109(b)),the detection limit shall not exceed 3 pCi/l.

(B) To determine compliance with §6109(b) the detection limits shall not exceed the concentrations listed in Table B.

Table B.

Detection Limits for Man-Made Beta Particle
and Photon Emitters

RADIONUCLIDE	DETECTION LIMIT
Tritium	1,000 pCi/l
Strontium-89	10 pCi/l
Strontium-90	2 pCi/l
Iodine-131	1 pCi/l
Cesium-134	10 pci/l
Gross Beta	4 pCi/l
Other Radionuclides	1/10 of the applicable limit

(4) To judge compliance with the maximum contaminant levels listed in §6109(a) and §6109(b), averages of data shall be used and shall be rounded to the same number of significant figures as the maximum contaminant level for the substance in question.

(5) The Administrator has the authority to determine compliance or initiate enforcement action based upon analytical results or other information compiled by the GEPA'S sanctioned representatives and other agencies.

(b) Monitoring frequency for radioactivity in community water systems.

(1) Monitoring requirements for gross alpha particle activity radium-226 and radium-228.

(A) Initial sampling to determine compliance with Section 9.1 must have begun before June 24, 1979 and the analysis shall have been completed before June 24, 1980. 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.

(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 where is the standard deviation of the net counting rate of the sample). In localities where radium-228 may be present in drinking water, the Administrator may require radium-226 and/or radium-228 analyses when the gross alpha particle activity exceeds 2 pCi/l.

(2) When the gross alpha particle activity exceeds 5 pCi/l, the same or an equivalent sample 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.

(B) For the initial analysis required by §6114(a), data acquired within one year prior to June 24, 1977 may be substituted at the discretion of the Administrator.

(C) Suppliers of water shall monitor at least once every four years following the procedure required by §6114(a). At the discretion of the Administrator when an annual record taken in conformance with §6114(b), has established that the average annual concentration is less than half of the maximum contaminant levels established by §6109(a), analysis of a single sample may be substituted for the quarterly sampling procedure required by §6114(b).

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

(2) A supplier of water shall monitor in conformance with §6114(a) within one year of the introduction of a new water source for a community water system. More frequent monitoring shall be conducted when ordered by the Administrator when changes in the distribution system or treatment processing occur which may increase the concentration of radioactivity in finished water.

(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 Administrator.

(4) Monitoring for compliance with §6109(a), after the initial period need not include radium-228 except when required by the Agency, provided, that the average annual concentration of radium-228 has been assayed at least once using the quarterly sampling procedure required by §6114(b).

(5) Supplies of water shall conduct annual monitoring of any community water system in which the radium-226 concentration exceeds 3 pCi/l, when ordered by the Administrator.

(D) If the average annual maximum contaminant level for gross alpha particle activity or total radium as set forth in §6109(a) is exceeded, the supplier of a community water system shall give notice to the Administrator pursuant to §6118, and notify the public as required by §6119. Monitoring at quarterly intervals shall be continued until the annual average concentration no longer exceeds the maximum contaminant level or until a monitor schedule as a condition to a variance, exemption or enforcement action shall become effective.

(2) Monitoring requirements for man-made radioactivity in community water systems.

(A) Systems using surface water sources and serving more than 100,000 persons and such other community shall be monitored for compliance with §6109(b) by analysis of a composite of four consecutive quarterly samples or analysis of four quarterly samples. Compliance with §6109(b) 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 Table A, provided, that if both radionuclides are present the sum of their annual dose equivalents to bone marrow shall not exceed 4 millirem/year.

(1) If the gross beta particle activity exceeds 50 pCi/l an analysis of the sample must be performed to identify the major radioactive constituents present and the appropriate organ and total body doses shall be calculated to determine compliance with §6109(b).

(2) Suppliers of water shall conduct additional monitoring as ordered by the Administrator, to determine the concentration of man-made radioactivity in principal watersheds designated by the Administrator.

(3) At the discretion of the Administrator, suppliers of water utilizing only ground water may be required to monitor for man-made radioactivity.

(B) For the initial analysis required by §6114.(b), data acquired within one year prior to June 24, 1977 may be substituted at the discretion of the Administrator.

(C) After the initial analyses required by §6114(b), suppliers of water shall monitor at least every four years following the procedure given in §6114(b).

(D) Before June 24, 1979 the supplier of any community water system designated by the Administrator utilizing waters contaminated by effluents from nuclear facilities shall initiate quarterly monitoring for gross beta particle and iodine-I 31 radioactivity and annual monitoring for strontium-90 and tritium.

(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 monthly samples. The former is recommended. If the gross beta particle activity in a sample exceeds 15 pCi/l, the source or an equivalent sample shall be analyzed for strontium-89 and cesium-134. If the gross beta particle activity exceeds 50 pCi/l, and 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 §6109(b).

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

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

(4) The Administrator may allow the substitution of environmental surveillance data taken in conjunction with a nuclear facility for direct monitoring of man-made radioactivity by the supplier of water where the Administrator determines such data is applicable to a particular community water system.

(E) If the average maximum contaminant level for man-made radioactivity set forth in §6109(b) is exceeded, the operator of a community water system shall give notice to the Administrator pursuant to §6118 and to the public as required by §6119. Monitoring at monthly intervals shall be continued until the concentration no longer exceeds the maximum contaminant level or until monitoring schedule as a condition to a variance, exemption or enforcement action shall become effective.

§6115. Alternative Analytical Techniques. With the written permission of the Administrator, concurred in by the Federal Administrator, an alternative analytical technique may be employed. An alternative technique shall be acceptable only if it is substantially equivalent to the prescribed test in both precision and accuracy as it relates to the determination of compliance with any maximum contaminant level. The use of the alternative analytical technique shall not decrease the frequency of monitoring required by these regulations..

§6116. Approved Laboratories. (a) For the purpose of determining compliance with §6110 through §6115, samples may be considered only if they have been analyzed by a laboratory approved by the Administrator, except that measurements for turbidity, free chlorine residual, temperature and pH may be performed by any person approved by the Administrator.

(b) Nothing in this regulation shall be construed to preclude the Administrator or any duly designated representative of the Administrator from taking samples or from using the results from such samples to determine compliance by a supplier of water with applicable requirements of these regulations.

§6117. Monitoring of Consecutive Public Water Systems. When a public water system supplies water to one or more other public water systems, the Administrator may modify the monitoring requirements imposed by this part to the extent the interconnection of the systems justifies treating them as a single system for monitoring purposes. Any modified monitoring shall be conducted pursuant to a schedule specified by the Administrator and concurred in by the Federal Administrator.

§6118. Reporting Requirements. (a) Except where a shorter period is specified in this part, the supplier of water shall report to the Administrator the results of any test measurement or analysis required by this part within:

(1) The first ten days following the month in which the result is received, or

(2) The first ten days following the end of the required monitoring period as stipulated by the Administrator, whichever of these is shortest.

(b) Except where a different reporting period is specified in this part, the supplier of water must report to the Administrator within 48 hours the failure to comply with any of Guam's Primary Drinking Water Regulation (including failure to comply with monitoring requirements) as set forth in this part.

(c) The supplier of water is not required to report analytical results to the Administrator in cases where the Agency laboratory performs the analysis.

(d) The water supply system, within ten days of completion of each public notification required pursuant to §6119, shall submit to the Administrator a representative copy of each type of notice distributed, published, posted, and/or made available to the persons served by the system and/or to the media.

(e) The water supply system shall submit to the Administrator within the time stated in the request copies of any records required to be maintained under §6120 hereof or copies of any documents then in existence which the Administrator is entitled to inspect pursuant to the authority of §57288 of Guam's Safe Drinking Water Act.

§6119. Public Notification. (a) If a community water system or non-transient, non-community water system fails to comply with an applicable maximum contaminant level established in these regulations, fails to comply with an applicable testing procedure established in these regulations, is granted variance or an exemption from an applicable maximum contaminant level, fails to comply with the requirements of any schedule prescribed pursuant to a variance or exemption, or fails to perform any

monitoring required under these regulations, the supplier of water shall notify persons served by the water system of the failure or grant by inclusion of a notice in the first set of water bills of the system issued after the failure or grant and in any event by written notice.

(b) Maximum Contaminant Level (MCL), treatment technique, and variance and exemption schedule violations. The owner or operator of a public water system which fails to comply with an applicable MCL or treatment technique established by this part or which fails to comply with the requirements of any schedule prescribed shall notify persons served by the system as follows:

(1) Except as provided in §6119(b) of this section, the owner or operator of a public water system must give notice,

(A) By publication in a daily newspaper of general circulation in the area served by the system as soon as possible, but in no case later than 14 days after the violation or failure. If the area served by a public water system is not served by a daily newspaper of general circulation, notice shall instead be given by publication in a weekly newspaper of general circulation serving the area; and

(B) By mail delivery (by direct mail or with water bill), or by hand delivery not later than 45-days after the violation or failure. The Administrator may waive mail or hand delivery if he determines that the owner or operator of the public water system in violation has corrected the violation or failure within the 45-day period. The Administrator must make the waiver in writing and within the 45 day period; and

(C) For violations of the MCLs of contaminants that may pose an acute risk to human health, by furnishing a copy of the notice to the radio and television stations serving the area served by the public water system as soon as possible but in no case later than 72 hours after the violation. The following violations are acute violations:

(1) Any violations specified by the Administrator as posing an acute risk to human health.

(2) Violation of the MCL for nitrate or nitrite as defined in §6105(b) and determined according to §6112(j).

(3) Violation of the MCL for total coliforms, when fecal coliforms or E. coli are present in the distribution system, as specified in §6108(a) of these regulations.

(4) Occurrence of a waterborne disease outbreak as defined in §6102 of these regulations in an unfiltered system subject to the requirements of Filtration and Disinfection in §6139 of these regulations December 30, 1991 (see §6139(a) of these regulations).

(2) Except as provided in §6119(b) of this section, following the initial notice given under §6119(a) a this section, the owner or operator of the public water system must give notice at least once every three months by mail delivery (by direct mail or with the water bill) or by hand delivery, for as long as the violation or failure exists.

(3)(A) In lieu of the requirements of paragraph 19.2(a)(1) of this section, the owner or operator of community water system in an area that is not served by a daily or weekly newspaper of general circulation must give notice within 14 days after the violation or failure by hand delivery or by continuous posting in conspicuous places within the area served by the system. Posting must continue for as long as the violation or failure exists. Notice by hand delivery must be repeated at least every three months for as long as the violation or failure exists.

(B) In lieu of the requirements of §6119(b)(1) and §6119(b)(2) of this section, the owner or operator of a non-community water system may give notice within 14 days after the violation or

failure by hand delivery or by continuous posting in conspicuous places within the area served by the system. Posting must continue for as long as violation or failure exist. Notice by hand delivery must be repeated at least every three months for as long as violation or failure exists.

(c)(1) Other violations, variances, exemptions. The owner or operator of public water system which fails to perform monitoring required by the Federal Safe Drinking Water Act and the Guam Primary Safe Drinking Water Regulations, fails to comply with a testing procedure established by this part, is subject to a variance granted by these regulations or is subject to an exemption under these regulations, shall notify persons served by the system as follows:

(2) Except as provided in §6119(c) or §6119.5 of this section, the owner or operator of a public water system must give notice within three months of the violation or granting of a variance or exemption by publication in a daily newspaper of general circulation in the area served by the system. If the area served by a public water system is not served by a daily newspaper of general circulation, notice shall instead be given by publication in a weekly news paper of general circulation serving the area.

(3) Except as provided in §6119(c)(4) or §6119(c)(5) of this section, following the initial notice given under §6119(c)(1) of this section, the owner or operator of the public water system must give notice at least once every three month by mail delivery (by direct mail or with the water bill) or by hand delivery, for as long as the violation exists. Repeat notice of the existence of a variance or exemption must be given every three months for as long as the variance or exemption remain in effect.

(4)(A) In lieu of the requirements of §6119(c)(1) and §6119(c)(2) of this section, the owner or operator of a community water system in an area that is not served by a daily or weekly newspaper of general circulation must give notice, within three months of the violation or granting of the variance or exemption, by hand delivery or by continuous posting in conspicuous places with

the area served by the system. Posting must continue for as long as the violation exists or a variance or exemption remains in effect. Notice by hand delivery must be repeated at least every three months for as long as the violation exists or a variance or exemption remains in effect.

(B) In lieu of the requirements of §6119(c)(1) and §6119(c)(2) of this section, the owner or operator of a non-community water system may give notice, within three months of the violations or the granting of a variance or exemption by hand delivery or by continuous posting in conspicuous places within the area served by the system. Posting must continue for as long as the violation exists, or a variance or exemption remains in effect. Notice by hand delivery must be repeated at least every three months for as long as the violation exists or a variance or exemption remains in effect.

(C) In lieu of the requirements of subsections (c)(1) and (c)(2) and (c)(3), of this section, the owner or operator of a public water system at the discretion of the Administrator may provide less frequent notice for minor monitoring violation as defined by the Administrator, if U.S.EPA has approved the Administrator's application for a program revision. Notice of such violations must be given no less frequently than annually.

