

Water



Other Elements

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Water Quality Standards Criteria Summaries A Compilation of State/Federal Criteria



OTHER ELEMENTS

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A Compilation of State/Federal Criteria

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U. S. Environmental Protection Agency
Office of Water Regulations and Standards
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NATIONAL SUMMARY
OF
STATE WATER QUALITY STANDARDS

OTHER ELEMENTS

OCTOBER, 1980

PREPARED FOR
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
CRITERIA AND STANDARDS DIVISION
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INTRODUCTION

This digest is compiled to provide general information to the public as well as to Federal, State, and local officials. It contains excerpts from the individual Federal-State water quality standards establishing pollutant specific criteria for interstate surface waters. The water quality standards program is implemented by the U. S. Environmental Protection Agency where responsibility for providing water quality recommendations, approving State-adopted standards for interstate waters, evaluating adherence to the standards, and overseeing enforcement of standards compliance, has been mandated by Congress.

Standards, a nationwide strategy for surface water quality management, contain three major elements: the use (recreation, drinking water, fish and wildlife propagation, industrial, or agricultural) to be made of the navigable water; criteria to protect these uses; and an antidegradation statement to protect existing high quality waters, from degradation by the addition of pollutants.

Water quality criteria (numerical or narrative specifications) for physical, chemical, temperature, and biological constituents are stated in the July 1976 U. S. Environmental Protection Agency publication Quality Criteria for Water (QCW), available from the Government Printing Office, Washington, D. C. The 1976 QCW, commonly referred to as the "Red Book," is the most current compilation of scientific information used by the Agency as a basis for assessing water quality. This publication is subject to periodic updating and revisions in light of new scientific and technical information.

This digest summarizes eight elements which are usually incorporated into State Water Quality Standards. These are: barium, beryllium, boron, chlorine, manganese, nickel, selenium and silver. The presence of any of these elements in water is not unusual because of their wide industrial application. Many of these elements also occur in natural waters as a result of leaching from mineral deposits and various mining operation. Toxic effects attributed to these elements are as varied as the uses to which they are applied. Some are even essential nutrients in very minute concentrations. Nevertheless, EPA has succeeded in demonstrating water associated environmental problems with these elements and has recommended the following ambient water quality criteria to protect aquatic life and human health:

Barium	1 mg/l for domestic water supply (health)
Beryllium	11 ug/l for the protection of aquatic life in soft fresh water.* 1,100 ug/l for the protection of aquatic life in hard fresh water.* 100 ug/l for continuous irrigation on all soils: except 500 ug/l for irrigation on neutral to alkaline fine-textured soils.

* See Hardness (p.75, QCW, 1976). The beryllium concentration that will be protective of a given aquatic ecosystem can be obtained by conducting flow-through bioassays using ambient water and native species of fish and invertebrates.

Boron	750 ug/l for long term irrigation on sensitive crops.
Chlorine	Total residual chlorine: 2.0 ug/l for salmonid fish 10.0 ug/l for other freshwater and marine organisms.
Manganese	50 ug/l for domestic water supplies (welfare). 100 ug/l for protection of consumers of marine mollusks.
Nickel	0.01 of the 96-hour LC ₅₀ for freshwater and marine aquatic life.
Selenium	10 ug/l for domestic water supply (health). For marine and freshwater aquatic life, 0.01 of the 96-hour LC ₅₀ as determined through bioassay using a sensitive resident species.
Silver	50 ug/l for domestic water supply (health). For marine and freshwater aquatic life, 0.01 of the 96-hour LC ₅₀ as determined through bioassay using a sensitive resident species.

Since water quality standards experience revisions and upgrading from time to time, following procedures set forth in the Clean Water Act, individual entries in this digest may be superseded. As these revisions are accomplished and allowing for the States to revise their standards accordingly, this digest will be updated and reissued. Because this publication is not intended for use other than as a general information resource, to obtain the latest information and for special purposes and applications, the reader needs to refer to the current approved water quality standards. These can be obtained from the State water pollution control agencies or the EPA or Regional Offices.

