Wyoming
DEPARTMENT OF Agriculture

Bottled Water Guidance Document

Developed for Bottled Water Processors

July 2017

The Wyoming Department of Agriculture, Consumer Health Services, understands that Bottled Water Regulations can be confusing and difficult to understand. This document has been developed for our bottled water processors to help guide them to a better understanding of the requirements.

This document is intended *for guidance only*. For more information, or to determine specific regulations, please refer to the Wyoming Food Safety Rule (WFSR) and appropriate Code of Federal Regulations (CFR) as adopted by the WFSR Chapter 14 or contact your local Consumer Health Services Inspector.

NOTE:

In this document all sampling requirements and recordkeeping requirements have been identified by color to assist the user.

Bottled Water Guidance Document

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Physical Facilities

Bottled water is regulated as a food under the Federal Food, Drug, and Cosmetic Act (FFDCA) by the Food and Drug Administration (FDA). Specific FDA regulations cover Current Good Manufacturing Practices (CGMPs) for production of bottled water.

Physical facilities must meet construction and maintenance requirements as outlined in the Wyoming Food Safety Rule and requirements of 21 CFR 129, 117, and 110.

21 CFR Sec. 129.20 - Plant Construction and Design:

- The bottling room shall be separated from other plant operations or storage areas by tight walls, ceilings, and self-closing doors to protect against contamination.
- If processing operations are conducted in other than a sealed system under pressure, adequate protection shall be provided to preclude contamination of the water and the system.
- Provide adequate ventilation to minimize condensation in all areas.
- The washing and sanitizing of containers for bottled drinking water shall be performed in an enclosed room.
- Rooms in which product water is handled, processed, or held or in which containers, utensils, or equipment are washed or held shall not open directly into any room used for domestic household purposes.

21 CFR Sec. 129.37- Sanitary Operations:

- The product water-contact surfaces of all multiservice containers, utensils, pipes, and equipment used in the transportation, processing, handling, and storage of product water shall be clean and adequately sanitized.
- Multiservice containers, utensils, and disassembled piping and equipment shall be transported and stored in such a manner as to assure drainage and shall be protected from contamination.
- Single-service containers and caps or seals must be stored in sanitary closures and kept clean.
- Filling, capping, closing, sealing, and packaging of containers shall be done in a sanitary manner.

21 CFR Sec. 129.40- Equipment and Procedures:

- All plant equipment and utensils shall be suitable for their intended use.
- Product water contact surfaces shall be constructed of nontoxic and non-absorbent materials.
- Storage tanks shall be of the type that can be closed to exclude all foreign matter and shall be adequately vented.

21 CFR Sec. 129.80- Processes and Controls:

- All treatment of product water by distillation, ion-exchanging, filtration, ultraviolet treatment, reverse osmosis, carbonation, mineral addition, or any other process shall be done in a manner so as to be effective in accomplishing its intended purpose and in accordance with section 409 of the Federal Food, Drug, and Cosmetic Act.

21 CFR Sec. 110.20- Plant and Grounds:

- Requirements for adequate maintenance of the grounds, including litter control, waste removal and treatment, and grounds maintenance and drainage.

21 CFR Sec. 117.20- Plant and Grounds:

- A water plant must be kept in a condition that will protect against the contamination of water.
- Proper storage of equipment, removal of litter and waste, and cutting of weeds or grass to eliminate attractants, harborage areas, and breeding areas for pests.

- Maintain roads, yards, and parking lots so as not to constitute a source of contamination.
- Adequate draining of areas that may contribute contamination.
- Operating systems for waste treatment and disposal in a manner so as to not constitute a source of contamination.
- Where plant grounds bordered by grounds not under the operator's control and not maintained, care must be exercised in the plant to exclude pests and filth that may contaminate water.
- The plant must be suitable in size, construction, and design to facilitate maintenance and sanitary operations for water-production purposes.
- The plant must provide adequate space for equipment and storage of materials as is necessary for maintenance, sanitary operations, and the production of safe water.
- Floors, walls, and ceilings must be constructed to adequately clean and keep in good repair.
- Provide adequate lighting in hand-washing areas, dressing and locker rooms, and toilet rooms and in all areas where water is examined, manufactured, bottled, or equipment cleaned.
- Provide adequate ventilation to minimize dust, odors and vapors.
- Provide adequate screening or other protection against pests.