(d) **Notice to new billing units.** The owner or operator of a community water system must give a copy for any outstanding violation of any maximum contaminant level, or any treatment technique or any variance or exemption schedule to all new billing units or new hookups prior to or at the time service begins.

(e) **General Content of Public Notice.** Each notice required by this chapter must provide a clear and readily understandable explanation of the violation, any potential adverse health effects, the population risk, the steps that the public water system is taking to correct such violation, the necessity for seeking alternative water supplies if any, and any preventive measures the consumer should take until the violation is corrected. Each notice shall be conspicuous and shall not contain unduly technical

language, unduly small print, or similar problems that frustrate the purpose of the notice. Each notice shall include the telephone number of the owner, operator, or designee of the public water system as a source of additional information concerning the notice. Where appropriate, the notice shall be multilingual.

(f) **Mandatory health effects language.** When providing the information on potential adverse health effects required by §6119(d) of this section in notices of this section in notices of violation of maximum contaminant levels or treatment technique requirements, or notices of the granting or the continued existence of exemptions or variances, notices of failure to comply with a variance or exemption schedule, the owner or operator of a public water system shall include language specified below for each contaminant. (If language for a particular contaminant is not specified below at the time notice is required, this paragraph does not apply.)

(1) **Trichloroethylene.** The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that trichloroethylene is a health concern at certain levels of exposure. This chemical is a common metal cleaning and dry cleaning fluid. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes.

Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. EPA has set forth enforceable standards for trichloroethylene at 0.005 parts per million (ppm) to reduce risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

(2) **Carbon tetrachloride.** The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that carbon tetrachloride is a health concern at certain levels of exposure. This chemical was once a popular

household cleaning fluid. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable standard for carbon tetrachloride at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

(3) **1,2-Dichloroethane.** The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 1,2-Dichloroethane is a health concern at certain level of exposure. This chemical is used as a cleaning fluids for fats, oil waxes, and resins. It generally gets into drinking water from improper waste disposal. This chemical has been shown to cause cancer in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Chemicals that cause cancer in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long period of time. EPA has set the enforceable drinking water standard for 1,2-Dichloroethane at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effect which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

(4) **Vinyl Chloride.** The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that vinyl chloride is a health concern at certain levels of exposure. This chemical is used in industry and is found in drinking water as a result of the breakdown of related solvents. The solvents are used as cleaners and degreaser of metals and generally get into drinking water by improper waste disposal. This chemical has been associated with significantly increased risks of cancer among certain industrial

workers who were exposed to relatively large amounts of this chemical during their working careers. This chemical has also been shown to cause cancer in laboratory animals when the animals are exposed at high levels over their lifetimes. Chemicals that cause increased risk of cancer among exposed industrial workers and in laboratory animals also may increase risk of cancer in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for vinyl chloride at 0.002 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in humans and laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

(5) **Benzene.** The United States Environmental Protection Agency (EPA) sets drinking water standard and has determined that benzene is a health concern at certain levels of exposure. This chemical is used as a solvent and degreaser of metals. It is also a major component of gasoline. Drinking water contamination generally results from leaking underground gasoline and petroleum tanks or improper waste disposal. This chemical has been associated with significantly increased risks of leukemia among certain industrial workers who were exposed to relatively large amounts of this chemical during their working careers. This chemical has also been shown to cause cancer in laboratory animals when the animals are exposed at high level over their lifetimes. Chemicals that cause increased risk of cancer among industrial workers and in laboratory animals also may increase the risk of cancer in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for benzene at 0.005 parts per million (ppm) to reduce the risk of cancer or other adverse health effects which have been observed in human and laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

(6) **1,1-Dichloroethylene.** The United States Environmental Protection Agency (EPA) sets drinking water standard and has determined that 1,1-dichloroethylene is a health concern at certain levels of

exposure. This chemical is used in industry and is found in drinking water as a result of the breakdown of related solvents. The solvents are used as cleaners and degreasers of metals and generally get into drinking water by improper waste disposal. This chemical has been shown to cause liver and kidney damage in laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes.

Chemicals which cause adverse effects in laboratory animals also may cause adverse health effects in human who are exposed at lower levels over long period of time. EPA has set the enforceable drinking water standard for 1,1-dichloroethylene at 0.007 parts per million (ppm) to reduce the risk of these adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

(7) **Para-dichlorobenzene.** The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that para-dichlorobenzene is a health concern at certain levels of exposure. This chemical is a component of deodorizer, moth balls, and pesticides. It generally gets into drinking water by improper waste disposal. This chemical has been shown to cause liver and kidney damage in laboratory animals such as rats and mice when the animals are exposed to high levels over their lifetimes. Chemicals which cause adverse effect in laboratory animals also may cause adverse health effect in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable standard for para-dichlorobenzene at 0.075 parts per million (ppm) to reduce the risk of these adverse health effects which have been observed in laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

(8) **1,1,1-Trichloroethane.** The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that 1,1,1-trichloroethane is a health concern at certain levels of exposure. This chemical is used as a cleaner and

degreaser of metals. It generally gets into drinking water by improper waste disposal. This chemical has been shown to damage the liver, nervous system, and circulatory system of laboratory animals such as rats and mice when the animals are exposed at high levels over their lifetimes. Some industrial workers who were exposed to relatively large amounts of this chemical during their working careers also suffered damage to the liver, nervous system, and circulatory system. Chemicals which cause adverse effect among exposed industrial workers and in laboratory animals also may cause adverse health effects in humans who are exposed at lower levels over long periods of time. EPA has set the enforceable drinking water standard for 1,1,1-trichloroethanes at 0.2 parts per million (ppm) to protect against the risk of these adverse health effects which have been observed in humans and laboratory animals. Drinking water which meets this standard is associated with little to none of this risk and should be considered safe.

(9) **Fluoride.** (Note - EPA is not specifying language that must be included in a public notice for a violation of the fluoride maximum contaminant level in this section because the requirements for compliance with secondary maximum contaminant level and public notification for fluoride of this part includes the necessary information. (See subsection (g) of this section.)

(10) Microbiological contaminants (for use when there is a violation of treatment technique requirements for filtration and disinfection of this part). "The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that the presence of microbiological contaminants are a health concern at certain levels of exposure. If water is inadequately treated, microbiological contaminants in that water may cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and any associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water, but also may be caused by a number of factors other than your drinking water. U.S. EPA has set enforceable requirements for treating drinking water to reduce the risk of these adverse

health effects. Treatment such as filtering and disinfecting the water removes or destroys microbiological contaminants. Drinking water which is treated to meet Guam EPA and U.S. EPA requirements is associated with little to none of this risk and should be considered safe.

(11) Total coliforms (To be used when there is a violation of paragraph 8.1(a), and not a violation of paragraph 8.1((b)). The United States Environmental Protection Agency (U.S.EPA) sets drinking water standards and has determined that the presence of total coliforms is a possible health concern. Total coliforms are common in the environment and are generally not harmful themselves. The presence of these bacteria in drinking water, however, generally is a result of a problem with water treatment or the pipes which distribute the water, and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and any associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water, but also may be caused by a number of factors other than your drinking water. U.S. EPA has set an enforceable drinking water standard for total coliforms to reduce the risk of these adverse health effects. Under this standard, no more than 5.0 percent of the samples collected during a month can contain these bacteria, except that systems collecting fewer than 40 samples per month that have one total coliform-positive sample per month are not violating the standard. Drinking water which meets the standard is usually not associated with a health risk from disease-causing bacteria and be considered safe.

(12) **Fecal coliforms/E. coli** (To be used when there is a violation of paragraph 8.1(b) or both paragraphs 8.1(a) and (b). The United States Environmental Protection Agency (U.S. EPA) sets drinking water standards and has determined that the presence of fecal coliforms or E. coli is a serious health concern. Fecal coliforms and E. coli are generally not harmful themselves, but their presence in drinking water is serious because they usually are associated with sewage or animal wastes. The presence of these

bacteria in drinking water is generally a result of a problem with water treatment or the pipes which distribute the water, and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water. U.S. EPA has set an enforceable drinking water standard for fecal coliforms and E. coli to reduce health effects. Under this standard all drinking water samples must be free of these bacteria. Drinking water which meets this standard is associated with little or none of this risk and should be considered safe. Guam EPA recommends that consumers take the following precautions: (To be inserted by the public water system according to instructions from Guam EPA).

(g) **Public Notices for fluoride.** Notice of violations of the maximum contaminant level for fluoride notices of variances and exemptions from the maximum contaminant level for fluoride, notices of failure to comply with variance and exemption schedules for the maximum contaminant level for fluoride shall consist of the public notice prescribed in paragraph 19.7.1, plus a description of any steps which the system is taking to come into compliance.

(1) Public Notice.

Dear User,

The U.S. Environmental Protection Agency requires that we send you this notice on the level of fluoride in your drinking water. The drinking water in your community has a fluoride concentration of 1 milligrams per liter (mg/l).

Federal regulations require that fluoride, which occurs naturally in your water supply, not exceed a concentration of 4.0 mg/l in drinking water. This is an enforceable standard called a Maximum Contaminant Level (MCL), and it has been established to protect public health. Exposure to drinking water levels above 4.0 mg/l for many years may result in cases of crippling

skeletal fluorosis, which is a serious bone disorder.

Federal law also requires that we notify you when monitoring indicates that the fluoride in your drinking water exceeds 2.0 mg/l. This is intended to alert families about dental problems that might affect children under nine years of age. The fluoride concentration of your water exceeds this federal guideline.

Fluoride in children's drinking water at levels of approximately 1 mg/l reduces the number of dental cavities. However; some children exposed to level of fluoride greater than about 2.0 mg/l may develop dental fluorosis. Dental fluorosis, in its moderate and severe forms, is a brown staining and/or pitting of the permanent teeth.

Because dental fluorosis occurs only when developing teeth (before they erupt from the gums) are exposed to elevated fluoride levels, households without children are not expected to be affected by this level of fluoride. Families with children under the age of nine are encourage to seek other sources of drinking water for their children to avoid the possibility of staining and pitting.

Your water supplier can lower the concentration of fluoride in your water so that you will still receive the benefits of cavity prevention while the possibility of stained and pitted teeth is minimized. Removal of fluoride may increase your water costs. Treatment systems are also commercially available for home use. Information on such systems is available at the address given below Low fluoride bottled drinking water that would meet all standard is also commercially available.

For further information, contact at your water system:

- *1. Public Water System (PWS) shall insert the compliance result which triggered notification under this part.
- *2. Public Water System (PWS) shall insert the name, and telephone number of a contact person at the PWS.

(h) **Public notification by Administrator.** The Administrator may give notice to the public required by this section on behalf of the owner or operator of the public water system, if the Administrator complies with the requirements of this section. However, the owner or operator of the public water system remain legally responsible for ensuring that the requirement of this section are met.

(i) **Public Notice requirement to lead.**

(1) Applicability of public notice requirement.

(A) Except as provided in subsection (i) of this section, by June 19, 1988, the owner or operator of each community water system and each non -transient, non-community water system shall issue notice to persons served by the system that may be affected by lead contamination of their drinking water. The Administrator may require subsequent notices. The owner or operator shall provide notice under this section even if there is no violation of the national primary drinking water regulation for lead.

(B) Notice under subsection (i) of this section is not required if the system demonstrates to the Administrator that the water system, including the residential and non-residential portions connected to the water system, are lead free. For the purpose of this paragraph, the term *lead free* when used with respect to solders and flux refers to solders and flux not more than 0.2 percent lead, and when used with respect to pipes and pipe fittings refers to pipes and pipe fittings containing not more than 8.0 percent lead.

(2) **Manner of notice.** Notice shall be given to persons served by the system either by (1) three newspaper notices (one for each of three consecutive months and the first no later than June 18, 1988); or (2) once by mail notice with the water bill or in a separate mailing by June 19, 1988. (3) Once by hand delivery by June 19, 1988. For non-transient non-community water system, notice may be given by continuous posting. If posting is used, the notice shall be posted in a conspicuous place in the area served by the system and start no later than June 19, 1988, and continue for three months.

(3) **General Content of notice.**

(A) Notices issued under this section shall provide a clear and readily understandable explanation of the potential sources of lead in drinking water, potential adverse health effects, reasonably available methods of mitigating known or potential lead content in drinking water, and the necessity for seeking alternative water supplies, if any. Use of the mandatory language in subsection (a)(4) of this section in the notice will be sufficient to explain potential adverse health effects.

(B) Each notice shall also include specific advice on how to determine if materials containing lead have been used in homes or the water distribution system and how to minimize exposure to water likely to contain high levels of lead. Each notice shall be conspicuous and shall not contain unduly technical language, unusually small print, or similar problems that frustrate the purpose of the notice. Each notice shall contain the telephone number of the owner, operator, or designee of the public water system as a source of additional information regarding the notice shall be multilingual.