Individual State-adopted criteria follow:

REFERENCES

- A California Water Quality Standards by River Basins, c.a. 1975
For more detailed information on selected basins, sub-basins and stretches of streams and coastal areas refer to California State Water Quality Standards.
- B Delaware Water Quality Standards, March 25, 1979
- C Idaho Water Quality Standards, c.a. September, 1979
- D Missouri Water Quality Standards, c.a. February, 1978
- E American Samoa Water Quality Standards,
Revised July, 1973
- F Territory of Guam Water Quality Standards, Sept. 1975
- G Trust Territory of the Pacific Islands Water Quality
Standards, October 21, 1973
- H Virgin Islands Water Quality Standards, Aug. 1973

ENVIRONMENT REPORTER, The Bureau of National Affairs, Inc.
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- 1 Pages 701:0501-0509, February 16, 1979
- 2 Pages 706:1004-1008, July 20, 1979
- 3 Pages 711:0542-0544, August 5, 1977
- 4 Pages 716:0603, March 26, 1976
- 5 Pages 726:1005, 1011-1013, March 7, 1980
Basic Water Quality Standards adopted May 22, 1979,
have not yet been submitted to EPA for formal approval.
- 6 Pages 731:1002-1009, September 8, 1978
- 7 Pages 746:1008-1014, October 19, 1979
- 8 Pages 751:0504-0505, January 25, 1980
- 9 Pages 765:0512-0515, January 30, 1976
- 10 Page 761:0503-0504, 1973

11 Page 766:0504-0509, October 5, 1979
12 Pages 771:0502-0504, September 29, 1978
13 Pages 776:0504-0506, April 10, 1979
14 Pages 781:0501-0502, May 18, 1979
15 Pages 786:0501-0502, August 29, 1975
16 Page 791:0583, May 26, 1978
17 Pages 796:0103-0108, February 16, 1979
18 Pages 801:1001-1002, Sept. 29, 1978
19 Page 806:1003, March 30, 1979
20 Page 811:1043, 1974
21 Pages 816:0602-0607, 0642-0648, 1974
22 Pages 821:0502-0505, June 30, 1978
23 Pages 831:0501-0510, February 21, 1975
24 Page 836:0502, June 30, 1978
25 Pages 841:0507-0537, December 7, 1979
26 Pages 846:0501-0508, November 17, 1978
27 Pages 851:1001-1023, December 15, 1978
28 Pages 856:1001-1002, July 18, 1978
29 Pages 861:1002-1007, August 11, 1979
30 Pages 866:1004-1009, December 28, 1979
31 Pages 871:0501-0506, November 25, 1977
32 Pages 876:1001-1043, May 26, 1978
33 Pages 881:1001-1007, September 21, 1979
34 Pages 886:0513-0524, August 29, 1975
35 Pages 891:1001-1129, November 16, 1979

- 36 Pages 901:0501-0505, November 3, 1978
- 37 Pages 906:0501-0506, October 13, 1978
- 38 Pages 911:0501-0507, June 22, 1979
- 39 Pages 916:0541-0544, April 14, 1978
- 40 Pages 921:1001-1003, August 13, 1976
- 41 Pages 926:0541-0563, January 26, 1979
- 42 Pages 931:0501-0508, May 26, 1978
- 43 Pages 936:1001-1003, June 27, 1975
- 44 Pages 941:1001-1005, May 26, 1978
- 45 Pages 946:0501-0520, July 14, 1978
- 46 Pages 951:1002-1003, April 28, 1978
- 47 Pages 956:1001-1007, January 11, 1980
- 48 Page 741:1002, November 23, 1979
- 49 Pages 896:0301-0310, March 31, 1978

OTHER ELEMENTS

<u>State</u>	<u>Criteria Values in mg/l</u>		<u>Designated Stream Use</u>
Alabama ¹	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
Alaska ²	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
Arizona ³	Barium 1.0		Public water supply, industrial, recreation (in and on the water)
	Barium 0.5		Fish and aquatic life, wildlife
	Beryllium - not specified		All
	Boron 1.0		Agricultural
	Chlorine - not specified		All
	Manganese - not specified		All
	Nickel - not specified		All
	Selenium 0.01		Public water supply, industrial, recreation (in and on the water) fish and aquatic life, wildlife
	Silver 0.05		Public water supply, industrial, recreation (in and on the water) fish and aquatic life, wildlife