21 CFR Sec. 110.35- Sanitary Operations

- Physical facilities, equipment, and utensils are to be sanitized in a way that protects against food contamination. Storage of cleaning materials and toxic materials permitted are outlined to prevent contamination with chemicals.

21 CFR Sec. 117.35- Sanitary Operations:

- Buildings, fixtures, and other physical facilities of the plant must be maintained in clean sanitary condition and must be kept in repair adequate to prevent water from becoming adulterated.
- Cleaning and sanitizing of utensils and equipment must be conducted in a manner that protects against cross-contact and contamination of water and packaging materials.
- Cleaning compounds and sanitizing agents used in cleaning and sanitizing procedures must be safe and adequate under the conditions of use, including letter of guarantee or certification.

- Toxic cleaning compounds, sanitizing agents, and pesticide chemicals must be identified, held, and stored in a manner that protects against contamination of water and packaging materials.
- Effective measures must be taken to exclude pests from the manufacturing and processing areas
- Equipment in continuous production operation must be cleaned and sanitized as necessary.
- Non-water contact surfaces of equipment must be cleaned in a manner and as necessary to protect against cross-contact and contamination of water contact surfaces and packaging.

- Cleaned and sanitized portable equipment with water contact surfaces must be stored in a location and manner that protects surfaces from cross-contact and from contamination.

21 CFR Sec. 110.37- Sanitary Facilities and Controls:

- Requirements for adequate sanitary facilities and controls, including the water supply, plumbing, toilet and handwashing facilities, and rubbish and offal disposal.

21 CFR Sec. 117.37- Sanitary Facilities and Controls:

- The water supply must be adequate for the operations intended and must be derived from an adequate source. Any water that contacts food contact surfaces, or packaging materials must be safe and of adequate sanitary quality.
- Plumbing must be of adequate size and design and adequately installed and maintained to carry adequate quantities of water to required locations throughout the plant.
- Sewage must be disposed of into an adequate sewerage system and avoid constituting a source of contamination to water supplies, equipment, or utensils or creating an unsanitary condition.
- Provide adequate floor drainage in all areas where floors are

subject to flooding-type cleaning.

- Provide that there is not backflow from, or cross-connection between, piping systems that discharge waste water or sewage and piping systems that carry water for food or food manufacturing.
- Provide employees with adequate, clean, readily accessible toilet facilities.
- Water plant must provide hand-washing facilities that are adequate and convenient.
- Rubbish must be conveyed, stored, and disposed to minimize the potential for the waste becoming an attractant and harborage place for pests, and protect against contamination of food, packaging materials, water supplies, and ground surfaces.

21 CFR Sec. 117.40- Equipment and Utensils:

- Plant equipment and utensils used in manufacturing, processing, or holding water must be designed of material that can be adequately cleaned, and protect against contamination.
- Equipment and utensils must be designed, constructed, and used appropriately to avoid the adulteration of water with lubricants, fuel, metal fragments, or any other contaminants.
- Equipment must be installed so as to facilitate the cleaning and maintenance of the equipment and of adjacent spaces.
- Water contact surfaces must be corrosion-resistant.
- Water contact surfaces must be made of nontoxic materials and designed to withstand the environment and action of cleaning compounds, sanitizing agents, and cleaning procedures.
- Water contact surfaces must be maintained to protect from being contaminated by any source, including unlawful indirect food additives.
- Seams on water contact surfaces must be smoothly bonded or maintained so as to minimize accumulation of food particles, dirt, and organic matter.
- Holding, conveying, and manufacturing systems must be of a design and construction that enables them to be maintained in an appropriate clean and sanitary condition.
- Instruments and controls used for measuring, regulating, or recording temperatures, pH, acidity, water activity must be accurate, precise and adequately maintained, and adequate in number for their designated uses.
- Compressed air or other gases mechanically introduced into food or used to clean water contact surfaces or equipment must be treated in such a way that food is not contaminated with unlawful indirect food additives.

