

## Vermont Water Supply Rule

### 6.12 Maximum Contaminant Levels

The Maximum Contaminant Levels and Maximum Residual Disinfectant Levels of 40 CFR Part 141 are adopted herein. The Secretary, with the concurrence of the Vermont Commissioner of Health, has established a more stringent MCL for uranium (listed in Table 6-1) than published in 40 CFR, Part 141. The Secretary has also adopted the Vermont Department of Health's Health Advisory for Nickel as an MCL and the Vermont Department of Health's Health Advisory for five per- and polyfluoroalkyl substances (PFHxS, PFHpA, PFNA, PFOS, and PFOA) as a cumulative (sum of all 5 analyte results) MCL.

Table 6-1 summarizes the contaminants and the maximum contaminant level (MCL) and maximum residual disinfectant level (MRDL) standards which apply to **Public** water systems. If any discrepancy exists between the values in Table 6-1, with the exception of nickel, uranium, PFHxS, PFHpA, PFNA, PFOS, and PFOA, and the referenced sections in 40 CFR, Part 141, the MCLs in 40 CFR, Part 141 shall apply.

Table 6-1 also summarizes the maximum contaminant level goals (MCLG) and the maximum residual disinfection level goals (MRDLG) which apply to **Public** water systems. If any discrepancy exists between the values in Table 6-1, with the exception of nickel, and the referenced sections in 40 CFR, Part 141, the MCLGs and MRDLGs in 40 CFR, Part 141 shall apply.

The provisions of 40 CFR, §142.63, prohibiting variances and exemptions from the MCL for total coliform, is adopted herein.

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**Table 6-1 - CONTAMINANT STANDARDS**

CONTAMINANT	STANDARD MCL or MRDL as noted (mg/l unless otherwise noted)*	MCLG or MRDLG (as noted)	Initial Source Testing Required
<b>1. Microbiological</b>	<b>MCL</b>	<b>MCLG</b>	
A. Total coliform bacteria	Test for absence or presence in the samples collected: 1. For systems which collect 40 or more per month no more than 5.0% shall be positive; and 2. For systems which collect fewer than 40 samples per month no more than 1 sample shall be positive.	Zero (including fecal coliforms and <i>Escherichia coli</i> )	Yes
B. Fecal Coliform or <i>Escherichia coli</i> ( <i>E. coli</i> ) repeat samples	Any fecal coliform-positive repeat sample or <i>E. coli</i> -positive repeat sample, or any total coliform-positive repeat sample following a fecal coliform-positive or <i>E. coli</i> -positive routine sample constitutes a violation of the MCL for total coliform. For purposes of the public notification requirements in 40 CFR, §141.32, this is a violation that may pose an acute risk to health.	See total coliform bacteria	Yes

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CONTAMINANT	STANDARD MCL or MRDL as noted (mg/l unless otherwise noted)*	MCLG or MRDLG (as noted)	Initial Source Testing Required
<i>Giardia lamblia</i>	----	zero	Only if MPA testing required
Viruses	---	zero	No
Legionella	---	zero	No
<i>Cryptosporidium</i>	---	zero	Only if MPA testing required
<b>2. Turbidity</b>			Yes
A. Unfiltered systems required to install filtration	See 40 CFR, §141.13	---	---
B. Unfiltered systems that have been granted approval for avoiding filtration	See 40 CFR, §141.71	---	---
C. Conventional, Direct, Slow Sand, Diatomaceous earth filtration and other filtration technologies	See 40 CFR, §141.73	---	---
<b>3. Primary Inorganic Chemicals</b>	<b>MCL</b>	<b>MCLG</b>	
Arsenic	0.010 mg/l	zero	Yes
Asbestos	7 million fibers/liter (longer than 10 um)	7 million fibers/liter (longer than 10 um)	No
Barium	2 mg/l	2 mg/l	Yes
Cadmium	0.005 mg/l	0.005 mg/l	Yes
Chromium	0.1 mg/l	0.1 mg/l	Yes
Copper	1.3 mg/l (Action Level)	1.3 mg/l	Yes
Fluoride	4.0 mg/l	4.0 mg/l	Yes
Lead	0.015 mg/l (Action Level)	zero	Yes