NOTE: (Optional information): Each notice should advise persons served by the system to use only the cold water faucet for drinking and for use in cooking or preparing baby formula, and to run the water until it gets as cold as it is going to get before each use. If there has recently been major water use in the household, such as showering or bathing, flushing toilets, or doing laundry with cold water, flushing the pipes should take 5 to 30 seconds; if not,

flushing the pipes could take as long as several minutes. Each notice should also advise persons served by the system to check to see if lead pipes, solder, or flux have been used in plumbing that provides tap water and to ensure that new plumbing and plumbing repairs used lead-free materials.

The only way to be sure of the amount of lead in this household water is to have the water tested by a competent laboratory. Testing is especially important to apartment dwellers because flushing may not be effective in highrise building that have lead soldered central piping. As appropriate, the notice should provide information on testing.

(4) **Mandatory health effect information.** When providing the information in public notices required under subsection (i)(3) of this section on the potential adverse health effects of lead in drinking water, the owner or operator of the water system shall include the following specific language in the notice:

"The United States Environmental Protection Agency (EPA) sets drinking water standards and has determined that lead is a health concern at certain levels of exposure. There is currently a standard of 0.050 parts per million (ppm). Based on new health information, EPA is likely to lower this standard significantly.

"Part of the purpose of this notice is to inform you of the potential adverse health effects of lead. This is being done even though your water may not be in violation of the current standard.

"EPA and others are concerned about lead in drinking water. Too much lead in the human body can cause serious damage to the brain, kidneys, nervous system and red blood cells. The greatest risk, even with short-term exposure, is to young children and pregnant women.

"Lead levels in your drinking water are likely to be highest:

- * If your home or water system has lead pipes, or
- * If your home has copper pipes with lead solder, and

- * if the home is less than five years old, or
- * if you have soft or acidic water, or
- * if water sits in the pipes for several hours."

(5) **Notice by the Administrator.** The Administrator may give notice to the public required by this section on behalf of the owner or operator of the water system if the Administrator meets the requirements of §6119(i)(2) and the notice contains all the information specified in subsections (i)(c) (i)(4) of this section. However, the owner or operator of the water system remains legally responsible for ensuring that the requirements of this section are met.

(j) If a non-community water system fails to comply with an applicable MCL established in this regulation, fails to comply with an applicable testing procedure established in this regulation, is granted a variance or an exemption from the applicable MCL, fails to comply with the requirements of any schedule prescribed pursuant to a variance or exemption, or fails to perform any monitoring requirement pursuant to this regulation, the supplier of water shall give notices by continuous posting for such failure or granting of a variance or exemption to the persons served by the system as long as the failure or granting of a variance or exemption continues. The form and manner for such notices shall be prescribed by the Administrator and shall ensure that the public using the system is adequately informed of the failure or granting of the variance or exemption.

(1) Notices given pursuant to this section shall be written reasonably designed to inform fully the users of the system. The notice shall be conspicuous and shall not use unduly technical language, unduly small print or other methods which would frustrate the purpose of the notice. The notice shall disclose all material facts regarding the subject including the nature of the problem and, when appropriate, a clear statement that a primary drinking water regulation has been violated and any preventive measures that should be taken by the public. Where appropriate, or where designated by the Administrator, bilingual notice shall be given. Notices may include a balance explanation of the significance or seriousness to the

public health of the subject of the notice, a fair explanation of steps taken by the system to correct any problem and the results of any additional sampling.

(2) Notice to the public required by this chapter may be given by the Administrator on behalf of the supplier of water.

(3) In any instance in which notification by mail is required in this chapter but notification by newspaper or to radio or television stations is not required in this section, the Administrator may order the supplier of water to provide notification by newspaper and to radio and television stations when circumstances make more immediate or broader notice appropriate to protect the public health.

(k) Total coliforms (To be used when there is a violation of §6108(a)(1), and not a violation of §6108(a). The United States Environmental Protection Agency (U.S.EPA) sets drinking water standards and has determined that the presence of total coliforms is a possible health concern. Total coliforms are common in the environment and are generally not harmful themselves. The presence of these bacteria in drinking water, however, generally is a result of a problem with water treatment or the pipes which distribute the water, and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and any associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water, but also may be caused by a number of factors other than your drinking water. U.S. EPA has set an enforceable drinking water standard for total coliforms to reduce the risk of these adverse health effects. Under this standard, no more than 5.0 percent of the samples collected during a month can contain these bacteria, except that systems collecting fewer than 40 samples per month that have one total coliform-positive sample per month are not violating the standard. Drinking water which meets the standard is usually not associated with a health risk from disease-causing bacteria and be considered safe.

(l) Fecal coliforms/E. coli (To be used when there is a violation of paragraph 8.1(b) or both paragraphs 8.1(a) and (b). The United States Environmental Protection Agency

(U.S. EPA) sets drinking water standards and has determined that the presence of fecal coliforms or E. coli is a serious health concern. Fecal coliforms and E. coli are generally not harmful themselves, but their presence in drinking water is serious because they usually are associated with sewage or animal wastes. The presence of these bacteria in drinking water is generally a result of a problem with water treatment or the pipes which distribute the water, and indicates that the water may be contaminated with organisms that can cause disease. Disease symptoms may include diarrhea, cramps, nausea, and possibly jaundice, and associated headaches and fatigue. These symptoms, however, are not just associated with disease-causing organisms in drinking water. U.S. EPA has set an enforceable drinking water standard for fecal coliforms and E. coli to reduce health effects. Under this standard all drinking water samples must be free of these bacteria. Drinking water which meets this standard is associated with little or none of this risk and should be considered safe. Guam EPA recommends that consumers take the following precautions: (To be inserted by the public water system according to instructions from Guam EPA).

§6120. Record Maintenance. Any owner or operator of a public water system subject to the provisions of these regulations shall retain on its premises or at a convenient location near its premises the following records:

(a) Records of bacteriological analyses made pursuant to these Regulations shall be kept for not less than (5) years. Records of chemical analyses made pursuant to these regulations shall be kept for not less than ten (10) years. Actual laboratory reports may be kept, or data may be transferred to tabular summaries, provided that the following information is included:

(1) The date, place, and time of sampling, and the name of the person who collected the samples;

(2) Identification of the sample as to whether it was a routine distribution system sample, check sample, raw or process water sample or other special purpose sample;

(3) Date of analysis;

(4) Laboratory and person responsible for performing analysis;

(5) The analytical technique/method used;
and

(6) The results of the analysis.

(b) Records of action taken by the system to correct violations of primary drinking water regulations shall be kept for a period not less than three (3) years after the last action taken with respect to the particular violation involved.

(c) Copies of any written reports, summaries or communications relating to sanitary survey of the system conducted by the system itself, by a private consultant, or by any Territorial or Federal Agency, shall be kept for a period of not less than ten (10) years after completion of the sanitary survey involved.

(d) Records concerning a variance or exemption granted to the system shall be kept for a period ending not less than five (5) years following the expiration of such variance or exemption.

§6121. Reporting and Public Notification for Certain Unregulated Contaminants. (a) The requirements of this section only apply to the listed in §6122.

(b) The owner or operator of a community water system or non-transient, non-community water system who is required to monitor under §6123 shall send a copy of the results of such monitoring within 30 days of receipt and any public notice under subsection (d) of this section to the Administrator.

(c) The community water system or non-transient, non-community water system shall furnish the following information to the Administrator for each sample analyzed under §6122.

(1) Results of all analytical methods, including negatives;

(2) Name and address of the system that supplied the sample;

(3) Contaminant(s);

(4) Analytical method(s) used;

(5) Date of sample;

(6) Date of analysis;

(d) The owner or operator shall notify persons served by the system of the availability of the results of sampling conducted under §6122 by including a notice in the first set of water bills issued by the system after receipt of the results or written notice within three months. The notice shall identify a person and supply the telephone number to contact for information on the monitoring results.

§6122. Special Monitoring for Organic Chemicals. (a) All community and non-transient, non-community water system shall monitor for contaminants listed in §6122(e) of this section by date specified in Table 1:

TABLE 1 - MONITORING SCHEDULE DATE
BY SYSTEM SIZE

Number of persons served	Monitoring to begin no later than
Over 10,000	January 1, 1988
3,300 to 10,000	January 1, 1989
Less than 3,300	January 31, 1991

(b) Surface water system shall sample in the distribution system representative of each water source or at entry point to the distribution system after any application of treatment. The minimum number of samples if one year of quarterly samples per water source.

(c) Ground water systems shall sample at points of entry to the distribution system representative of each well after any application of treatment. The minimum number of samples is one sample per entry point to the distribution system.

(d) The Administrator may require confirmation samples for positive or negative results.

(e) Community water systems and non-transient, non-community water system shall monitor for the following contaminants except as provided in subsection (f) of this section:

- (1) Chloroform
- (2) Bromodichloromethane
- (3) Chlorodibromomethane
- (4) Bromoform
- (5) Trans-1, 2-Dichloroethylene
- (6) Chlorobenzene
- (7) m-Dichlorobenzene
- (8) Dichloromethane
- (9) cis-1, 2-Dichloroethylene
- (10) o-Dichlorobenzene
- (11) Dibromomethane
- (12) 1,1-Dichloropropane
- (13) Tetrachloroethylene
- (14) Toluene
- (15) p-Xylene
- (16) o-Xylene
- (17) m-Xylene
- (18) 1,1-Dichloroethane
- (19) 1,2-Dichloropropane
- (20) 1,1,2,2-Tetrachloroethane
- (21) Ethylbenzene
- (22) 1,3-Dichloropropane
- (23) Styrene
- (24) Chloromethane
- (25) Bromomethane
- (26) 1,2,3-Trichloropropane
- (27) 1,1,1,2-Tetrachloroethane
- (28) Chloroethane
- (29) 1,1,2-Trichloroethane
- (30) 2,2-Dichloropropane
- (31) o-Chlorotoluene
- (32) p-Chlorotoluene
- (33) Bromobenzene
- (34) 1,3-Dichloropropane
- (35) Ethylene Dibromide (EDB)
- (36) 1,2-Dibromo-3-chloropropane (DBCP)

(f) Community water system and non-transient non-community water Systems must monitor for EDB and DBCP only if the Administrator determines they vulnerable to contamination by either or both of these substances. For the purpose of this paragraph, a vulnerable

system is defined as a system which is potentially contaminated by EDB and DBCP, including surface water systems where these two compounds are applied, manufactured, stored, disposed of, or shipped upstream, and for ground water systems in areas where the compounds are applied, manufactured, stored, disposed of, or shipped within the groundwater recharge basin, or for groundwater systems that are in proximity to underground storage tanks that contain leaded gasoline.

(g) Analysis under this section shall be conducted using the recommended; EPA methods as follows, or their equivalent as determined by EPA: 502.1, "Volatile Halogenated Organic Compounds in Water by Purge and Trap Gas Chromatography", 503.1, "Volatile Aromatic and Unsaturated Organic Compounds in Water by Purge and Trap Gas Chromatography/Mass Spectrometry", 524.1, "Volatile Organic Compounds in Water by Purge and Trap Gas Chromatography/Mass Spectrometry", 524.2, Volatile Organic Compounds in Water by Purge and Trap Capillary Column Gas Chromatography Spectrometry", or 502.2, "Volatile Organic Compounds in Water by Purge and Trap Gas Chromatography with Photoionization and Electrolytic Conductivity Detectors in Series". These methods are contained in "Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Source Water," September 1986, available from Environmental Monitoring and Support Laboratory (EMSL), EPA, Cincinnati, Ohio 45268. Analysis of 1,2-dibromo-chloropropane (DBCP) and 1,2-dibromomethane (EDB), and be conducted by Method 504, "Measurement of 1,2-Dibromo-ethane, 1,2-Dibromo-3-chloropropane (DBCP) in Drinking Water by Microextraction and Gas Chromatography (GC)" September 1986, available from EMSL, Cincinnati, Ohio 45268.

(h) Analysis under this section shall only be conducted by laboratories approved under §6113(11). In addition to the requirements of §6113(f), each laboratory analyzing for EDB and DBCP must achieve a method detection limit for EDB and DBCP of 0.00002 mg/l, according to the procedures in Appendix B of Part 136.

(i) Public water system may use monitoring data collected any time after January 1, 1983 to meet the requirements for unregulated monitoring, provided that the monitoring program was consistent with the

requirement of this section. In addition, the results of EPA's Ground Water Survey may be used in a similar manner for systems supplied by a single well.

(j) Monitoring for the following compounds is required at the discretion of the Administrator:

- (1) 1,2,4-Trimethylbenzene
- (2) 1,2,4-Trichlorobenzene
- (3) 1,2,3-Trichlorobenzene
- (4) n-Propylbenzene
- (5) n-Butylbenzene
- (6) Naphthalene
- (7) Hexachlorobutadiene
- (8) 1,2,5-Trimethylbenzene
- (9) p-Isopropyltoluene
- (10) Isopropylbenzene
- (11) Tertbutylbenzene
- (12) Sec-butylbenzene
- (13) Fluorotrichloromethane
- (14) Dichlorodifluoromethane
- (15) Bromochloromethane.