Sampling and Records

Sampling of bottled water source and products must comply with the requirements outlined in 21 CFR 129. The finished bottled water must comply with bottled water quality standards outlined in 21 CFR 165.110 and the FFDCA. Record keeping requirements are outlined in 21 CFR 129. These requirements have been put into a chart in Appendix C: Sampling and Records to try to simplify requirements for the processors. Tests shall be performed either by qualified plant personnel or a competent commercial laboratory. The Wyoming Department of Agriculture Analytical Services Laboratory is able to analyze microbiological samples for more information on sample analysis call (307)742-2984.

21 CFR 129.35- Sanitary Facilities:

- Product and operations water must both be derived from an approved source. Source sampling is required if on a private water source. If a plant is on a public water supply they are exempt from source sampling requirement if they have the test results or a certificate showing full compliance with all provisions of EPA National Primary and Secondary Drinking Water Regulations.

- Sampling Requirements:
    - Source Total Coliform - source water shall be analyzed and tested for total coliform at least weekly. If any coliform is detected, follow-up testing must be conducted to determine if any of the coliform organisms are E. coli.
    - Source Chemical - source water from each source in use by the plant are to be taken and analyzed at a minimum of once annually.
    - Source Radiological - source water from each source in use by the plant shall be taken and analyzed once every 4 years.

- Recordkeeping Requirement: Records of approval of the source water government agencies having jurisdiction, records of sampling and analyses for which the plant is responsible, and

records describing corrective measures taken in response to a finding of E. coli are to be maintained on file at the plant.

- Facilities that do not use a public water system as its source but whose source water has been treated with chlorine based disinfectant or ozone must test the source water.

- Sampling Requirement: Source water shall be tested for the residual disinfectants and the DBP's listed in Appendix B: Contaminant Table, under Residual Disinfectants and Disinfection By-products.

21CFR 129.80- Processes and Controls:

(a) Treatment of Product Water: All treatment of product by any process shall be effective in accomplishing its intended purpose in a manner that will not adulterate product.

- Sampling Requirement: Product water samples shall be taken after processing and prior to bottling by the plant. They are to be analyzed as often as necessary to assure effectiveness. The methods of analysis shall be those approved by the government agency or agencies having jurisdiction.

- Recordkeeping Requirement: All records including inspections and repairs shall be maintained by the plant including those of physical maintenance, inspections, and conditions found.

(b) Containers: Multiservice primary containers shall be adequately cleaned, sanitized, and inspected just prior to being filled, capped, and sealed. All containers shall be washed, rinsed, and sanitized by mechanical washers approved methods. Multiservice shipping cases shall be maintained to prevent contamination.

- Recordkeeping Requirement: Records of physical maintenance, inspections and conditions found, and performance of mechanical washer shall be maintained by the plant.

(c) Cleaning and Sanitizing Solutions: Cleaning and sanitizing solutions

utilized by the plant shall be sampled and tested.

- Recordkeeping Requirement: Records of these tests shall be maintained by the plant.

(d) Sanitizing Operations: Sanitizing operations shall be adequate to sanitize the intended product water-contact surfaces and any other critical area. The final rinse, prior to filling the container with product water, shall be performed with disinfected water.

- Recordkeeping Requirement: The plant should maintain a record of the intensity of the sanitizing agent and the time duration that the agent was in contact with the surface being sanitized. Refer to CFR 129.80(d) for minimum times production. See Appendix B: Contaminant Table.

(e) Unit Package Production Code: Each unit package from a batch or segment shall be identified by a production code. The production code shall identify a particular batch or segment of a continuous production run and the day produced.

- Recordkeeping Requirement: The plant shall record and maintain information as to the kind of product, volume produced, date produced, lot code used, and the distribution of the finished product to wholesale and retail outlets.

(f) Filling, Capping, or Sealing: During the process of filling, capping or sealing, the filling, capper or sealer must be monitored. Visual or electronic inspection shall take place to verify containers are sound, properly capped or sealed, and coded and labeled. Containers that are not satisfactory shall be reprocessed or rejected.