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CONTAMINANT	STANDARD MCL or MRDL as noted (mg/l unless otherwise noted)*	MCLG or MRDLG (as noted)	Initial Source Testing Required
Mercury	0.002 mg/l	0.002 mg/l	Yes
Nitrate	10.0 (as Nitrogen)	10mg/l (as Nitrogen)	Yes
Nitrite	1.0 (as Nitrogen)	1 mg/l (as Nitrogen)	Yes
Total nitrate & nitrite	10.0 (as Nitrogen)	10 mg/l (as Nitrogen)	Yes
Selenium	0.05 mg/l	0.05 mg/l	Yes
Antimony	0.006 mg/l	0.006 mg/l	Yes
Beryllium	0.004 mg/l	0.004 mg/l	Yes
Cyanide (as free cyanide)	0.2 mg/l	0.2 mg/l	Yes
Nickel	0.1 mg/l	0.1 mg/l	Yes
Thallium	0.002 mg/l	0.0005 mg/l	Yes
<b>4. Disinfection By-products</b>	<b>MCL</b>	<b>MCLG</b>	
Bromodichloromethane Dibromochloromethane Tribromomethane (Bromoform) Trichloromethane (Chloroform)	Sum of all concentrations (Total Trihalomethanes): 0.080 mg/l	zero 0.06 mg/l zero -----	No
Monochloroacetic acid Dichloroacetic acid Trichloroacetic acid Monobromoacetic acid Dibromoacetic acid	Sum of all concentrations (Haloacetic acids (five) HAA5): 0.060 mg/l	--- zero 0.3 mg/l --- ---	No
Bromate (systems treating with ozone)	0.010 mg/l	zero	No
Chlorite (systems treating with chlorine dioxide)	1.0 mg/l	0.8 mg/l	No
<b>5. Disinfectant residuals</b>	<b>MRDL</b>	<b>MRDLG</b>	
Chlorine	4.0 mg/l (as Cl <sub>2</sub> )	4 mg/l (as Cl <sub>2</sub> )	No
Chloramines	4.0 mg/l (as Cl <sub>2</sub> )	4 mg/l (as Cl <sub>2</sub> )	No
Chlorine Dioxide	0.8 mg/l (as Cl <sub>2</sub> )	0.8 mg/l (as Cl <sub>2</sub> )	No

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CONTAMINANT	STANDARD MCL or MRDL as noted (mg/l unless otherwise noted)*	MCLG or MRDLG (as noted)	Initial Source Testing Required
<b>6. Volatile Organic Chemicals</b>	<b>MCL</b>	<b>MCLG</b>	
Vinyl Chloride	0.002 mg/l	zero	Yes
Benzene	0.005 mg/l	zero	Yes
Carbon Tetrachloride	0.005 mg/l	zero	Yes
1,2-Dichloroethane	0.005 mg/l	zero	Yes
Trichloroethylene	0.005 mg/l	zero	Yes
para-Dichlorobenzene	0.075 mg/l	0.075 mg/l	Yes
1,1-Dichloroethylene	0.007 mg/l	0.007 mg/l	Yes
1,1,1-Trichloroethane	0.2 mg/l	0.2 mg/l	Yes
cis-1,2-Dichloroethylene	0.07 mg/l	0.07 mg/l	Yes
1,2-Dichloropropane	0.005 mg/l	zero	Yes
Ethylbenzene	0.7 mg/l	0.7 mg/l	Yes
Monochlorobenzene	0.1 mg/l	0.1 mg/l	Yes
o-Dichlorobenzene	0.6 mg/l	0.6 mg/l	Yes
Styrene	0.1 mg/l	0.1 mg/l	Yes
Tetrachloroethylene	0.005 mg/l	zero	Yes
Toluene	1 mg/l	1 mg/l	Yes
trans-1,2-Dichloroethylene	0.1 mg/l	0.1 mg/l	Yes
Xylenes (total)	10 mg/l	10 mg/l	Yes
Dichloromethane	0.005 mg/l	zero	Yes
1,2,4-Trichlorobenzene	0.07 mg/l	0.07 mg/l	Yes
1,1,2-Trichloroethane	0.005 mg/l	0.003 mg/l	Yes
<b>7. Synthetic Organic Chemicals</b>	<b>MCL</b>	<b>MCLG</b>	
Alachlor	0.002 mg/l	zero	Yes
Atrazine	0.003 mg/l	0.003 mg/l	Yes
Carbofuran	0.04 mg/l	0.04 mg/l	Yes
Chlordane	0.002 mg/l	zero	Yes