(k) Instead of performing the monitoring required by this section, a community water system or non-transient, non-community water system serving fewer than 150 service connections may send a letter stating that its system is available for sampling. This letter must be sent to the administrator no later than January 1991. The system shall not send sample to the administrator; unless requested to do so by the administrator.

(1) All community and non-transient, non-community water systems shall repeat the monitoring required in this section no less frequently than every five years from the dates specified in §6122(a).

(m) Public water systems or the administrator may composite up to five samples when monitoring for substances in subsections (e) and (j) of this section.

§6123, Use of Point-of-Entry Treatment Devices and Other Non-Centralized Treatment Devices. (a) Criteria and procedures for public water systems using point-of-entry devices.

(1) Public water systems may use point-of-entry devices to comply with maximum contaminant levels only if they meet the requirements of this section.

(2) It is the responsibility of the public water system to operate and maintain the point-of-entry system.

(3) The public water system must develop and obtain Administrator's approval for a monitoring plan before point-of-entry devices are installed for compliance. Under the plan approved by the Administrator, point-of-entry devices must provide health protection equivalent to central water treatment. Equivalent means that the water would meet all Primary Drinking Water Regulations and would be of acceptable quality similar to water distributed by a well-operated central treatment plant. In addition to the VOC's, monitoring must include physical measurements and observations such as total flow treated and mechanical condition of the treatment equipment.

(4) Effective technology must be properly applied under a plan approved by the Administrator and the microbiological safety of the water must be maintained.

(A) The Administrator must require adequate certification of performance, field testing, and, if not included in the certification process, a rigorous engineering design review of the point-of-entry devices.

(B) The design and application of the point-of-entry devices must consider the tendency for increase in heterotrophic bacteria concentrations in water treated with activated carbon. It may be necessary to use frequent back-washing, post-contactor disinfection, and Heterotrophic Plate Count monitoring to ensure that the microbiological safety of the water is not compromised.

(5) All consumers shall be protected. Every building connected to the system must have a point-

of-entry device installed, maintained, and adequately monitored. The Administrator must be assured that every building is subject to treatment and monitoring and that the rights and responsibilities of the public water system customer convey with title upon sale of property.

(b) **Use of non-centralized treatment devices.** Public water systems shall not use bottled water or point-of-use devices to achieve compliance with an MCL. Bottled water or point-of-use devices may be used on a temporary basis to avoid an unreasonable risk to health.

§6124. Bottled Water and Point-of-use Devices. (a) The Administrator may require a public water system to use bottled water or point-of-use devices as a condition for granting an exemption from the requirements of §6106(d)(1) of this part.

(b) Public water system that use bottled water as a condition of obtaining an exemption from the requirement of §6106(d)(1) must meet the requirements set out in §6125(f) of this part.

(c) Public water system that uses point-of-use devices as a condition for receiving an exemption must meet the requirements set in §6125(g) of this part.

§6125. Variances and Exemptions From the Maximum Contaminant Levels for Inorganic and Organic Contaminants and the Treatment Technique for Lead and Copper. (a) The Federal Administrator, pursuant to §1415(a)(1)(A) of the Act, hereby identifies the following as the best technology, treatment techniques, or other means available for achieving compliance with the maximum contaminant levels for synthetic organic chemicals: Removal using packed tower aeration; removal using granular activated carbon (except for vinyl chloride).

(b) A Administrator shall require community water systems and non-transient, non-community water systems to install and/or use any treatment method identified in §6125(a) and (b) as a condition for granting a variance except as provided in subsection (d) of this section. If, after the system's installation of the treatment method, the system cannot meet the MCL, that system shall be eligible

for a variance under the provisions of §1415(a)(1)(A) of the Act..

(c) If a system can demonstrate through comprehensive engineering assessments, which may include pilot plant studies, that the treatment methods identified in subsection (a) of this chapter/or part would only achieve a diminish reduction in contaminants, the Administrator may issue a schedule of compliance that requires the system being granted the variance to examine other treatment methods as a condition of obtaining the variance.

(d) If the Administrator determines that a treatment method identified in subsection (c) of this section is technically feasible, the Administrator or primacy Administrator may require the system to install and/or use that treatment method in connection with a compliance schedule issued under the provisions of §1415(a)(1)(A) of the Act. The Administrator determination shall be based upon studies by the system and other relevant information.

(e) The Administrator may require a public water system to use bottled water, point-of-use devices, point-of-entry devices or other means as a condition of granting a variance or an exemption from the requirements of §6106(d) to avoid an unreasonable health risk.

(f) Public water systems that use bottled water as a condition for receiving a variance or an exemption from the requirements of §6106(d), must meet the following requirements specified in either subsection (f)(1) or subsection (f)(2) of this section:

(1) The Administrator or primacy Administrator must require and approve a monitoring program for bottled water. The public water system must develop and put in place a monitoring program that provides reasonable assurances that the bottled water meets all MCLs. The public water system must monitor a representative sample of the bottled water for all contaminants regulated under §6106(d)(1), the first quarter that it supplies the bottled water to the public, and annually thereafter. Results of the monitoring program shall be provided to the Administrator within 10 days following the end of the year.

(2) The public water system must receive a certification from the bottled water company that the bottled water supplied has been taken from an "approved source" as defined in 21 CFR 129.3(a); the bottled water company has conducted monitoring in accordance with 21 CFR 129.80(g) (1) through (3); and the bottled water does not exceed any MCLs or quality limits as set out in 21 CFR 102.35, 110, and 129. The public water system shall provide the certification to the Administrator the first quarter after it supplies bottled water and annually thereafter. At the Administrators option a public water system may satisfy the requirements of this subsection if an approved monitoring program is already in place in another Administrator.

(3) The public water system is fully responsible for the provision of sufficient quantities of bottled water to every person supplied by the public water system via door-to-door bottled water delivery.

(h) Public water systems that use point-of-use or point-of-entry devices as a condition for obtaining a variance or an exemption from NPDWRs must meet the following requirements.

(1) It is the responsibility of the public water system to operate and maintain the point-of-use and/or point-of-entry treatment system.

(2) The public water system must develop a monitoring plan and obtain the Administrator's approval for the plan before point-of-use devices are installed for compliance. This monitoring plan must provide health protection equivalent to monitoring plan for central water treatment.

(3) Effective technology must be properly applied under a plan approved by the Administrator and the micorbiological safety of the water must be maintained.

(4) The Administrator must require adequate certification of performance, field testing, and, if not included in the certification process, a rigorous engineering design review of the point-of-use devices.

(5) The design and application of the point-of-entry devices must consider the potential for increasing concentrations of heterotrophic bacteria in water treated with activated carbon. It may be necessary to use frequent backwashing, post-contactor disinfection, and Heterotrophic Plat Count monitoring to ensure that the microbiological safety of the water is not compromised.

(6) All consumers shall be protected. Every building connected to the system must have a point-of-use device installed, maintained, and adequately monitored. The Administrator must be assured that every building is subject to treatment and monitoring, and that the rights and responsibilities of the public water system customer convey with title upon sale of property.

§6126. Variance From the Maximum Contaminant Level for Fluoride. (a) The Federal Administrator, pursuant to §1415(a)(1)(A) of the Safe Drinking Water Act, hereby identifies the following as the best technology, treatment techniques or other means generally available for achieving compliance with Maximum Contaminant Level for fluoride.

(1) Activated alumina absorption centrally applied

(2) Reverse osmosis, centrally applied.

(b) The Administrator shall require a community water system to install and or use any treatment method identified in §6126(a) as a condition for granting a variance unless the Administrator determines that such treatment method identified in §6126(a) as condition for granting a variance is not available and effective for fluoride control for the system. A treatment method shall not be considered to be "available and effective" for a individual system if the treatment method would not be technically appropriate and technically feasible for that system. If upon application by a system for a variance, the Administrator shall determine that none of the treatment methods identified in §6126(a) are available and effective for the system, that system shall be entitled to a variance under the provision of Section 1415(a)(1)(A) of the Act. The Administrator's determination as to the availability and effectiveness of

such treatment method shall be based upon studies by the system and other relevant information. If a system submits information to demonstrate that a treatment method is not available and effective for fluoride control for that system, the Administrator shall make a finding whether this information supports a decision that such treatment method is not available and effective for that system before requiring installation and/or use of such treatment method.

(c) The Administrator shall issue a schedule of compliance that may require the system being granted the variance to examine the following treatment methods:

(1) To determine the probability that any of these methods will significantly reduce the level of fluoride for that system, and

(2) If such probability exists, to determine whether any listed method is technically feasible and economically reasonable, and that the fluoride reductions obtained will be commensurate with the costs incurred with the installation and use of treatment methods for that system:

- (A) Modification of lime softening
- (B) Alum coagulation
- (C) Electrodialysis
- (D) Anion exchange resins
- (E) Well field management
- (F) Alternate source
- (G) Regionalization

(d) If the Administrator determines a treatment method identified in §6126(c) or other treatment method is technically feasible, economically reasonable, and will achieve fluoride reductions commensurate with the costs incurred with the installation and/or use of such treatment method for the system the Administrator shall require the system to install and/or use that treatment method in connection with a compliance schedule issued. The Administrator's determination shall be based upon studies by the system and other relevant information.

§6127. Requirements for a Variance. (a) The Administrator may grant one or more variances to any

public water system from any requirement with respect to the maximum contaminant level, except that variances from the MCL for total coliforms may not be granted upon finding that:

(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 of such drinking water regulations despite application of the best technology, treatment techniques, or other means, which the Federal Administrator finds are generally available (taking costs into consideration); and

(2) The granting of a variance will omit result in an unreasonable risk to the health of persons served by the system.

(b) The Administrator may grant one or more variances to any public water system from any requirement of a specified treatment technique, except that the variance from any treatment requirements of filtration and disinfection of this regulation may not be granted, unless it is found that the public water system applying for the variance has demonstrated that such treatment technique is not necessary to protect the health of persons because of the nature of the raw water source of such system.

§6128. Variance Request. A supplier of water may request the granting of a variance pursuant to these regulations for a public water system by submitting a request for a variance in writing to the Administrator. Suppliers of water may submit a joint request for variances when they seek similar variances under similar circumstances. Any written request for a variance or variances shall include the following information:

(a) The nature and duration of variance requested.

(b) Relevant analytical results of water quality sampling of the systems including results of relevant test conducted pursuant to the requirements of these primary drinking water regulations.

(c) For any request made under §6127(a).

(1) Explanation in full and evidence of the best available treatment technology and techniques.

(2) Economic and legal factors relevant to ability to comply.

(3) Analytical results of raw water quality relevant to the variance request.

(4) 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 or improvement of existing raw water source will be completed.

(B) Date of initiation of the connection of the alternative raw water source or improvement of existing raw water source.

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

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

(6) A plan for additional interim control measures during the effective period of variance.

(d) For any request made under §6127(b), a statement that the system will perform monitoring and other reasonable requirements prescribed by the Administrator as a condition to the variance.

(e) Other information, if any; believed to be pertinent by the applicant.

(f) Such other information as the Administrator may require.

§6129. Consideration of Variance Request. (a) In his consideration of whether the public water system is unable to comply with a contaminant level required by the primary drinking water regulations because of the nature of the raw water source, the Administrator shall consider such factors as the following:

(1) The availability and effectiveness of treatment methods for the contaminant for which the variance is requested.

(2) Cost and other economic considerations such as implementing treatment, improving the quality of the source water or using an alternate source.

(b) In his consideration of whether a public water system should be granted a variance to a required treatment technique because such treatment is unnecessary to protect the public health, the Administrator shall consider such factors as the following:

(1) Quality of the water source including water quality data and pertinent sources of pollution.

(2) Source protection measures employed by the public water system.

(c) The Administrator shall act on any variance request submitted pursuant to Chapter Twenty-Nine within 90 days of receipt of the request.

(d) A variance may only be issued to a system after the system's application of the best technology, treatment or other means, which the Administrator finds are available (taking cost into consideration).

§6130. Requirements for an Exemption. "The Administrator may exempt any public water system from any requirement with respect to a maximum contaminant level (MCL), except that exemption from MCL for Total Coliform or any treatment technique requirement may not be granted upon finding that:"

(a) Due to compelling factors (which may include economic factor), the public water system is unable to

comply with such contaminant level or treatment technique requirement;

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

(c) The granting of the exemption will not result in an unreasonable risk to health.

§6131. Exemption Request. More than one supplier of water may request the granting of an exemption pursuant to these regulations for a public water system by submitting a joint request for exemption when they seek similar exemptions or exemptions such request shall include the following information.

(a) The nature and duration of exemption requested.

(b) Relevant analytical results of water quality sampling of the system.

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

(d) Other information, if any, believed by the applicant to be pertinent to the application.

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

(f) Such other information as the Administrator may require.

§6132. Consideration of an Exemption Request (a) In his consideration of whether the public water system is unable to comply due to compelling factors, the Administrator shall consider such factors as the following:

(1) Construction, installation, or modification of treatment equipment or systems.