- Sampling Requirement: At least once each 3 months, a bacteriological swab and/or rinse count should be made from at least four containers and closures selected just prior to filling and sealing. No more than one of the four samples may exceed more than one bacterium per milliliter of capacity or one colony per square centimeter or surface area. All samples shall be free of coliform organisms. Tests shall be performed either by qualified plant personnel or a competent commercial laboratory. (See Appendix A: Container and Closure Testing Guidance)

(g) Compliance Procedures: A quality standard for bottled drinking water

is established in 165.110(b) of CFR. To assure that the plant's production of bottled drinking water complies with the applicable standards, laws, and regulations of the government agency or agencies having jurisdiction, the plant will need to take product samples of product.

- Sampling Requirements:
  - Bacteriology- at least weekly, test a representative sample from a continuous run for total Coliform. A representative sample shall consist of primary containers of product or unit packages of product (If the primary container of product is large i.e. 5 gallons, for shipping purposes a unit package may consist of a smaller sample collected in an approved container of at least 100ml collected directly from the bottling line). If coliform organisms are detected, follow up testing must be conducted to determine if any coliform organisms are E.coli
  - Chemical, Physical, Radiological- Analyze at least annually a representative sample from a batch or segment of a continuous product run for each type of bottled drinking water during a day's production. See Appendix B: Contamination Table.

- Record Requirement: The plant shall maintain records of date of sampling, type of product sampled, production code, and results of analysis.

(h) Record Retention: All records required by above statements, shall be maintained at the plant for not less than 2 years. Plants shall also retain, on file at the plant, current certificates or notifications of approval issued by the government agency or agencies approving the plant's source and supply of product water and operations water. All required documents shall be available for official review at reasonable times.

Identity and Labeling

Identity and labeling are covered under 21 CFR Sec. 165 and 21 CFR Sec. 101. The Wyoming Food Safety Rule and FFDCA also specify product labeling requirements. All labels must be approved by submitting the WDA/CHS label review form.

- Identity: The identity of the water must meet the requirements outlined in the 21 CFR Subpart B Sec. 165.110 (a).

- Labeling requirements include:
  - Name of Food (Type of Water) (ie: artesian, ground water, mineral water, sparkling bottled, spring water, distilled, reverse osmosis, municipal water, well water, etc.).
  - Name of Source - if the water comes from a community water system.
  - Ingredients (ie: Minerals for taste).
  - Quantity of contents - must be dual declaration.
  - Name and place of business of the manufacturer, packer or distributor.

- Optional Labeling:
  - TDS, unless required through testing as outlined in 21 CFR Subpart B Sec. 165.110 (a)(2)(iii).
  - Bottled water for feeding infants as outlined in 21 CFR Subpart B Sec. 165.110 (a)(3)(iii).
  - If bottled water is not within drinking water standard parameters for chemical, physical or radiological requirements proper labeling shall be present as outlined in 21 CFR Sec.

Appendix A: Container and Closure Testing Basic Procedure

INTRODUCTION: The following procedure is provided as guidance for FDA-required analysis of containers and closures. The requirement can be found at 21CFR129.80(f):

> "Filling, capping, or sealing. During the process of filling, capping or sealing either single-service or multiservice containers, the performance of the filler, capper or sealer shall be monitored and the filled containers visually or electronically inspected to assure they are sound, properly capped or sealed, and coded and labeled. Containers which are not satisfactory shall be reprocessed or rejected. Only nontoxic containers and closures shall be used. All containers and closures shall be sampled and inspected to ascertain that they are free from contamination. At least once each 3 months, a bacteriological swab and/or rinse count should be made from at least four containers and closures selected just prior to filling and sealing. No more than one of the four samples may exceed more than one bacterium per milliliter of capacity or one colony per square centimeter of surface area. All samples shall be free of coliform organisms. The procedure and apparatus for these bacteriological tests shall be in conformance with those recognized by the government agency or agencies having jurisdiction. Tests shall be performed either by qualified plant personnel or a competent commercial laboratory."

There are variations and alternatives to this procedure. You should consult with your laboratory for exact procedures used by the laboratory, or for suggestions for performing the analysis in-house by a qualified plant employee.