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CONTAMINANT	STANDARD MCL or MRDL as noted (mg/l unless otherwise noted)*	MCLG or MRDLG (as noted)	Initial Source Testing Required
Dibromochloropropane	0.0002 mg/l	zero	No
2,4-D	0.07 mg/l	0.07 mg/l	Yes
Ethylene Dibromide	0.00005 mg/l	zero	Yes only for groundwater sources
Heptachlor	0.0004 mg/l	zero	Yes
Heptachlor Epoxide	0.0002 mg/l	zero	Yes
Lindane	0.0002 mg/l	0.0002 mg/l	Yes
Methoxychlor	0.04 mg/l	0.04 mg/l	Yes
Polychlorinated biphenols	0.0005 mg/l	zero	Yes
Pentachlorophenol	0.001 mg/l	zero	Yes
Toxaphene	0.003 mg/l	zero	Yes
2,4,5-TP Silvex	0.05 mg/l	0.05 mg/l	Yes
Benzo[a]pyrene	0.0002 mg/l	zero	Yes
Dalapon	0.2 mg/l	0.2 mg/l	No
Di(2-ethylhexyl) adipate	0.4 mg/l	0.4 mg/l	Yes
Di(2-ethylhexyl) phthalate	0.006 mg/l	zero	Yes
Dinoseb	0.007 mg/l	0.007 mg/l	Yes
Diquat	0.02 mg/l	0.02 mg/l	No
Endothall	0.1 mg/l	0.1 mg/l	No
Endrin	0.002 mg/l	0.002 mg/l	Yes
Glyphosate	0.7 mg/l	0.05 mg/l	No
Hexachlorobenzene	0.001 mg/l	zero	Yes
Hexachlorocyclopentadiene	0.05 mg/l	0.05 mg/l	Yes
Oxamyl (Vydate)	0.2 mg/l	0.2 mg/l	Yes
Picloram	0.5 mg/l	0.5 mg/l	Yes
Simazine	0.004 mg/l	0.004 mg/l	Yes
2,3,7,8-TCDD (Dioxin)	3 x 10 <sup>-8</sup> mg/l	zero	No
<b>8. Radionuclides</b>	<b>MCL</b>	<b>MCLG</b>	