<u>State</u>	<u>Criteria Values in mg/l</u>	<u>Designated Stream Use</u>
Arkansas ⁴	Barium Not specified	All
	Beryllium Not specified	All
	Boron Not specified	All
	Chlorine Not specified	All
	Manganese Not specified	All
	Nickel Not specified	All
	Selenium Not specified	All
	Silver Not specified	All
California ^A	Barium - 1.0	All
	Beryllium - (see specific Basin Plans)	All
	Boron - varies from stream to stream: 0-0.5	All
	Chlorine - (see specific Basin Plans)	All
	Manganese - (see specific Basin Plans)	All
	Nickel - (see specific Basin Plans)	All
	Selenium 0.01	All
	Silver - (see specific Basin Plans)	All
Colorado ⁵	Aluminum 0.1 or bioassay	Aquatic life
	Barium 1.0	Public water supply
	Beryllium 0.01-1.1 depending on water hardness (0-400) plus mg/l) or bioassay: 0.1	Aquatic life
	Beryllium 0.1	Agriculture
	Boron 0.75	Agricultural
	Chlorine 0.003	Fish and aquatic life
	Manganese 1.0 or bioassay	Fish and aquatic life
	Manganese 0.2	Agriculture
	Manganese 0.05	Public water supply
	Nickel 0.05-0.4 depending on water hardness (0-400 plus mg/l) or bioassay 0.01 application factor	Aquatic life
	Nickel 0.2	Agricultural

<u>State</u>	<u>Criteria Values in mg/l</u>	<u>Designated Stream Use</u>
Colorado (con't)	Selenium 0.05 or bioassay 0.001 application factor	Fish and aquatic life
	Selenium 0.02	Agricultural
	Selenium 0.01	Public water supply
	Silver 0.0001 - 0.00025 depending on water hardness (0-400 plus mg/l) or bioassay 0.01 application factor	Fish and aquatic life
	Silver 0.05	Public water supply
	Thallium 0.015 or bioassay	Aquatic life
	Uranium 0.03 - 1.4 depending on water hardness (0-400 plus mg/l) or bioassay	Public water supply
Connecticut ⁶	Barium Not specified	All
	Beryllium Not specified	All
	Boron Not specified	All
	Chlorine Not specified	All
	Manganese Not specified	All
	Nickel Not specified	All
	Selenium Not specified	All
	Silver Not specified	All
Delaware ^B	Barium Not specified	All
	Beryllium Not specified	All
	Boron Not specified	All
	Chlorine Not specified	All
	Manganese Not specified	All
	Nickel Not specified	All
	Selenium Not specified	All
	Silver Not specified	All
Florida ⁷	Barium 1.0	Public water supply
	Beryllium 0.011 (150 mg/l or less of CaCO ₃), 1.1 (over 150 mg/l of CaCO ₃)	Public water supply, fish and aquatic life, wildlife
	0.1 (less than 150 mg/l of CaCO ₃), 0.5 (mg/l or more of CaCO ₃)	Agricultural
	Boron 0.75	Agricultural
	Chlorine 0.01 (total residual)	Public water supply, fish and aquatic life, wildlife and shellfish

<u>State</u>	<u>Criteria Values in mg/l</u>		<u>Designated Stream Use</u>
Florida (con't)	Manganese	0.1	Shellfish
	Nickel	0.1	Public water supply, fish and aquatic life, wildlife, shellfish, agricultural
	Selenium	0.01	Public water supply
	Selenium	0.025	Fish and aquatic life, wildlife, shellfish
	Silver	0.00007	Public water supply
	Silver	0.00005	Shellfish
	Silver	0.00007	Fish and aquatic life, wildlife in predominantly fresh waters.
	Silver	0.00005	Fish and aquatic life, wildlife in predominantly marine waters
	Antimony	0.2	Fish and aquatic life, wildlife in predominantly marine waters and shellfish
Georgia ⁸	Aluminum	1.5	Fish and aquatic life, wildlife, and shellfish
	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
Hawaii ⁹	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All