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

(3) Economic feasibility of compliance.

(b) The Administrator shall act on any exemption request submitted pursuant to §6131 within 90 days of receipt of the request.

§6133. Disposition of a Request for Variance or Exemption. (a) If the Administrator decides to deny the application for a variance or an exemption, he shall notify the applicant of his intention to issue a denial. 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 Administrator. The Administrator 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.

(b) If the Administrator proposed to grant a variance or exemption request submitted pursuant to §6128 or §6131, respectively, he shall notify the applicant of his decision in writing. Such notice shall identify the variance or exemption, the facility covered, and shall specify, as appropriate, the period of time for which the variance will be effective or the termination date of the exemption.

(1) For the type of variance specified in Section 28.1 or for an exemption, such notice shall also provide that the variance or exemption will be terminated when the system comes into compliance with the applicable regulation, and may be terminated upon a finding by the Administrator that the system has failed to comply with any requirements of a final schedule issued pursuant to §6134.

(2) For the type of variance specified in §6127(a) such notice shall provide that the variance may be terminated at any time upon a finding that the nature of the raw water source is such that the specified treatment technique for which the variance was granted is necessary to protect the health of persons or upon a finding that the public water system has failed to comply with monitoring and other requirements prescribed by the Administrator as a condition to the granting of the variance.

(c) When proposing to issue a variance specified in §6127(a), or an exemption or within one (1) year after issuance of such a variance or exemption, the Administrator shall propose a schedule for:

(1) Compliance (including increments of progress) by the public water system with each contaminant level requirement covered by the variance or each contaminant level and treatment technique covered by the exemption; and

(2) Implementation by the public water system of such control measures as the Administrator may require for each contaminant covered by the exemption or variance; and

(3) Implementation of additional interim control measures during the period of variance including interim treatment techniques, methods and equipment, and dates by which steps toward meeting the interim control measures are to be met.

(4) The proposed schedule for compliance shall specify dates by which steps towards compliance are to be taken, including at the minimum, where applicable:

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

(B) Date of initiation of the connection for the alternative raw water source or improvement of the existing raw water source.

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

(d) The exemption schedule shall be prescribed by the Administrator at the time the exemption is granted, subsequent to provision opportunity for hearing pursuant to §6134.

(e) The proposed schedule for compliance specified in §6127(a) 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 Administrator.

(f) The schedule shall be prescribed by the Administrator within one year after the granting of the variance or exemption, subsequent to provision of opportunity for hearing pursuant to §6134.

§6134. Public Hearing of Variances, Variance Schedules and Exemption Schedules. (a) Before a variance, variance schedule, or exemption schedule proposed by the Administrator pursuant to §6133 may take effect, the Agency shall provide notice and opportunity for public hearing before the Board on the variance, variance schedule or exemption schedule. A notice given pursuant to the preceding sentence may cover the granting of more than one variance, variance schedule or exemption schedule and a hearing held pursuant to such notice shall include each of the variances, variance schedules or exemption schedules covered by the notice. Such notice shall include a summary of the proposed variance, variance schedule or exemption schedule, and shall inform interested persons that they may submit written comments on the proposed variance, variance schedule or exemption schedule as specified in the notice, and that they may also request a public hearing on the proposed variance, variance schedule or exemption schedule.

(b) Public notice of an opportunity for hearing on a variance, variance schedule exemption shall be circulated in a manner designed to inform interested and potentially interested persons of the proposed variance, variance schedule or exemption schedule, and shall include at least the following:

(1) Posting of a notice in the principal post office of each municipality or area served by the public water system, and publishing of a notice in a newspaper or newspapers of general circulation in the area served by the public water system; and

(2) Mailing of a notice to other appropriate Territorial Agencies at the Administrator's discretion.

(3) Such notice shall include variance and schedule and shall inform interested persons that they may request a public hearing on the proposed variance and schedule.

(c) Requests for hearing may be submitted by any interested person. Frivolous or insubstantial requests for hearing may be denied by the Administrator. Request must be submitted to the Administrator within thirty (30) days after issuance of the public notices provided for in §6134(b), such requests shall include the following information.

(1) The name, address and telephone number of the individual, organization or other entity requesting a hearing;

(2) A brief statement of the interest of the person making the request in the proposed variance, variance schedule or exemption schedule and of information that the requesting person intends to submit at such hearing;

(3) The signature of the individual making the request, or, if the request is made on behalf of an organization or other entity, the signature of a responsible official of the organization or other entity.

(d) The Administrator shall give notice in the manner set forth in paragraph 35.2 of this Chapter of any hearing to be held pursuant to a request submitted by an interested person or on his own motion. Notice of the shall also be sent to the persons requesting the hearing, if any. Notice of the hearing shall include a statement of the purpose of the hearing, information regarding the time and location for the hearing, and the address and telephone number of an office at which interested persons may obtain further information concerning the hearing. Notice of hearing shall be given not less than fifteen (15) days prior to the time scheduled for the hearing..

(e) The hearing shall be conducted before the Board of Directors of the Guam Environmental Protection Agency. The hearing shall be conducted by the Board Chairman or his authorized designee in an orderly and expeditious manner. The Board shall have authority to call witnesses,

receive oral and written testimony and take such other action as may be necessary to assure the fair and efficient conduct of the hearing. Following the conclusion of the hearing, the hearing officer shall forward the record of the hearing to the Administrator.

(f) The Administrator shall provide that the variance, variance schedule or exemption schedule shall become effective thirty (30) days after notice of opportunity for hearing is given pursuant to §6135(b) if no timely request for hearing is submitted and the Administrator does not determine to hold a public hearing on his own motion.

§6135. Alternative Treatment Techniques. The Administrator may grant a variance from any treatment technique requirement of a primary drinking water regulation to a supplier of water, upon showing from any person that an alternative treatment technique not included in such requirement is at least as efficient in lowering the level of the contaminant with respect to which such requirements was prescribed. A variance under this paragraph shall be conditioned on the use of the alternative treatment technique which is the basis of the variance.

§6136. Variances from the Maximum Contaminant Level for Total Trihalomethane. (a) The Administrator, pursuant to §1415(a)(1)(A) of the Act, hereby identifies the following as the best technology, treatment techniques or other means generally available for achieving compliance with the maximum contaminant level for total trihalomethanes §6106(c):

- (1) Use of chloramines as an alternate or supplemental disinfectant or oxidant.
- (2) Use of chlorine dioxide as an alternate or supplemental disinfectant or oxidant.
- (3) Improved existing clarification for THM precursor reduction.
- (4) Moving the point of chlorination to reduce TTHM formation and, where necessary, substituting for the use of chlorine dioxide or potassium permanganate.

(5) Use of powdered activated carbon for THM precursor or TTHM reduction seasonally or intermittently at dosages not to exceed 10 mg/l on an annual average basis.

(b) The Administrator shall require a community water system to install and/or use any treatment method identified in §6136(a) as a condition for granting variance unless the Administrator determines that such treatment method identified in §6136(a) is not available and effective for TTHM control for the system. A treatment method shall not be considered to be "available and effective" for an individual system if the treatment method would not be technically appropriate and technically feasible for that system or would only result in a marginal reduction in TTHM for the system. If, upon application by a system for a variance, the Administrator determines that none of the treatment methods identified in §6136(a) is available and effective for the system, that system shall be entitled to a variance pursuant to this regulations. The Administrator's determination as to the availability and effectiveness of such treatment methods shall be based upon studies by the system and other relevant information. If a system submits information intending to demonstrate that a treatment method is not available and effective for TTHM control for that system, the Administrator shall make a finding on whether this information supports a decision that such treatment method is not available and effective for that system before requiring installation and/or use of such treatment method.

(c) The Administrator shall issue a schedule of compliance that may require the system being granted the variance to examine the following treatment methods:

(1) To determine the probability that any of these methods will significantly reduce the level of TTHM for that system, and

(2) If such probability exists, to determine whether any of these method are technically feasible and economically reasonable, and that the TTHM reductions obtained will be commensurate with the costs incurred with the installation and use of such treatment methods for that system:

Introduction of off-line water storage for THM precursor reduction.

Aeration for TTHM reduction, where geographically and environmentally appropriate.

Introduction of clarification where not currently practiced.

Use of ozone as an alternate or supplemental disinfectant or oxidant.

(3) If the Administrator determines that a treatment method identified in paragraph 38.3 is technically feasible, economically reasonable and will achieve TTHM reductions commensurate with the costs incurred with the installation and/or use of such treatment method for the system, the Administrator shall require the system to install and/or use that treatment method in connection with a compliance schedule issued under this regulations. The Administrator's determination shall be based upon studies by the system and other relevant information. In no event shall the Administrator require a system to install and/or use a treatment method not described in §6136(c) to obtain or maintain a variance from the TTHM requirement or in connection with any variance compliance schedule.

§6137. Extension of Data and Compliance. (a) The final date for compliance provided in any schedule in the case of any extension may be extended by the Administrator for a period not to exceed 3 years after the date of the issuance of the exemption if the public water system establishes that:

(1) The system cannot meet the standard without capital improvements which cannot be completed within the period of such exemption;

(2) In the case of a system which need financial assistance for the necessary improvements, the system has entered into an agreement to obtain such financial assistance; or

(3) The system has entered into an enforceable agreement to become a part of a regional public water system; and the system is taking all practicable steps to meet the standard.

(b) In the case of a system which does not serve more than 500 service connections and which need financial assistance for the necessary improvements, an exemption granted under §6137(a)(1) or §6137(a)(2) may be renewed for one or more additional 2 year periods if the system establishes that it is taking all practicable steps to meet the requirements of §6137(a) of this section.

§6138. Final Schedule. (a) Within thirty (30) days after the termination of any public hearing held pursuant to §6134, the Administrator shall, taking into consideration information obtained during such hearing, and other relevant information (which shall include any written comments submitted pursuant to the public notice specified in §6134(a)) shall

(1) With respect to a variance or variance schedule confirm, revise or rescind the proposed variance or schedule; or

(2) With respect to an exemption schedule, confirm or revise the proposed schedule as necessary.

(b) The exemption schedule referred to in §6138(a)(2) of these regulations shall require compliance by the public water system with each contaminant level and treatment technique requirement prescribed by these regulations, no less stringent than:

(1) National Primary Water Regulations promulgated by the Federal Administrator, pursuant to 40 CFR Part 141, by no later than June 19, 1987; and

(2) Revised national primary drinking water regulations promulgated by the Federal Administrator pursuant to 40 CFR Part 141, 12 months after issuance of the exemption.

(c) If the public water system has entered into an enforceable agreement to become a part of a regional public water system, as determined by the Administrator,

the schedule referred to in §6138(a)(2) shall require compliance by the public water system with each contaminant level and treatment technique requirement prescribed by these Regulations, no less stringent than:

(1) Interim National Primary Drinking Water Regulations promulgated by the Federal Administrator, pursuant to 40 CFR Part 141, by no later than January 1, 1987; and

(2) Revised interim national primary drinking water regulations promulgated by the Federal Administrator pursuant to 40 CFR Part 141, by no later than nine (9) years after the effective date of such Regulations.

§6139. Filtration and Disinfection. (a) General Requirements.

(1) The requirements of this chapter constitute national primary drinking water regulations. These regulations establish criteria under which filtration is required as a treatment technique for public water systems supplied by a surface water source and public water systems supplied by a groundwater source under the direct influence of surface water. In addition, these regulations establish treatment technique requirements in lieu of maximum contaminant levels for the following contaminants: *Giardia lamblia*, viruses, heterotrophic plate count bacteria, *Legionella*, and turbidity. Each public water system with a surface water source or a ground water source under the direct influence of surface water must provide treatment of that source water that complies with these treatment technique requirements. The treatment technique requirements consist of installing and properly operating water treatment processes which reliably achieve:

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

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

(2) A public water system using a surface or a ground water source under the direct influence of surface water is considered to be in compliance with the requirements of paragraph (a) of this section if:

(A) It meets the requirements for avoiding filtration in §6139(b) and the disinfection requirements in §6139(c)(1); or

(B) It meets the filtration requirements in §6139(d) and the disinfection requirements in §6139(c)(2).

(3) Each public water system using a surface water source or a ground water source under the direct influence of surface water must be operated by qualified personnel who meet the requirements specified by the Administrator.

(b) Criteria for avoiding filtration.

(1) Any public water system that uses a surface water source must meet all of the conditions of subsections (a) and (b) of the section, and is subject to subsection (c) of this section, beginning 18 months after the Administrator determines that it is under the direct influence of surface water, or December 30, 1991, whichever is later, unless the Administrator had determined before December 30, 1991, that filtration is required, the system must have installed filtration and meet the criteria for filtered systems specified in §6139(c) and §6139(d) by June 29, 1993. Within 18 months of the failure of a system using surface water or a ground water source under the direct influence of surface water to meet any one of the requirements of subsections (a) and (b) of the section or after June 29, 1993, whichever is later, the system must have installed filtration and meet the criteria for filtered systems specified in subsections (c)(2) and (d) of this section.