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CONTAMINANT	STANDARD MCL or MRDL as noted (mg/l unless otherwise noted)*	MCLG or MRDLG (as noted)	Initial Source Testing Required
Gross Alpha Particle Activity (including radium-226 but excluding radon and uranium)	15 pCi/l	zero	Yes
Combined Radium-226 and Radium-228	5 pCi/l <sup>2</sup>	zero	Yes
Uranium	20 ug/l	zero	Yes
Beta particle and photon radioactivity from man-made Radionuclides <sup>1</sup>	An annual dose equivalent to the total body or any internal organ greater than 4 millirem/year (mrem/year) <sup>3</sup>	zero	No
Gross Beta Activity <sup>1</sup>	50 pCi/l	---	No
Tritium <sup>1</sup>	20,000 pCi/l	---	No
Strontium-90 <sup>1</sup>	8 pCi/l <sup>5</sup>	---	No
<b>8. Treatment Technique</b>		<b>MCLG</b>	
Acrylamide	----	zero	No
Epichlorohydrin	----	zero	No
<b>9. Per- and polyfluoroalkyl substances (PFAS)</b>	<b>Cumulative MCL</b>	<b>MCLG</b>	
Perfluorohexane sulfonic acid (PFHxS)	0.000020 mg/l <sup>6</sup>	zero	Yes
Perfluoroheptanoic acid (PFHpA)	0.000020 mg/l <sup>6</sup>	zero	Yes
Perfluorononanoic acid (PFNA)	0.000020 mg/l <sup>6</sup>	zero	Yes
Perfluorooctanesulfonic acid (PFOS)	0.000020 mg/l <sup>6</sup>	zero	Yes
Perfluorooctanoic acid (PFOA)	0.000020 mg/l <sup>6</sup>	zero	Yes

\* The conversion from mg/l to ug/l is 1 mg/l=1000 ug/l. As an example 5 mg/l is equal to 5000 ug/l. The conversion from mg/l to ng/l (ppt) is 1 mg/l =1,000,000 ng/l (ppt). As an example, 0.000020 mg/l is 20 ng/l. 20 ng/l is equivalent to 20 ppt.

1 Public Community Water Systems designated by the Secretary as vulnerable must sample for this contaminant

2 The combined radium-226 and radium-228 value is determined by the addition of the results of the analysis for radium-226 and radium 228.

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- 3 See 40 CFR §141.66(d) for calculation of the MCL.
- 4 Average annual concentration assumed to produce a total body or organ doses of 4 mrem/yr. For tritium the critical organ is total body. See 40 CFR §141.66.
- 5 Average annual concentration assumed to produce a total body or organ doses of 4 mrem/yr. For strontium-90 the critical organ is bone marrow. See 40 CFR §141.66.
- 6 The MCL is 0.000020 mg/L for any combination of these PFAS: PFOA, PFOS, PFHxS, PFHpA, and PFNA.

**Table 6-2 – DOMESTIC BOTTLED WATER MONITORING REQUIREMENTS**

Category of Contaminant <sup>(1)</sup>	Sampling Frequency	Number of Samples	
		Source	Product
Microbiological Total Coliform Heterotrophic Plate Count (HPC)	Monthly <sup>(2)</sup> Monthly <sup>(2)</sup>	1 1	4 4
Primary Inorganic Chemicals (including lead and copper)	3 Years	1	1
Volatile Organic Chemicals	3 Years	1	1
Synthetic Organic Chemicals	3 Years	1	1
Per- and polyfluoroalkyl substances (PFAS)	See § 6.18		
Radionuclides: Gross Alpha, Combined Radium 226 & 228, and Uranium	3 Years	1	1
Disinfectant By-products and Disinfectant Residual	According to 40 CFR, Part 141, Subpart L		

- (1) See Table 6-1 for a detailed list of contaminants and associated MCLs and MRDLs.
- (2) If bottling does not occur monthly, a letter must be submitted in place of the monthly sample to avoid receiving a monitoring violation.

### 6.13 Secondary Standards

- (a) All new **Public Community, Domestic Bottled, and Public Non-Transient Non-Community** water systems shall initially monitor for the contaminants contained in Table 6-3 except for Aluminum, Copper, Fluoride, Foaming Agents, Silver, Sulfate, and Zinc. Proposed water systems with contaminants exceeding these values may be required to treat or abandon the source, at the discretion of the Secretary.