<u>State</u>	<u>Criteria Values in mg/l</u>	<u>Designated Stream Use</u>
Idaho ¹⁰	Barium Not specified	All
	Beryllium Not specified	All
	Boron Not specified	All
	Chlorine Not specified	All
	Manganese Not specified	All
	Nickel Not specified	All
	Selenium Not specified	All
	Silver Not specified	All
Illinois ¹¹	Barium 5.0	All except public and food processing water supply.
	Barium 1.0	Public and food processing water supply.
	Beryllium Not specified	All
	Boron 1.0	All waters except secondary contact and indigenous aquatic life waters
	Chlorine Not specified	All
	Manganese 0.15	Public water supply
	Manganese 1.0	All waters except secondary contact and indigenous aquatic life waters.
	Nickel 1.0	All waters except secondary contact and indigenous aquatic life waters.
	Selenium 0.01	Public water supply
	Selenium 1.0	All waters except secondary contact and indigenous aquatic life waters.
	Silver 0.005	All waters except secondary contact and indigenous aquatic life waters.
Indiana ¹²	Barium - Not to exceed 1,000 ug/l at any time	Inner Harbor, Gary Harbor, Burns Harbor, and Lake Michigan
	Beryllium Not specified	All

<u>State</u>	<u>Criteria Values in mg/l</u>		<u>Designated Stream Use</u>
Indiana (con't)	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium - Not to exceed 10 ug/l at any time		Inner Harbor, Gary Harbor, Burns Harbor, and Lake Michigan
	Silver - Not to exceed 50 ug/l at any time		Inner Harbor, Gary Harbor, Burns Harbor, and Lake Michigan
Iowa ¹³	Barium	1.0	Public water supply, fish and aquatic life, wildlife, recreation
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	0.1	Public water supply, fish and aquatic life, wildlife, recreation
	Silver	0.05	Public water supply
Kansas ¹⁴	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
Kentucky ¹⁵	Barium	1.0	Public water supply
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	0.05	Public water supply
	Nickel	Not specified	All
	Selenium	0.01	Public water supply
	Silver	0.05	Public water supply

<u>State</u>	<u>Criteria Values in mg/l</u>		<u>Designated Stream Use</u>
Louisiana ¹⁶	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
Maine ¹⁷	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
Maryland ¹⁸	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
Massachusetts ¹⁹	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
Michigan ²⁰	Berium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
Minnesota ²¹	Barium	1.0	Public water supply
	Beryllium	Not specified	All
	Boron	0.5	Agriculture and Wildlife Class A

<u>State</u>	<u>Criteria Values in mg/l</u>		<u>Designated Stream Use</u>
Minnesota (con't)	Manganese	0.05	Public water supply
	Nickel	Not specified	All
	Selenium	0.01	Public water supply
	Silver	0.05	Public water supply
Mississippi ²²	Barium	1.0	Public water supply
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	0.01	Public water supply
	Silver	0.05	Public water supply
Missouri ^D	Barium	5.0	Aquatic life
	Barium	1.0	Drinking water supply
	Beryllium	1.1	Aquatic life
	Beryllium	0.1	Irrigation
	Boron	0.75	Irrigation
	Chlorine	0.01	Aquatic life
	Chlorine	0.002	Coldwater fishery
	Manganese	0.05	Drinking water supply
	Nickel	0.1	Aquatic life
	Nickel	0.2	Irrigation
	Selenium	0.01	Drinking water supply
	Silver	0.05	Drinking water supply
Montana ²³	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
Nebraska ²⁴	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All

<u>State</u>	<u>Criteria Values in mg/l</u>		<u>Designated Stream Use</u>
Nebraska (con't)	Chlorine	250	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
Nevada ²⁵	Barium*		All
	Beryllium*		All
	Boron*		All
	Chlorine*		All
	Manganese*		All
	Nickel*		All
	Selenium**		All
	Silver*		All
* (see Article 4.2.5., Nevada Water Pollution Control Regs., for numerical water quality standards for selected waters of the state.			
** (see articles 4.1.3.1, and 4.1.3.2., Nevada Water Pollution Control Regs., for selected waters of the state.			
New Hampshire ²⁶	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
New Jersey ²⁷	Barium	1.0	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	0.01	All
	Silver	0.05	All
New Mexico ²⁸	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All

<u>State</u>	<u>Criteria Values in mg/l</u>		<u>Designated Stream Use</u>
New Mexico (con't)	Chlorine	0.002	High quality cold water fishery
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
New York ²⁹	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not Specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
North Carolina ³⁰	Barium	1.0	Drinking water supply
	Beryllium	0.011	All
	Boron	Not specified	All
	Chlorine	2.0 ug/l	All
	Manganese	0.05	Drinking water supply
	Nickel	0.1	All
	Selenium	0.01	All
	Silver	Not specified	All
	Chromium	0.05	Drinking water supply
	Chromium	0.1	Recreation, fishing, agriculture
	Barium	1.0	All
	Beryllium	Not specified	All
North Dakota ³¹	Boron	0.5	Public water supply, fish and aquatic life wildlife, recreation
	Boron	0.75	Agriculture Industrial
	Chlorine	0.01	All
	Chlorine	0.002	All uses in lakes
	Manganese	Not specified	All

