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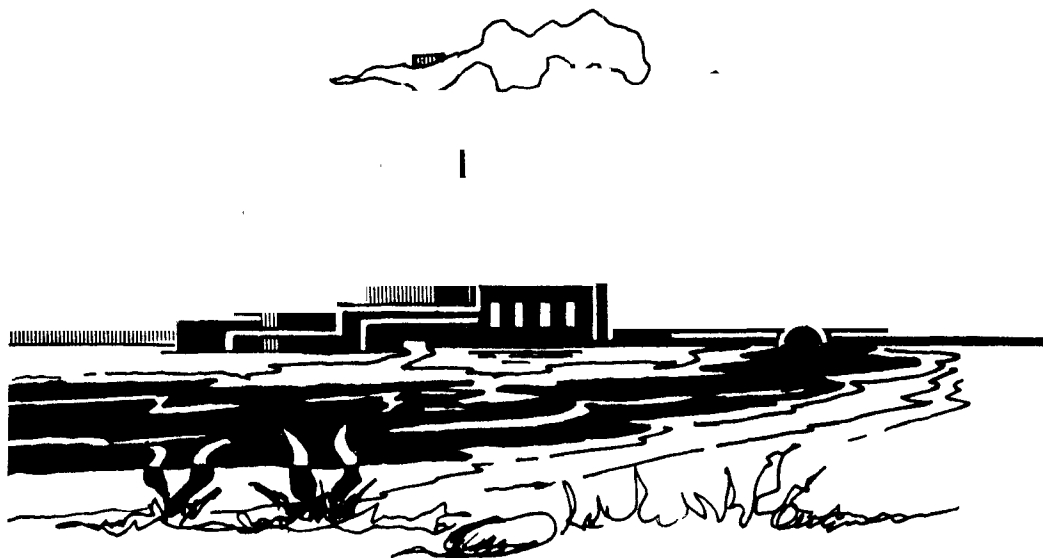
Water



General Toxic Substances

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

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NATIONAL SUMMARY
OF
STATE WATER QUALITY STANDARDS
GENERAL TOXIC SUBSTANCES PROVISIONS

JULY, 1980

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Introduction

This digest was compiled to provide general information to the public as well as to Federal, State, and local officials. It contains excerpts from the individual State-Federal water quality standards establishing pollutant specific criteria for navigable 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 navigable waters, evaluating adherence to the standards, and overseeing enforcement of standards compliance, has been mandated by Congress.

The standards program, a nationwide strategy for surface water quality management, contains two major elements: the use (recreation, drinking water, fish and wildlife propagation, industrial, or agricultural) to be made of the navigable water; and criteria to protect these uses.

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), order # 055-001-01049-4, price \$3.50, 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.

State Water Quality Standards contain a "four free froms" statement, in which one of the "free froms" specifically refers to toxic substances. This statement is essentially a comprehensive narrative standard. It is designed to protect any stream use from detrimental toxic effects of unknown substances. The 1976 Quality Criteria for Water recommendation for this provision, which can be one of several general provisions in State water quality standards, is:

All waters must be kept free from substances attributable to wastewaters or other discharges that injure or are toxic or produce adverse physiological responses in humans, animals or plants.

Since water quality standards are revised from time to time, following procedures set forth in the Clean Water Act, individual entries in this digest may be superseded. This digest will be updated periodically. Because this publication is intended for use only as a general information reference, the reader needs to refer to the current approved water quality standards to obtain the latest information for special purposes and applications. These can be obtained from the State water pollution control agencies or the EPA Regional Offices.