CONTAINERS:

Materials:

- PET(polyethylene terephthalate)/PC(poly- carbonate)/ HDPE(High-density polyethylene)containers to be tested, five (5) of each container type.
- USP sterile water, at least 120 ml in individual containers, one for each container to be tested.
- Materials usually needed for total coliform/E. coli (membrane filtration (MF) or presence/absence (P/A) methods) and Heterotrophic Plate Count (HPC) analysis (membrane filtration or pour plate methods).

Testing for Each Container Type:

- HPC: Four (4) containers
- Total Coliform/E. coli: One (1) container

Procedure for Each Container Type:

- Collect container samples directly from production line prior to filling. For reusable containers, collect samples after washing, but before filling.
- Preferably inside a biological safety cabinet or in a structure that isolates sample containers from environmental air, or in an area separate from plant operations, open vial of sterile water and pour into sample container.
- Carefully turn container nearly horizontal and roll container effectively rinse interior surfaces of container with sterile water.
- For HPC pour plate analysis, with a sterile pipette, extract one
  (1) ml of sterile water from the container and dispense onto a prepared HPC pour plate. Repeat for three (3) additional containers, or
  (2) If shipping to a laboratory place in sterile bottle to send to lab

for testing. Contact the laboratory where sample is being shipped for sampling bottles and sampling requirements.

- For total coliform/E. coli analysis (MF or P/A methods) and HPC (MF method):
    - MF Method: Pour 100 ml of sterile water directly from the sample container into a membrane filtration monitor and filter through a 0.45 micron (um) membrane filter, OR
    - P/A Method: Pour 100 ml of sterile water directly from the sample container into a sterile container with prepared media for a presence/absence test.
- Place HPC plates, membrane filter plates and P/A containers in an incubator at 37^0C (98.6^0F).
- Remove plates/containers from incubator and interpret results in accordance with analytical method instructions at 18-24 hours (total coliform/E. coli) and 48 hours (HPC).

Results:

- Total coliform: Any presence of total coliform as detected by the analytical method employed is interpreted as a failing test result, as no coliforms or E. coli are permitted.
- HPC: Per 21CFR129.80(f), "….No more than one of the four samples may exceed more than one bacteria per milliliter of capacity or one colony per square centimeter of surface area…." Therefore, for a pour plate test, if the test has a volume capacity of 500 ml, the test plate must contain fewer than 500 CFUs of HPC colonies, which equals ‹1 CFU per ml capacity of the 500 ml container.

CLOSURES:

Materials:

- Samples of closures to be tested, five (5) of each closure type
- Swab kits in glass vials/tubes containing sterile water (HPC) or prepared liquid media for specific test (total coliform/E. coli)
- As needed, materials usually needed for total coliform/E. coli (MF or P/A methods) and HPC analysis (MF or pour plate methods)
    - Not required for tests involving swabs in vials/tubes containing specific liquid media

Testing for Each Closure Type:

- HPC: Four (4) containers
- Total Coliform/E. coli: One (1) container

Procedure for Each Closure Type:

- Surface area of the inside (product contact surface) of the closure can be calculated based on closure dimensions, or it can be obtained from the closure manufacturer.
- For HPC, remove swab from tube/vial containing sterile water and swab the complete product contact surface of the closure.
- Replace swab in tube/vial and close tightly. Agitate tube/vial to assure adequate mixing.
- From each tube/vial, extract one (1) ml of water using a sterile pipette and dispense onto a prepared HPC pour plate. Repeat for three (3) additional containers, for a total of four (4) containers.
- Repeat steps #2 and #3 using swab and tube/vial containing media specific to total coliform/E. coli.
- Place all HPC plates and coliform tubes/vials in an incubator at 37^0C (98.6^0F).
- Remove plates/containers from incubator and interpret results in

accordance with analytical method instructions at 18-24 hours (total coliform/E. coli) and 48 hours (HPC).

Results:

- Total coliform: Any presence of total coliform as detected by the analytical method employed is interpreted as a failing test result, as no coliforms or E. coli are permitted.
- HPC: Per 21CFR129.80(f), "….No more than one of the four samples may exceed more than one bacteria per milliliter of capacity or one colony per square centimeter of surface area…." Therefore, for a pour plate test, if the test has product contact surface area of 8 cm^2, the test plate must contain fewer than 8 CFUs of HPC colonies, which equals ‹1 CFU per cm^2 of the product contact surface.