<u>State</u>	<u>Criteria Values in mg/l</u>		<u>Designated Stream Use</u>
North Dakota (con't)	Nickel	Not specified	All
	Selenium	0.01	All
	Silver	Not specified	All
Ohio ³²	Barium	1.0	Public water supply Ohio River, Mahoning River Basin
	Barium	1.0 mg/l	Lake Erie
	Beryllium	1.1	Warmwater and coldwater habitats
	Beryllium	1.1 mg/l	Lake Erie
	Beryllium	0.1	Agricultural
	Boron	Not specified	All
	Chlorine	0.002 mg/l	Lake Erie
	Chlorine	0.002	Warmwater and coldwater habitats
	Chlorine	0.01	Seasonal warm water habitat
	Manganese	0.05 mg/l	Lake Erie
	Manganese	0.05	Public water supply
	Nickel	0.025 mg/l	Lake Erie
	Nickel	0.2	Agricultural
	Nickel	0.01 x 96 hour LC50 of any representative aquatic species	Warmwater habitat
	Nickel	0.025	Exceptional warm water habitat as well as cold water.
	Selenium	0.010 mg/l	Lake Erie
	Selenium	0.01 x 96 hour LC50 of any representative aquatic species.	Warm water and cold water habitat
	Selenium	0.01	Public water supply and all Ohio River uses

<u>State</u>	<u>Criteria Values in mg/l</u>		<u>Designated Stream Use</u>
Ohio (con't)	Selenium	0.05	Agricultural
	Selenium	0.05	Mahoning River Basin
	Silver	0.05 mg/l	Lake Erie
	Silver	0.01 x 96 hour LC50 of any representative aquatic species	Warmwater and coldwater habitats
	Silver	0.05	Public water supply and all Ohio River uses.
Oklahoma ³³	Silver	0.05	Mahoning River Basin
	Barium	1.0	Drinking water supply
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Nickel	Not specified	All
	Selenium	0.01	Drinking water supply
Oregon ³⁴	Silver	0.05	Drinking water supply
	Barium	1.0	All*
	Beryllium	Not specified	All
	Boron	0.5	All*
	Cadmium	0.01	Drinking water supply
	Chromium	0.05	Drinking water supply
	Copper	1.00	Drinking water supply
	Lead	0.05	Drinking water supply
	Mercury	0.002	Drinking water supply
	Zinc	5.00	Drinking water supply
	Chlorine	Not specified	All
	Manganese	0.05	All*
	Nickel	Not specified	All

<u>State</u>	<u>Criteria Values in mg/l</u>		<u>Designated Stream Use</u>
Oregon (con't)	Selenium	Not specified	All
	Silver	Not specified	All
	*Special water quality standards applicable to: Main stem Klamath River; Multnomah Channel; Main stem Willamette River; Main stem Columbia River from eastern Oregon-Washington border westward to Pacific Ocean; Main stem Grande Ronde River; Main stem Walla Walla River; Main stem Snake River in and adjacent to Oregon; Rouge River Basin; Umpqua River Basin; McKenzie River Basin; Santiam River Basin.		
Pennsylvania ³⁵	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine (as chloride) CH ₁ , CH ₂ , CH ₃ , CH ₄		All waters
	CH ₁	not more than 150 mg/l	
	CH ₂	not more than 250 mg/l	
	CH ₃	not more than 200 mg/l	
	CH ₄	maximum 15 day mean 50 mg/l	
	Manganese	Not to exceed 1.0 mg/l	All waters
	Nickel	0.01 of the 96-hour LC50 of representative important species	All
	Selenium	Not specified	All
	Silver	Not specified	All
Rhode Island ³⁶	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
South Carolina ³⁷	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All

<u>State</u>	<u>Criteria Values in mg/l</u>		<u>Designated Stream Use</u>
South Dakota ³⁸	Barium	1.0	Domestic water supply
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	0.02	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	0.01	Domestic water supply
Tennessee ³⁹	Silver	Not specified	All
	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
Texas ⁴⁰	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
Utah ⁴¹	Barium	1.0	Domestic water supply
	Beryllium	Not specified	All
	Boron	0.75	Agricultural
	Chlorine	0.002	Coldwater aquatic life
	Chlorine	0.01	Warmwater aquatic life
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	0.01	Domestic water supply
	Selenium	0.05	Aquatic life and agriculture