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

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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

GENERAL TOXIC SUBSTANCES PROVISIONS

<u>State</u>	<u>Toxic Substances Narrative</u>	<u>Designated Stream Use</u>
Alabama ^{1.}	Only such amounts, whether alone or in combination with other substances as will not render the waters unsafe or unsuitable as a source of water supply for drinking or food-processing purposes, or injurious to fish, wildlife and aquatic life.	Public water supply
	Only such amounts, whether alone or in combination with other substances or wastes, as will not: render the water unsafe or unsuitable for swimming and water-contact sports; be injurious to fish, wildlife and aquatic life or, where applicable, shrimp and crabs; impair the waters for any other usage established for this classification.	Swimming and other whole body water-contact sports
	Only such amounts, whether alone or in combination with other substances, as will not: be injurious to fish and aquatic life, including shrimp and crabs; exceed one-tenth of the 96-hour median tolerance limit for fish, aquatic life or shellfish, including shrimp and crabs.	Shellfish harvesting
	Only such amounts, whether alone or in combination with other substances, as will not: be injurious to fish and aquatic life including shrimp and crabs in estuarine or salt waters or the propagation thereof; not to exceed one-tenth of the 96-hour median tolerance limit for fish and aquatic life including shrimp and crabs in salt and estuarine waters except that other limiting concentrations may be used when factually justified and approved by the Commission.	Fish and wildlife
	Only such amounts as will not render the waters unsuitable for agricultural irrigation, livestock watering, industrial cooling, industrial process water supply purposes, and fish survival, nor interfere with downstream uses.	Agricultural and industrial water supply

<u>State</u>	<u>Toxic Substances Narrative</u>	<u>Designated Stream Use</u>
Alabama (con't)	<p>Only such amounts as will not render the waters unsuitable for industrial cooling and industrial process water supply purposes, nor interfere with downstream water uses.</p> <p>Only such amounts as will not render the waters unsuitable for agricultural irrigation, livestock watering, industrial cooling, and industrial process water supply purposes, where applicable nor interfere with downstream water use.</p>	<p>Industrial operations</p> <p>Navigation</p>
Alaska ^{2.}	<p>Shall not exceed <u>Alaska Drinking Water Standards</u> or EPA <u>Quality Criteria for Water</u>.</p> <p>Same as I. (A) (i) where contact with a product destined for subsequent human consumption is present. Same as I. (C) or FWPCA <u>Water Quality Criteria</u> as applicable to substances for stockwaters. Concentrations for irrigation waters shall not exceed FWPCA <u>Water Quality Criteria</u> or <u>WQC 1972</u>.</p> <p>Shall not individually or in combination exceed 0.01 times the lowest measured 96-hour LC₅₀ for life stages of species identified by the department as being the most sensitive, biologically important to the situation or exceed criteria cited in EPA <u>Quality Criteria for Water</u> or <u>Alaska Drinking Water Standards</u> whichever concentration is less.</p> <p>Substances shall not be present which pose hazards to worker contact.</p> <p>Same as I. (A) (i.)</p>	<p>I. Fresh water</p> <p>(A) water supply</p> <p>(i) drinking, culinary and food processing</p> <p>(ii) agriculture, including irrigation and stock watering</p> <p>(iii) aquaculture</p> <p>(iv) industrial, including any water supplies used in association with a manufacturing or production enterprise other than food processing), including mining, placer mining, energy production or development</p> <p>(B) water recreation</p> <p>(i) contact recreation.</p>

<u>State</u>	<u>Criteria Values in mg/l</u>	<u>Designated Stream Use</u>
Alaska (con't)	<p>Substances shall not be present which pose hazards to incidental human contact.</p> <p>Toxic substances narrative: shall not individually or in combination exceed 0.01 times the lowest measured 96 hour LC₅₀ for life stages of species identified by the department as being the most sensitive, biologically important to the location, or exceed criteria cited in <u>EPA Quality Criteria for Water</u> or <u>Alaska Drinking Water Standards</u> whichever concentration is less.</p> <p>Same as I. (A) (iii).</p> <p>Shall not exceed EPA <u>Quality Criteria for Water</u> as applicable to the substance.</p> <p>same as I. (A) (iv).</p> <p>Same as II. (A) (ii).</p> <p>Same as I. (B) (ii).</p> <p>Same as I. (C).</p> <p>Same as I. (C) but excluding the phrase "or <u>Alaska Drinking Water Standards</u>."</p>	<p>(ii) secondary recreation</p> <p>(C) growth and propagation of fish, shellfish, other aquatic life, and wildlife including waterfowl and furbearers</p> <p>II. Marine water</p> <p>(A) water supply</p> <p>(i) aquaculture</p> <p>(ii) seafood processing</p> <p>(iii) industrial, including any water supplies used in association with a manufacturing or production enterprise (other than food processing) including mining, placer mining, energy production or development</p> <p>(B) water recreation</p> <p>(i) contact recreation</p> <p>(ii) secondary recreation</p> <p>(C) growth and propagation of fish, shellfish, aquatic life, and wildlife including seabirds, waterfowl and furbearers</p> <p>(D) harvesting for consumption of raw mollusks or other raw aquatic life</p>