Appendix B - Contaminant Tables

21 CFR Sec. 165.10(b)(3) - Physical Quality:

- Turbidity
- Color
- Odor

21 CFR Sec. 165.110(b)(5) - Radiological Contaminants:

- The bottled water shall contain a Combined radium-226 and radium-228 not in excess of 5 picocuries per liter of water.
- The bottled water shall not contain a gross alpha particle activity (including radium-226, but excluding radon and uranium) in excess of 15 picocuries per liter of water.
- The bottled water shall not contain beta particle and photon radioactivity from manmade radionuclides in excess of that which would produce an annual dose equivalent to the total body or any internal organ of 4 millirems per year calculated on the basis of an intake of 2 liters of the water per day. If two or more beta or photon-emitting radionuclides are present, the sum of their annual dose equivalent to the total body of any internal organ shall not exceed 4 millirems per year.
    - The bottled water shall not contain uranium in excess of 30 micrograms per liter of water.
    - Mineral water may be exempt from some of the limits. Please refer to 21 CFR 165.110.
    - Approved methods for testing can be found in the 21 CFR 165.110.

21 CFR Sec. 165.110lb!f41 Chemical Quality:

Water tested shall not contain chemicals in excess of the following concentrations -

Substance	Concentration in milligrams per liter
Chloride	250
Iron	0.3
Manganese	0.05
Phenols	0.001
Total Dissolved Solids	500
Zinc	5

,,,, The allowable limit of fluoride is dependent upon the temperature at the location where the bottled water is sold at retail. The limit of allowable fluoride in bottled water where no fluoride is added is

as follows:

Annual average max.daily air temperatures (F)	Concentration in milligrams per liter
53.7 and below	2.4
53.8-58.3	2.2
58.4-63.8	2
63.9-70.6	1.8
70.7-79.2	1.6
79.3-90.5	1.4

The limit of allowable fluoride in bottled water to which fluoride is added is as follows:

Annual average maximum daily air temperatures	Concentration in milligrams per liter
53.7 F and below	1.7
53.8-58.3 F	1.5
58.4-63.8 F	1.3
63.9-70.6 F	1.2
70.7-79.2 F	1
79.3-90.5 F	0.8

Bottled water shall be tested for the following chemical contaminants which shall not be found in excess of the limits that are listed. Allowable levels for inorganic substances are as follows:

Contaminant	Concentration in milligrams per liter
Arsenic	0.01
Antimony	0.006
Barium	2
Berylium	0.004
Cadmium	0.005
Chromium	0.1
Copper	1
Cyanide	0.2
Lead	0.005
Mercury	0.002
Nickel	0.1
Nitrate	10 (as nitrogen)
Nitrite	1 (as nitrogen)
Total Nitrate and Nitrite	10 (as nitrogen)
Selenium	0.05
Thallium	0.002

iv.

	Allowable levels for volatile organic chemicals (VOCs) are as follows:	
	Contaminant (CAS Reg. No)	Concentration in milligrams per liter
	Benzene (7143-2)	0.005
	Caroon Tetrachloride (56-23-5)	0.005
	o- Dichlorobenzene (95-50-1)	0.6
	p- Dichlorobenzene (10646-7)	0.075
	1, 2 Dichloroethane (1076-2)	0.005
	1, 1 - Dichbroethylene (75-354)	0.007
	cis-1, 2-Dichloroethylene (156-59-2)	0.07
	trans- 1, 2-Dichloroethylene (156-60-5)	0.1
	Dichloromethane (75-2)	0.005
'''	1, 2-Dichloropropane (78-87-5)	0.005
	Ethylbenzene (100414)	0.7
	Monochlorobenzene (108-90-7)	0.1
	Styrene (10042-5)	0.1
	Tetrachloroethylene (127-184)	0.005
	Toluene (108-88-3)	1
	1, 2, 4-Trichlorobenzene (120-82-1)	0.07
	1, 1, 1-Trichloroethane (71-55-6)	0.2
	1, 1, 2-Trichloroethane (79-00-5)	0.005
	Trichloroethylene (79-01-6)	0.005
	Vinyl Chloride(7514)	0.002
	Xylenes (1330-20-7)	10