(A) Source water quality conditions.

(1) The fecal coliform concentration must be equal to or less than 20/100 ml, or the total coliform concentration must be equal to or less than 100/100 ml (measured as specified in §6139(e)(1) and §6139(e)(2), in representative samples of the source water immediately prior to the first or only point of disinfectant application in at least 90 percent of the measurements made for the 6 previous months that the system served water to the public on an ongoing basis. If a system measures both fecal and total coliforms, the fecal coliform criterion, but not the total coliform criterion, in this paragraph must be met.

(2) The turbidity level cannot exceed 5 NTU (measured as specified in §6139(e)(1) and §6139(e)(2) in representative samples of the source water immediately prior to the first or only point of disinfectant application unless (i) the Administrator determines that any such event was caused by circumstances that were unusual and unpredictable; and (ii) as a result of any such events in the past 12 months the system served water to the public, or more than five events in the past 120 months the system served water to the public, in which the turbidity level exceeded 5 NTU. An "event" is a series of consecutive days during which at least one turbidity measurement each day exceeds 5 NTU.

(B) Site-specific conditions.

(1)(i) The public water system meet the requirements of §6139(c) at least 11 of the 12 previous months that the system served water to the public, on an ongoing basis, unless the system served water to the public, and the Administrator determines that at least one of those failures was caused by circumstances that were unusual and unpredictable.

(ii) The public water system must meet the requirements of §6139(c) at all times the system serves water to the public.

(iii) The public water system must meet the requirements of §6139(c) at all times the system serves water to the public unless the Administrator determines that any such failure was caused by circumstance that were unusual and unpredictable.

(iv) The public water system must meet the requirements of §6139(c) on an ongoing basis unless the Administrator determines that failure to meet these requirements was not caused by a delicacy in treatment of the source water.

(2) The public water system must maintain a watershed control program which minimizes the potential for contamination by Giardia lamblia cysts and viruses in the source water. The Administrator must determine whether the watershed control program is adequate to meet this goal. The adequacy of a program to limit potential contamination by Giardia lamblia cysts and viruses must be based on the comprehensiveness of the watershed review; the effectiveness of the system's program to monitor and control detrimental activities occurring in the watershed; and the extent to which the water system has maximized land ownership and/or controlled land use within the watershed. At a minimum, the watershed control program must:

(i) Characterize the watershed hydrology and land ownership;

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

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

The public water system must demonstrate through ownership and/or written agreements with landowners within the watershed that it can control all human activities which may have an adverse impact on the microbiological quality of the source water. The public water system must submit an annual report to the Administrator that identifies any special concerns about the watershed and how they are being handled; describes activities in the watershed that affect water quality; and projects what adverse activities are expected to occur in the future and describes how the public water system expects to address them. For systems using a ground water source under the direct influence of surface water, an approved wellhead protection program developed under §1423 of the Safe Drinking Water Act may be used, if the Administrator deems it appropriate to meet these requirements.

(3) The public water system must be subject to an annual on-site inspection to assess the watershed control program and disinfection treatment process. The Guam Environmental Protection Agency must conduct the on-site inspection. The inspection must be conducted by competent individuals such as sanitary and civil engineers, sanitarians, or technicians who have experience and knowledge about the operation and maintenance of a public water system, and who have a sound understanding of public health principles and waterborne diseases. A report of the on-site inspection summarizing all findings must be prepared every year. The on-site inspection must indicate to the Administrator's satisfaction that the watershed control program and disinfection treatment process are adequately designed and maintained. The on-site inspection must include:

(i) A review of the effectiveness of the watershed control program;

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

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

(iv) An inspection of the disinfection equipment for physical deterioration;

(v) A review of operating procedures;

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

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

(4) The public water system must not have been identified as a source of a waterborne disease outbreak, or if it has been so identified, the system must have been modified sufficiently to prevent another such occurrence, as determined by the Administrator.

(5) The public water system must comply with the maximum contaminant level (MCL) for total coliforms in paragraph 8.1 at least 11 months of the 12 previous months that the system served water to the public, on an ongoing basis, unless the Administrator determines that failure to meet this requirement was not caused by a deficiency in treatment of the source water.

(6) The public water system must comply with the requirements for trihalomethanes in chapter 6 of this regulation.

(C) Treatment technique violations.

(1) A system that (i) fails to meet any one of the criteria in subsections (e)(1) and (e)(2) of this section and/or which the Administrator has determined that filtration is required, and (II) fails to install filtration by the date specified in the introductory paragraph of this chapter is in violation of a treatment technique requirement.

(2) A system that has not installed filtration is in violation of a treatment technique requirement if;

(i) The turbidity level (measured as specified in §6139(e)(1) and §6139(e)(2) in a representative sample of the source water immediately prior to the first or only point of disinfection application exceeds 5 NTU; or

(ii) The system is identified as a source of a waterborne disease outbreak.

(c) Disinfection.

(1) A public water system that uses a surface source and does not provide the filtration treatment must provide the disinfection treatment specified in subsection (d) of this section beginning December 31, 1991, unless the Administrator determines in writing that filtration is required. A public water system that uses a groundwater source under the direct influence of surface water and does not provide filtration treatment must provide disinfection treatment specified in subsection (d)(1) of this section beginning December 31, 1991, or 18 months after the Administrator determines that the ground water source is under the influence of surface water, whichever is later, unless the Administrator has determined that filtration is required in writing. If the

Administrator has determined that filtration is required, the system must comply with any interim disinfection requirements the Administrator deems necessary before filtration is installed. A system that uses a surface water source and provides filtration treatment must provide the disinfection treatment specified in subsection (c)(2) of this section beginning June 29, 1993, or beginning when filtration is installed, whichever is later.

A system that uses a ground water source under the direct influence of surface water and provides filtration treatment must provide disinfection treatment as specified in subsection (c)(2) of this section June 29, 1993, or beginning when filtration is installed, whichever is later. Failure to meet any requirement of this chapter after the applicable date specified in this introductory paragraph is a treatment technique violation.

(A) Disinfection requirements for public water systems that do not provide filtration. Each public water system that does not provide filtration treatment must provide disinfection treatment as follows:

(1) The disinfection treatment must be sufficient to ensure at least 99.9 percent (3-log) inactivation of *Giardia lamblia* cysts and 99.99 percent (4-log) inactivation of viruses, every day each month. Each day a system serves water to the public the public water system must calculate the CT value(s) from the system's treatment parameters, using the procedure specified in §6139(e), and determine whether this value(s) is sufficient to achieve the specified inactivation rates for *Giardia lamblia* cysts and viruses. If a system uses a disinfectant other than chlorine, the system may demonstrate to the Administrator through the use of an Agency approved protocol for on-site disinfection challenge studies or other information satisfactory to the Administrator, that CT99.9 values other than those specified in Tables 2.1 and 3.1 in §6139(e) or other operational parameters are adequate to demonstrate that

the system is achieving minimum inactivation rates required by subsection (c)(1) of this section.

(2) The disinfection system must have either;

(i) redundant components, including an auxiliary power supply with automatic start-up and alarm to ensure that disinfectant application is maintained continuously while water is being delivered to the distribution system, or;

(ii) automatic shut-off of delivery of water to the distribution system whenever there is less than 0.2 mg/l of residual disinfectant concentration in the water. If the Administrator determines that automatic shut-off would cause unreasonable risk to health or interfere with fire protection, the system must comply with subsection (c) of this section.

(3) The residual disinfectant concentration in the water entering the distribution system, measured as specified in §6139(e)(1) and §6139(e)(2) of this regulation, cannot be less than 0.2 mg/l for more than 4 hours.

(4)(i) The residual disinfectant concentration in the distribution system, measured as total chlorine dioxide, as specified in paragraphs 41.5(a)(5) and 41.5(b)(6), cannot be undetectable in more than 5 percent of the samples each month, for any two consecutive months that the system serves water to the public. Water in the distribution system with a heterotrophic bacteria concentration less than or equal to 500/mi, measured as heterotrophic plate count (HPC) as specified in paragraph 41.5(a)(3), is deemed to have a detectable

disinfectant residual for purposes of determining compliance with this requirement. Thus, the value "V" in the following formula cannot exceed 5 percent in one month, for any two consecutive months.

$$V = \frac{c + d + e}{a+b} \times 100$$

where:

a = number of instances where the residual disinfectant concentration is measured;

b = number of instances where the residual disinfectant concentration is not measured but heterotrophic bacteria plate count (HPC) is measured;

c = number of instances where the residual disinfectant concentration is measured but not detected and no HPC is measured;

d = number of instances where the residual disinfectant concentration is measured but not detected and where the HPC is >500/ml; and

e = number of instances where the residual disinfectant concentration is not measured and HPC is >500/mi.

(ii) If the Administrator determines, based on site-specific considerations, that a system has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature conditions specified by §6139(e) and that

the system is providing adequate disinfection in the distribution system, the requirements of subsection (e) of this section do not apply to that system.

(B) Disinfection requirements for public water systems which provide filtration. Each public water system that provides filtration treatment must provide disinfection treatment as follows.

(1) The disinfection treatment must be sufficient to ensure that the total treatment processes of that system achieve at least 99.9 percent (3-log) inactivation and/or removal of *Giardia lamblia* cysts and at least 99.99 percent (4-log) inactivation and/or removal of viruses, as determined by the Administrator.

(2) The residual disinfectant concentration in the water entering the distribution system, measured as specified in §6139(e), cannot be less than 0.2 mg/l for more than 4 hours.

(3)(i) The residual disinfectant concentration in the distribution system, measured as total chlorine, combined chlorine, or chlorine dioxide, as specified in §6109(e), cannot be undetectable in more than 5 percent of the samples each month, for any two consecutive months that the system serves water to the public. Water in the distribution system with a heterotrophic bacteria concentration less than or equal to 500/mi, measured as heterotrophic plate count (HPC) as specified in §6139(e), is deemed to have a detectable disinfectant residual for purposes of determining compliance with this requirements. Thus, the value "V" in the following formula cannot exceed 5 percent in one month, for any two consecutive months.

c+d+e

$$V = \frac{\quad}{a+b} \times 100$$

where:

a = number of instances where the residual concentration is measured

b = number of instances where the residual disinfectant concentration is not measured but heterotrophic bacteria plate count (HPC) is measured;

c = number of instances where the residual disinfectant concentration is measured but not detected and no HPC is measured;

d = number of instances where no residual disinfectant concentration is detected and where the HPC is >500/ml; and e=number of instances where the residual disinfectant concentration is not measured and HPC is > 500/ml.

(ii) If the Administrator determines, based on site-specific considerations, that a system has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature conditions specified in §6139(e) and that the system is providing adequate disinfection in the distribution system, the requirements of subsection (c) of this section do not apply.

(d) **Filtration.** A public water system that uses a surface water source or ground water under the direct influence of surface water, and does not meet all of the criteria in §6139(b) for avoiding filtration, must provide treatment consisting of both disinfection, as specified in §6139(c), and filtration treatment which complies with the

requirements of subsections (d)(1), (2), (3) and (4) of this section by June 29, 1993, or within 18 months of the failure to meet any one of the criteria for avoiding filtration in §6139(b)(1) and (2), whichever is later. Failure to meet any requirement of this section after the date specified in this introductory paragraph is a treatment technique violation.

(1) Conventional filtration treatment or direct filtration.

(A) For systems using conventional filtration or direct filtration, the turbidity level of representative samples of a system's filtered water must be less than or equal to 0.5 NTU in at least 95 percent of the measurements taken each month, measured as specified in §6139(e), except that if the Administrator determines that the system is capable of achieving at least 99.9 percent removal and/or inactivation of *Giardia lamblia* cysts at some turbidity level higher than 0.5 NTU in at least 95 percent of the measurements taken each month, the Administrator may substitute this higher turbidity limit for that system. However, in no case may the Administrator approve a turbidity limit that allows more than 1 NTU in more than 5 percent of the samples taken each month, measured as specified in §6139(e).

(B) The turbidity level of representative samples of a system's filtered water must at no time exceed 5 NTU, measured as specified in §6139(e).

(2) Slow sand filtration.

(A) For systems using slow sand filtration, the turbidity level of representative samples of a system's filtered water must be less than or equal to 1 NTU in at least 95 percent of the measurements taken each month, measured as specified in §6139(e), except that if the Administrator determines there is not significant interference with disinfection at a higher turbidity level, the Administrator may substitute this higher turbidity limit for that system.

(B) The turbidity level of representative samples of a system's filtered water must at no time exceed 5 NTU, measured as specified in §6139(e).

(3) Diatomaceous earth filtration.

(A) For systems using diatomaceous earth filtration, the turbidity level of representative samples of a system's filtered water must be less than or equal to 1 NTU in at least 95 percent of the measurements taken each month, measured as specified in §6139(e).

(B) The turbidity level of representative samples of a system's filtered water must at no time exceed 5 NTU, measured as specified in §6139(e).