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- (b) Existing **Public Community, Domestic Bottled, and Public Non-Transient Non-Community** water systems may be required to monitor and comply with the Secondary Standards contained in 40 CFR, Part 143 when the Secretary determines that monitoring and compliance is necessary to protect public welfare. When monitoring is required, the monitoring shall be conducted at every entry point to the water system's distribution system. Table 6-3 summarizes these secondary contaminants and the standards which apply to **Public Community, Domestic Bottled, and Public Non-Transient Non-Community** water systems. If any discrepancy exists between the values in Table 6-3 with the exception of sodium and aluminum and the referenced sections in 40 CFR, Part 143, then the standards in 40 CFR, Part 143 shall apply.

Table 6-3 SECONDARY CONTAMINANT STANDARDS		
CONTAMINANT	STANDARD	INITIAL SOURCE TESTING REQUIRED?
Aluminum	0.2 mg/l	No
Chloride	250 mg/l	Yes
Color	15 color units	Yes
Copper	1.0 mg/L	Yes as Primary Contaminant
Corrosivity	Non-corrosive (between +0.5 and -0.5 Langelier Saturation Index)	Yes
Fluoride	2.0 mg/L	Yes as Primary Contaminant
Foaming Agents	0.5 mg/l	No
Iron	0.3 mg/l	Yes
Manganese	0.05 mg/l	Yes
Odor	3 threshold odor number	Yes
pH	6.5 – 8.5	Yes
Silver	0.1 mg/l	No
Sodium	250 mg/l	Yes
Sulfate	250 mg/l	No
Total dissolved solids (TDS)	500 mg/l	Yes
Zinc	5 mg/l	No

- (c) Existing **Public Community and Non-Transient Non-Community** water systems shall monitor for Iron and Manganese once every three years at every entry point to the distribution system. More frequent monitoring may be required when the Secretary determines it is necessary to protect public welfare or to ensure the efficacy of contaminant treatment techniques.

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- (d) Additional monitoring requirement for **Public Transient Non-Community** water systems are contained in Appendix A Part 11.

### 6.14 Maximum Contaminant Level Goals (MCLGs)

The Maximum Contaminant Level Goals (MCLGs) contained in 40 CFR Part 141 are herein adopted (see Table 6-1 and Section 6.12). The MCLGs in the referenced sections of 40 CFR Part 141 shall apply throughout the entire **Public** water system.

A maximum contaminant level goal shall serve as the basis for design for any proposed treatment units using best available technology on existing water systems and sources. Maximum contaminant level goals shall serve as the basis for design for new **Public** water systems. Where feasible, new sources shall meet maximum contaminant level goals without treatment.

### 6.15 Health Advisories

For contaminants which may be detected in a **Public** water system for which MCLs or MCLGs have not been adopted, and the Vermont Commissioner of Health has established a Vermont Health Advisory Level for it, the Secretary may adopt the Advisory Level as an MCL or MCLG.

### 6.16 Treatment Techniques

- 6.16.1 All **Public** water systems shall comply with the acrylamide and epichlorohydrin provisions of 40 CFR, Part 141, Subpart K, Treatment Techniques.

### 6.17 Per- and Polyfluoroalkyl Substances Analytical Requirements

- 6.17.1 The Secretary approves the following analytical requirements for PFHxS, PFHpA, PFNA, PFOS, and PFOA samples.
- 6.17.2 Sample collection shall be conducted pursuant to EPA Method 537.1 or shall be conducted pursuant to a subsequently developed EPA-approved method for monitoring PFAS compounds in drinking water that the Secretary authorizes in writing for use by water systems.
- 6.17.3 Data shall be reported to the nearest 0.000001 mg/L.

### 6.18 Per- and Polyfluoroalkyl Substances Monitoring Requirements

- 6.18.1 Except as provided in Section 6.18.3, **Public Community, Non-Transient Non-Community, and Domestic Bottled** water systems shall conduct sampling for PFHxS, PFHpA, PFNA, PFOS, and PFOA in accordance with this section to determine compliance with the maximum contaminant levels.