Allowable levels for pesticides and other synthetic organic chemicals (SOC's) are as follows -

Contaminant (CAS Reg.No.)	Concentration in milligrams per liter
Alachlor {15972-60-8)	0.002
Atrazine (1912-24-9)	0.003
Benzo(a)pyrene (50-32-8)	0.0002
Carbofuran (1563-66-2)	0.04
Chlordane (57-74-9)	0.002
Dalapon (75-99-0)	0.2
1,2-Dibromo-3-chloropropane (96-12-8)	0.0002
2,4-D (94!-75-7)	0.07
Di(2-ethylhexyl)adipate (103-23-1)	0.4
Di(2-ethylhexyl)phthalate (117-81-7)	0.006
Dinoseb (88-85-7)	0.007
Diquat (85-00-7)	0.02
Endothall (145-73-3)	0.1
Endrin (72-20-8)	0.002
Ethylene dibromide (106-934)	0.00005

Allowable levels for pesticides and other SOC's are as follows:

Contaminant (CAS Reg. No.)	Concentration in milligrams per liter
Glyphosate (1071-53-6)	0.7
Heptachlor (76-44-8)	0.0004
Heptachlor epoxide (1024-57-3)	0.0002
Heptachlorbenzene (118-74-4)	0.001
Hexachlorocyclopentadiene (77-47-4)	0.05
Lindane (58-89-9)	0.0002
Methoxychlor (72-43-5)	0.04
Oxamyl (23135-22-0)	0.2
Pentachlorophenol (87-86-5)	0.001
PCB's (as decachlorobiphenyl) (1336-36-3)	0.0005
Picloram (1918-02-1)	0.5
Simazine (122-34-9)	0.004
2,3,7,8-TCDD (Dioxin) (1746-01-6)	3 x 10-8
Toxaphene (8001-35-2)	0.003
2,4,5-TP (Silvex) (93-72-1)	0.05

The allowable levels for certain chemicals with secondary maximum contaminant levels in its drinking water regulations (40 CFR part 143) are as follows:

Contaminant	Concentration in millgrams per liter
Aluminum	0.2
Silver	0.1
Sulfate	250

The allowable limits for residual disinfectants and disinfection byproducts are as follows-

Substance	Concentration in milligrams per liter
Disinfection byproducts	
Bromate	0.01
Chlorite	1
Haloacetic acids (five) (HAAS)	0.06
Total Trihalomethanes (TTHM)	0.08
Residual disinfectants	
Chloramine	4.0 (as Cl2)
Chlorine	4.0 (as Cl2)
Chlorine dioxide	0.8 (as ClO2)

Appendix C: Summary of Sampling and Records

Sampling Requirements:

Sample Type		Required Frequency of Samples						Page Reference
		Daily	Weekly	Quarterly	Annually	4 years	As Necessary	
Source Water	Total Coliform		X					Page 8
	Chemical				X			Page 8
	Radiological					X		Page 8
	Chlorine Treated						X	Page 8 & 9
Final Product Water	Treatment of Product Water						X	Page 9
	Swab and/or Rinse Count			X				Page 10
	Bacteriology		X					Page 11
	Chemical, Physical, Radiological				X			Page 11

Recordkeeping Requirements:

- Approval of source water by government agency having jurisdiction. (Page 8)
- Records of all sampling analysis done by the plant including date, type of product sampled, production code, and results of analysis. (Page 8)
- Records of all corrective measures taken in response to positive E. coli samples. (Page 8)
- All records involving inspections, repairs, conditions, and performance of mechanical washer found at the plant (Page 9)
- Records of types of cleaning and sanitizing solutions used and also the duration and strength of sanitizer used. (Page 9 &10)
- Records describing type of product, volume produced, date produced, lot code used, and the distribution of the finished product to wholesale and retail outlets. (Page 10)

All records shall be maintained at the plant for not less than 2 years.

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