(4) Other filtration technologies. A public water system may use a filtration technology not listed in subsections (d) of this section if it demonstrates to the Administrator, using pilot plant studies or other means, that the alternative filtration technology in combination with disinfection treatment that meets the requirements of §6139(c)(2), consistently achieves 99.9 percent removal and/or inactivation of viruses. For a system that makes this demonstration, the requirements of subsection (c)(2), of this section apply.

(e) Analytical and monitoring requirements.

(1) Analytical requirements. Only the analytical method(s) specified in this §6139(e), or otherwise approved by GEPA may be used to demonstrate compliance with the requirements of §6139(b), (c) and (d) of these regulations. Measurements of pH, temperature, turbidity, and residual disinfectant concentrations must be conducted by a party approved by the Administrator. Measurements for total coliforms, fecal coliforms, and HPC must be conducted by a laboratory certified by GEPA and U.S.EPA to do such analysis. Until laboratory certification criteria are developed for the analysis of HPC and fecal coliforms any laboratory certified for total coliform analysis by U.S.EPA is deemed certified

for HPC and fecal coliform analysis. The following procedures shall be performed in accordance with the publications listed in the following section. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR Part 51. Copies of the methods published in Standard Methods for the Examination of Water and Wastewater may be obtained from the American Public Health Association et al., 1015 Fifteenth Street, NW., Washington, DC 20005; copies of the Minimal Medium ONPG-MUG Method as set forth in the article "National Field Evaluation of a Defined Substrate Method for the Simultaneous Enumeration of Total Coliform and Escherichia coli from Drinking Water: Comparison with the Standard Multiple Tube Fermentation Method" (Edberg et al.), Applied and Environmental Microbiology, Volume 54, pp.1595-1601, June 1988 (as amended under Erratum. Applied and Environmental Microbiology, 1988), may be obtained from the American Water Works Association Research Foundation, 5666 West Quincy Avenue, Denver, Colorado, 80236; and copies of the Indigo Method as set forth in the article "Determination of Ozone in Water by the Indigo Method" (Bader and Hoigne), may be obtained from Ozone Science & Engineering, Perfamon Press Ltd., Fairview Park, Elmsford, New York 10523. Copies may be inspected at the U.S. Environmental Protection Agency, Room EB15, 401 M Street, SW., Washington, DC 20460 or at the Office of the Federal Register, 1100 L Street, NW., Room 8401, Washington, DC.

(A) Fecal Coliform concentration--Method 903C (Fecal Coliform MPN Procedures, pp.878-880, Method 908D (Estimation of Bacterial Density), pp. 880-882, or Method 909C (Fecal Coliform Membrane Filter Procedure), pp.896-898, as set forth in Standard Methods for the Examination of Water and Wastewater, 1985, American Public Health Association et al., 16th edition.

(B) Total coliform concentration--Method 908A (Standard Total Coliform Multiple--Tube (MPN) Tests), pp.872-876, Method 908B (Application of Tests to Routine Examinations),

pp.870-878, Method 908D (Estimation of Bacterial Density), pp. 880-882, Method 909A Standard Total Coliform Membrane Filter Procedure), pp. 887-894, or Method 909B (Delayed--Incubation Total Coliform Procedure), pp.894-896, as set forth in Standard Methods for the Examination of Water and Wastewater, 1985, American Public Health Association et al., 16th edition; Minimal Medium ONPG--MUG Test, as set forth in the article "National Field Evaluation of a Defined Substrate Method for the Simultaneous Enumeration of Total Coliforms and Escherichia coli from Drinking Water; Comparison with the Standard Multiple Tube Fermentation Method" (Edberg et al.), Applied and Environmental Microbiology, Volume 54, pp. 1595-1601, June 1988 (as amended under Erratum, Volume 54, p.3197, December, 1988).

NOTE: The Minimal Medium ONPG--MUG Test is sometimes referred to as the Autoanalysis Colilert System). Systems may use a five-tube or a ten-tube test.

(C) Heterotrophic Plate Count--Method 907A (Pour Plate Method), pp.864-866, as set forth in Standard Methods for the Examination of Water and Wastewater, 1985, American Public Health Association et. al., 16th edition.

(D) Turbidity--Method 214A (Nephelometric Method-Nephelometric Turbidity Units, pp. 134-136, as set forth in Standard Methods for the Examination of Water and Wastewater, 1985, American Public Health et at., 16th edition.

(E) Residual disinfectant concentration--Residual disinfectant concentrations for free chlorine and combined chlorine (chloramines) must be measured by Method 408C (Amperometric Titration Method), pp. 303-306, Method 408D (DPD Ferrous Titrimetric Method), pp. 306-309, Method 408E (DPD Colorimetric Method), pp. 309-310, or Method 408F (Leuco Crystal Violet Method), pp. 310-313, as set forth in Standard Methods for the Examination of Water and Wastewater, 1985, American Public Health Association et al., 16th edition. Residual

disinfectant concentrations for free chlorine and combined chlorine may also be measured by using DPD colorimetric test kits if approved by the Administrator. Residual disinfectant concentrations for ozone must be measured by the Indigo Method as set forth in Bader, H., Hoigne, I., "Determination of Ozone in Water by the Indigo Method; A Submitted Standard Method"; Ozone Science and Engineering, Vol.4, pp. 169-176, Pergamon Press Ltd., 1982, or automated methods which are calibrated in reference to the results obtained by the Indigo Method on a regular basis, if approved by the Administrator.

NOTE: This method will be published in the 17th edition of Standard Methods for the Examination of Water and Wastewater, American Public Health et al., the Iodometric Method in the 16th edition may not be used.

Residual disinfectant concentrations for chlorine dioxide must be measured by Method 410B (Amperometric Method) or Method 410C (DPD Method), pp. 322-324, as set forth in Standard Methods for the Examination of Water and Wastewater, 1985, American Public Health Association et al., 16th edition.

(F) Temperature -- Method 212 (Temperature), pp. 126-127, as set forth in Standard Methods for the Examination of Water and Wastewater, 1985, edition, American Public Health Association et al., 16th edition.

(G) pH - Method 423 (pH Value), pp. 429-437, as set forth in Standard Methods for the Examination of Water and Wastewater, 1985, American Public Health Association, 16th edition.

(2) Monitoring requirements for systems that do not provide filtration. A public water system that uses a surface water source and does not provide filtration treatment must begin monitoring, as specified in this paragraph (2), beginning December 31, 1990, unless the Administrator has determined that filtration is required in writing, in which case the Administrator may specify alternative monitoring requirements, as appropriate, until filtration is in place. A public water

system that uses a ground water source under the direct influence of surface water and does not provide filtration treatment must begin monitoring as specified in this paragraph (b) beginning December 31,1990, or 6 months after the Administrator determines that the ground water source is under the direct influence of surface water, whichever is later, unless the Administrator has determined that filtration is required in writing, in which case the Administrator may specify alternative monitoring requirements, as appropriate, until filtration is in place.

(A) Fecal coliform or total coliform density measurements as required by §6139(b) must be performed on representative source water samples immediately prior to the first or only point of disinfectant application. The system must sample for fecal or total coliforms at the following minimum frequency each week the system serves water to the public.

System size (persons served)	Samples/week*
<500	1
501 to 3,300	2
3,301 to 10,000	3
10,001 to 25,000	4
>25,000	5

*Must be taken on separate days.

Also, one fecal or total coliform density measurement must be made every day the system serves water to the public and the turbidity of the source water exceeds 1 NTU (these samples count towards the weekly coliform sampling requirement) unless the Administrator determines that the system, for logistical reasons outside the system's control cannot have the sample analyzed within 30 hours of collection.

(B) Turbidity measurements as required by §6139(b) must be performed on representative

grab samples of source water immediately prior to the first or only point of disinfectant application every four hours (or more frequently) that the system serves water to the public. A public water system may substitute continuous turbidity monitoring for grab sample monitoring if it validates the continuous measurement for accuracy on a regular basis using a protocol approved by the Administrator.

(C) The total inactivation ratio for each day that the system is in operation must be determined based on the CT_{99.9} values in Tables 1.1 - 1.6, 2.1, and 3.1 of this section as appropriate. The parameters necessary to determine the total inactivation ratio must be monitored as follows

(1) The temperature of the disinfected water must be measured at least once per day at each residual disinfectant concentration sampling point.

(2) If the system uses chlorine, the pH of the disinfected water must be measured at least once per day at each chlorine residual disinfectant concentration sampling point.

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

(4) The residual disinfectant concentration(s) ("C") of the water before or at the first customer must be measured each day during peak hourly flow

(5) If a system uses a disinfectant other than chlorine, the system may demonstrate to the Administrator, through the use of an GEPA approved protocol for on-site disinfection challenge studies or other information satisfactory to the Administrator, that CT_{99.9} values other than those specified in Tables 2.1 and 3.1 in this section and other operational parameters are adequate to demonstrate that the system is achieving the

minimum inactivation rates required by §6139(c).

(D) The total inactivation ratio must be calculated as follows:

(1) If the system uses only one point of disinfectant application, the system may determine the total inactivation ratio based on either of the following two methods:

(A) One inactivation ratio (CT calc/CT99.9) is determined before or at the first customer during peak hourly flow and if the $CT\ calc/CT99.9 > 1.0$, the 99.9 per-cent Giardia lamblia inactivation requirement has been achieved; or

(B) Successive CT calc/CT99.9 values, representing sequential inactivation ratios, are determined between the point of disinfectant application and a point before or at the first customer during peak hourly flow. Under this alternative, the following method must be used to calculate the total inactivation ratio:

(i) Determine CT calc for each $\frac{\quad}{CT99.9}$ sequence.

(ii) Add the CT calc values together

$$\frac{\quad}{CT99.9} ([CT\ calc])$$
$$\frac{\quad}{(CT99.9)}$$

(iii) If $\frac{\quad}{(CT99.9)} > 1.0$, the 99.9

$\frac{\quad}{(CT99.9)}$
percent Giardia lamblia inactivation requirement has been achieved.

(2) If the system uses more than one point of disinfectant application before or at the first customer, the system must determine the CT value of each disinfection sequence immediately prior to the next point of disinfectant application during peak hourly flow. The CT calc/CT99.9 value of each sequence and

$$\frac{\text{CT calc}}{\text{CT99.9}}$$

must be calculated using the method in subsection ((e) of this section to determine if the system is in compliance with §6139(c).

(3) Although not required, the total percent inactivation for a system with one or more points of residual disinfectant concentration monitoring may be calculated by solving the following equation

$$\text{Percent inactivation} = 100 - \frac{100}{10}$$

where

$$z=3 \times \frac{\text{CT calc}}{\text{CT99.9}}$$

(E) The residual disinfectant concentration of the water entering the distribution must be monitored continuously, and the lowest value must be recorded each day, except that if there is a failure in the continuous monitoring equipment, grab sampling every 4 hours may be conducted in lieu of continuous monitoring, but for no more than 5 working days following the failure of the equipment, and systems serving 3,300 or fewer persons may take grab samples in lieu of providing continuous monitoring on an ongoing basis at the frequencies prescribed below:

System size by population	Samples/day*
---------------------------	--------------

<500	1
501 to 1,000	2
1,001 to 2,500	3
2,501 to 3,300	4

* The day's samples cannot be taken at the same time. The sampling intervals are subject to the Administrator's review and approval

If at any time the residual disinfectant concentration falls below 0.2 mg/l in a system using grab sampling in lieu of continuous monitoring, the system must take a grab sample every 4 hours until the residual concentration is equal to or greater than 0.2 mg/l.

(F)(1) The residual disinfectant concentration must be measured at least at the same points in the distribution system and at the same time as total coliforms are sampled, as specified in §6108, except that the Administrator may allow a public water system which uses both a surface water source or a ground water source under direct influence of surface water, and a ground water source, to take disinfectant residual samples at points other than the total coliform sampling points if the Administrator determines that such points are more representative of treated (disinfected) water quality within the distribution system. Heterotrophic bacteria, measured as heterotrophic plate count (HPC) as specified in subsection (e) of this section, may be measured in lieu of residual disinfectant concentration.

(2) If the Administrator determines, based on site-specific considerations, that a system has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature conditions specified by

subsection (e) of this section and that the system is providing adequate disinfection in the distribution system, the requirements of subsection (e)(2) of this section do not apply to that system.

(3) Monitoring requirements for systems using filtration treatment. A public water system that uses a surface water source or a ground water source under the influence of surface water and provides filtration treatment must monitor in accordance with this subsection (c) beginning June 29, 1993, or when filtration is installed, whichever is later.

(A) Turbidity measurements as required by §6139(d) must be performed on representative samples of the system's filtered water every four hours (or more frequently) that the system serves water to the public. A public water system may substitute continuous turbidity monitoring for grab sample monitoring if it validates the continuous turbidity measurement for accuracy on a regular basis using a protocol approved by the Administrator. For any systems using slow sand filtration or filtration treatment other than conventional treatment, direct filtration, or diatomaceous earth filtration, the Administrator may reduce the sampling frequency to once per day if the Administrator determines that less frequent monitoring is sufficient to indicate effective filtration performance. For systems serving 500 or fewer persons, the Administrator may reduce the turbidity sampling frequency to once per day, regardless of the type of filtration treatment used, if the Administrator determines that less frequent monitoring is sufficient to indicate effective filtration performance.