<u>State</u>	<u>Criteria Values in mg/l</u>		<u>Designated Stream Use</u>
Utah (con't)	Silver	0.05	Domestic water supply
	Silver	0.01	Aquatic life
Vermont ⁴²	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
	Thallium	Prohibited	All
Virginia ⁴³	Barium	1.0	Public water supply
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	0.5 ug/l 1.0 ug/l	Class I and II waters Class III, IV, V and VI waters
	Manganese	0.05 100 ug/l	Public water supply Class I and II waters
	Nickel	0.01 times the 96 hr. LC ₅₀	All
	Selenium	0.01	Public water supply
	Silver	0.05	Public water supply
Washington ⁴⁴	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
West Virginia ⁴⁵	Barium	0.5	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All

<u>State</u>	<u>Criteria Values in mg/l</u>		<u>Designated Stream Use</u>
West Virginia (con't)	Nickel	Not specified	All
	Selenium	0.01	All
	Silver	0.05	All
Wisconsin ⁴⁶	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
Wyoming ⁴⁷	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	0.002	Cold water fisheries, non-game support
	Chlorine	0.01	Warm water fisheries
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
American Samoa ^E	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
District of Columbia ⁴⁸	Barium	1.0 mg/l max.	Domestic water supply
	Beryllium	0.011 mg/l max. in soft water 1.1 mg/l max. in hard water	All waters All waters
	Boron	Not specified	All
	Chlorine	0.002 mg/l max. (trout) 0.01 mg/l max. (other fresh- water and marine life	All waters All waters
	Manganese (filterable)	0.05 mg/l max.	Domestic water supply

<u>State</u>	<u>Criteria Values in mg/l</u>		<u>Designated Stream Use</u>
District of Columbia (con't)	Nickel	96 hr. LC ₅₀ x 0.1	All waters
	Selenium	0.01 mg/l max. 96 hr. LC ₅₀ x 0.1	Domestic water supply All waters
	Silver	0.05 mg/l max. 96 hr. LC ₅₀ x 0.01	Domestic water supply All waters
Guam ^F	Barium	0.5 or 0.05 x 96 hr. LC50	All except drinking water supply
	Barium	1.0	Drinking water supply
	Beryllium	0.1 or 0.01 x 96 hr. LC50	All
	Boron	5.0 or 0.1 x 96 hr LC50	All
	Chlorine	0.003 or 0.1 x 96 hr LC 50	All
	Chloride	250	Drinking water
	Manganese	0.02 or 0.02 x 96 hr LC50	All except drinking water supply
	Manganese	0.05	Drinking water supply
	Nickel	0.002 or 0.02 x 96 hr LC50	All
	Selenium	0.005 or 0.01 x 96 hr LC50	All except drinking water supply
	Selenium	0.01	Drinking water supply
	Silver	0.001 or 0.05 x 96 hr LC50	All except drinking water supply
	Silver	0.05	Drinking water supply
	Aluminum	0.2 or 0.01 x 96 hr LC50	All
	Antimony	0.2 or 0.02 x 96 hr LC50	All
	Molybdenum	0.05 x 96 hr LC50	All
	Thallium	0.05 or 0.05 x 96 hr LC50	All
	Vanadium	0.05 x 96 hr LC50	All
Puerto Rico ⁴⁹	Barium	1.0	All
	Beryllium	Not specified	All

<u>State</u>	<u>Criteria Values in mg/l</u>		<u>Designated Stream Use</u>
Puerto Rico (con't)	Boron	1.0	All surface waters
		4.8	All coastal waters
	Chlorine	Not specified	All
	Manganese	Not specified	All surface water
		0.10	All coastal waters
	Nickel	Not specified	All
Trust Territory ^G	Selenium	0.01	All
	Silver	0.001	All
	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All
Virgin Islands ^H	Barium	Not specified	All
	Beryllium	Not specified	All
	Boron	Not specified	All
	Chlorine	Not specified	All
	Manganese	Not specified	All
	Nickel	Not specified	All
	Selenium	Not specified	All
	Silver	Not specified	All

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