(B) The residual disinfectant concentration of the water entering the distribution system must be monitored continuously, and the lowest value must be recorded each day, except that if there is a failure in the continuous monitoring equipment, grab sampling every 4 hours may be conducted in lieu of continuous monitoring, but for no more than 5 working days following the failure of the equipment, and systems serving 3,300 or fewer

persons may take grab samples in lieu of providing continuous monitoring on an ongoing basis at the frequencies each day prescribed below:

System size by population	Samples/day*
<500	1
501 to 1,000	2
1,001 to 2,500	3
2,501 to 3,300	4

NOTE: * The day's samples cannot be taken at the same time. The sampling intervals are subject to the Administrator's review and approval

If at any time the residual disinfectant concentration falls below 0.2 mg/i in a system using grab sampling in lieu of continuous monitoring, the system must take a grab sample every 4 hours until the residual disinfectant concentration is equal to or greater than 0.2 mg/l.

(C)(i) The residual disinfectant concentration must be measured at least at the same points in the distribution and at the same time as total coliforms are sampled, as specified in paragraph 8.1, except that the Administrator may allow a public water system which uses both a surface water source or a ground water source under direct influence of surface water, and a ground water source to take disinfectant residual samples at points other than the total coliform sampling points if the Administrator determines that such points are more representative of treated (disinfected) water quality within the distribution system.

Heterotrophic bacteria, measured as heterotrophic plate count (HPC) as specified in subsection (e)(1) of this section, may be measured in lieu of residual disinfectant concentration.

(ii) If the Administrator determines, based on site-specific considerations, that a system has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature conditions specified by subsection (e)(1) of this section and that the system is providing adequate disinfection in the distribution system, the requirements of subsection (e)(3) of this section do not apply to that system.

(f) Reporting and record keeping requirements.

(1) A public water system that uses a surface source and does not provide filtration treatment must report monthly to the Administrator the information specified in this paragraph (a) beginning December 31, 1990, unless the Administrator has determined that filtration is required, in writing, in which case the Administrator may specify alternative reporting requirements, as appropriate, until filtration is in place. A public water system that uses a ground water source under the direct influence of surface water and does not provide filtration treatment must report monthly to the Administrator the information specified in this §6139(f) beginning December 31, 1990, or 6 months after the Administrator determines that the ground water source is under the direct influence of surface water, whichever is later, unless the Administrator has determined that filtration is required, in writing, in which case the Administrator may specify alternative reporting requirements, as appropriate, until filtration is in place.

(A) Source water quality information must be reported to the Administrator within 10 days after the end of each month the system serves water to the public. Information that must be reported includes:

(i) The cumulative number of months for which results are reported.

(ii) The number of fecal and/or total coliform samples, whichever are analyzed during the month (if a system monitors for

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

(iii) The number of samples during the month that had equal to or less than 20/100 ml fecal coliforms and/or equal to or less than 100/100 ml total coliforms, whichever are analyzed.

(iv) The cumulative number of fecal or total coliform samples, whichever are analyzed, during the previous six months the system served water to the public.

(v) The cumulative number of samples that had equal to or less than 20/100 ml fecal coliforms or equal to or less than 100/100 ml total coliforms, whichever are analyzed, during the previous six months the system served water to the public.

(vi) The percentage of samples that had equal to or less than 20/100 ml fecal coliforms or equal to or less than 100/100 ml total coliforms, whichever are analyzed, during the previous six months the system served water to the public.

(vii) The maximum turbidity level measured during the month, the date(s) of occurrence for any measurement(s) which exceeded 5 NTU, and the date(s) the occurrence(s) was reported to the Administrator.

(viii) For the first 12 months of record keeping, the dates and cumulative number of events during which the turbidity exceeded 5 NTU, and after one year of record keeping for turbidity measurements, the dates and cumulative number of events during which the turbidity exceeded 5 NTU in the previous 12 months the system served water to the public.

(ix) For the first 120 months of record keeping, the dates and cumulative number of events during which the turbidity exceeded 5 NTU, and after 10 years of record keeping for turbidity measurements, the dates and cumulative number of events during which the turbidity exceeded 5 NTU in the previous 120 months the system served water to the public.

(B) Disinfection information specified in §6139(e) must be reported to the Administrator within 10 days after the end of each month the system serves water to the public. Information that must be reported includes:

(i) For each day, the lowest measurement of residual disinfectant concentration in mg/l in water entering the distribution system.

(ii) The date and duration of each period when the residual disinfectant concentration in water entering the distribution system fell below 0.2 mg/l and when the Administrator was notified of the occurrence.

(iii) The daily residual disinfectant concentration(s) (in mg/l) and disinfectant contact time(s) (in minutes) used for calculating the CT value(s).

(iv) If the chlorine is used, the daily measurement(s) of pH of disinfected water following each point of chlorine disinfection.

(v) The daily measurement(s) of water temperature in "C" following each point of disinfection.

(vi) The daily CT calc and CT calc/CT99.9 values for each disinfectant measurement or sequence and the sum of all CT calc/CT99.9 values ($\{CT \text{ calc}/CT99.9\}$) before the first customer.

(vii) The daily determination of whether disinfection achieves adequate Giardia cyst and virus inactivation, i.e., whether (CT calc/CT99.9) is at least 1.0 or, where disinfectants other than chlorine are used, other indicator conditions that the Administrator determines are appropriate, are met.

(viii) The following information on the samples taken in the distribution system in conjunction with total coliform monitoring pursuant to section 41.3 of this chapter.

(A) Number of instances where the residual disinfectant concentration is measured;

(B) Number of instances where the residual disinfectant concentration is not measured but heterotrophic bacteria plate count (HPC) is measured;

(C) Number of instances where the residual disinfectant concentration is measured but not detected and no HPC is measured;

(D) Number of instances where the residual disinfectant concentration is detected and where HPC is >500/ml;

(E) Number of instances where the residual disinfectant concentration is not measured and HPC is >500/ml;

(F) For the current and previous month the system served water to the public, the value of "V" in the following formula:

$$v = \frac{c+d+e}{a+b} \times 100$$

where

a = the value in §6139(e)(1)(B)(viii)(A) of this section,

b = the value in §6139(e)(1)(B)(viii)(2) of this section,

c = the value in §6139(e)(1)(B)(Viii)(C) of this section,

d = the value in §6139(e)(1)(2)(viii)(4) of this section, and

e = the value in §6139(e)(1)(B)(viii)(5) of this section.

(G) If the Administrator determines, based on site-specific considerations, that a system has no means for having a sample transported and analyzed for HPC by a certified laboratory under the requisite time and temperature conditions specified by §6139(e) and that the system is providing adequate disinfection in the distribution system, the requirements of subsection §6139(f) of this section do not apply to that system.

(ix) A system need not report that data listed in subsection (e) (1)(B)(i), and (iii)-(vi) of this section if all data listed in subsections (e)(1)(B)(i)-(viii) of this section remain on file at the system, and the Administrator determines that:

(A) The water supplier has submitted to the Administrator all the information required by subsection (e)(1)(B)(i)-(viii) of this section for at least 12 months; and

(B) The Administrator has determined that the system is not required to provide filtration treatment.

(C) No later than ten days after the end of each fiscal year (September 30), each supplier of water must provide to the Administrator a report which summarizes its compliance with all watershed control program requirements specified in §6139(b).

(D) No later than ten days after the end of each fiscal year (September 30), each supplier of water must provide to the Administrator a report on the on-site inspection conducted during that year pursuant to §6139(b), unless the on-site inspection was conducted by GEPA. If the inspection was conducted by GEPA, the Administrator must provide a copy of its report to the supplier of water.

(E)(i) Each supplier of water, upon discovering that a waterborne disease outbreak potentially attributable to a water system has occurred, must report that occurrence to the Administrator as soon as possible, but no later than by the end of the next business day,

(ii) If at any time the turbidity exceeds 5 NTU, the supplier of water must inform the Administrator as soon as possible, but no later than by end of the next business day.

(iii) If at any time the residual falls below 0.2 mg/l in the water entering the distribution system the supplier of water must notify the Administrator as soon as possible, but no later than by the end of the next business day. The supplier of water also must notify the Administrator by the end of the next business day whether or not the residual was restored to at least 0.2 mg/l within 4 hours.

(2) A public water system that uses a surface water source or a ground water source under the direct influence of surface water and provides filtration treatment must report monthly to the Administrator the information specified in this

subsection beginning June 29, 1993, or when filtration is installed, whichever is later.

(A) Turbidity measurements as required by §6139(e) must be reported within 10 days after the end of each month the system serves water to the public. Information that must be reported includes:

(i) The total number of filtered water turbidity measurements taken during the month.

(ii) The number and percentage of filtered water turbidity measurements taken during the month which are less than or equal to the turbidity limits specified in §6139(d) of this section for the filtration technology being used.

(iii) The date and value of any turbidity measurements taken during the month which exceed 5 NTU.

(B) Disinfection information specified in §6139(e) must be reported to the Administrator within 10 days after the end of each month the system serves water to the public. Information that must be reported includes:

(i) For each day, the lowest measurement of residual disinfectant concentration in mg/l in water entering the distribution system.

(ii) The date and duration of each period when the residual disinfectant concentration in water entering the distribution system fell below 0.2 mg/l and when the Administrator was notified of the occurrence.

(iii) The following information on the samples taken in the distribution system in conjunction with total coliform monitoring pursuant to §6139(c) of this section.

A. Number of instances where the residual disinfectant concentration is measured;

B. Number of instances where the residual disinfectant concentration is not measured but heterotrophic bacteria plate count (HPC) is measured;

C. Number of instances where the residual disinfectant concentration is measured but not detected and no HPC is measured;

D. Number of instances where no residual disinfectant concentration is detected and where HPC is >500/ml;

E. Number of instances where the residual disinfectant concentration is not measured and HPC is >500/ml;

F. For the current and previous month the system serves water to the public, the value of "V" in the following formula

$$V = \frac{c+d+e}{a+b} \times 100$$

where

a = the value in §6139(e)(2)(B)(iii)(1) of this section.

b = the value in §6139(e)(2)(B) of this section.

c = the value in §6139(e)(2)(B)(iii)(4) of this section.

d = the value in §6139(e)(2)(B)(iii)(4) of this section, and

e the value in §6139(e)(2)(B)(iii)(f) of this section.

G. If the Administrator determines, based on site-specific considerations, that a supplier of water has no means for having a sample transported and analyzed for HPC by a certified laboratory within the requisite time and temperature conditions specified by §6139(e)(1)(C) and that the supplier of water is providing the system adequate disinfection in the distribution system, the requirements of subsection (e) of this section do not apply.

(iv) A supplier of water need not report the data listed in subsection (e) of this section if all data listed in subsection (e) of this section remain on file at the system and the Administrator determines that the supplier of water has submitted all the information required by §6139(e) of this section for at least 12 months.

(C)(i) Each supplier of water, upon discovering that a waterborne disease outbreak potentially attributable to that water system has occurred, must report that occurrence to the Administrator as soon as possible, but no later than by the end of the next business day.

(ii) If at any time the turbidity exceeds 5 NTU, the supplier of water must inform the Administrator as soon as possible, but no later than the end of the next business day.

(iii) If at any time the residual falls below 0.2 mg/l in the water entering the distribution system, the supplier of water must notify the Administrator as soon as possible, but no later than by the end of the next business day. The supplier of water also must notify the Administrator by the end of the next business day whether or not the

residual was restored to at least 0.2 mg/l within 4 hours.

§6140. Entry and Inspection. (a) Whether or not the Agency has evidence that a public water system has violated an applicable legal requirement, upon the presentation of his credentials the have the right, at all reasonable time, to:

- (1) Enter premises on which any public water system is located.
- (2) Inspect any equipment, operation, or sampling or any public water system;
- (3) Take water samples from any public water system; and
- (4) Have access to and copy any record required to be kept pursuant to these regulations.

(b) The Agency may enter into cooperative agreements with Federal Agencies to assure the implementation of this section on Federal Facilities.

§6141. Penalties. Any person who violates any provision of these Regulations, or any variance or exemption issued pursuant thereto, shall be subject to an enforcement action requiring the violator to cease and desist and/or to pay a civil penalty of up to Five Thousand Dollars (\$5,000) for each day of violation.

§6142. Appeals. Persons aggrieved by actions of the Administrator pursuant to these regulations may appeal to the Board within ten days of written notice of such action.

Persons aggrieved by actions of the Board pursuant to these regulations may appeal such actions to the Superior Court of Guam within 30 days from said Board Action as per the Administrative Adjudication Law.

§6143. Severability Clause. If any provision of these Regulation, or its application to any person or circumstance, is held invalid, the application of such provision to other persons or circumstances, and the

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remainder of these Regulations, shall not be affected
thereby.