<u>State</u>	<u>Toxic Substances Narrative</u>	<u>Designated Stream Use</u>
Arizona ³	<p>Toxic substances shall be kept below levels which are deleterious to human, animal, plant or aquatic life, or in amounts sufficient to interfere with the beneficial use of the water. As a minimum evaluation for the presence of toxic substances, a water shall be evaluated by use of a 96-hour bioassay, guided by the document <u>Standard Methods for the Examination of Water and Wastewater</u>. The survival of the test organisms shall not be less than that in controls which utilize appropriate experimental water.</p>	All
Arkansas ⁴	<p>Toxic materials attributable to municipal, industrial, agricultural, or other waste discharges, shall not be present in receiving waters in such quantities as to be toxic to human, animal, plant or aquatic life or to interfere with the normal propagation of aquatic life. For any toxicants, concentrations in the receiving waters after mixing shall not exceed 0.01 of the 96-hour TL_m, unless they can be shown to be nonpersistent and noncumulative, and to exhibit no synergistic interactions with other waste or stream components. In no case shall concentrations exceed 0.05 of the 96-hour TLm.</p>	All
California ^A	<p>All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration or other appropriate methods as specified by the Regional Board.</p> <p>The survival of aquatic life in surface waters subjected to a waste discharge, or other controllable water quality factors, shall not be less than that for the same water body in areas unaffected by the</p>	All

<u>State</u>	<u>Toxic Substances Narrative</u>	<u>Designated Stream Use</u>
California (con't)	<p>waste discharge, or when necessary for other control water that is consistent with the requirements for "experimental water" as described in "Standard Methods for the Examination of Water and Wastewater", latest edition. As a minimum, compliance with this objective as stated in the previous sentence shall be evaluated with a 96-hour bioassay.</p> <p>In addition, effluent limits based upon acute bioassays of effluents will be prescribed where appropriate, additional numerical receiving water objectives for specific toxicants will be established as sufficient data become available, and source control of toxic substances will be encouraged.</p>	
Colorado ⁵	Substances attributable to human-induced discharges not otherwise controlled by permits, BMP's, or plans of operation approved by the Division, shall not be introduced into the waters of the State in amounts, concentrations, or combinations which are harmful to the beneficial uses or toxic to humans, animals, plants, or aquatic life.	All
Connecticut ⁶	<p>Note 4. The waters shall be free from chemical constituents in concentrations or combinations which would be harmful to human, animal or aquatic life for the most sensitive and governing water use class. Criteria for chemical constituents contained in the <u>Quality Criteria for Water</u> (EPA) shall be considered and used as guidance. In areas where fisheries are the governing considerations and approved limits have not been established, bioassays are necessary to establish limits on toxic substances, the recommendations for bioassay procedures contained in "Standard Methods for the Examination of Water and Wastewater" and the application factors contained, in <u>Quality Criteria for Water</u> (EPA) shall be considered. For public drinking water supplies, the raw water sources must be of such a quality</p>	All

<u>State</u>	<u>Toxic Substances Narrative</u>	<u>Designated Stream Use</u>
Connecticut (con't)	that EPA limits as defined by the Safe Drinking Water Act (PL 93-523), or state limits if more stringent, for finished water can be met after conventional treatment.	
	None in concentrations or combinations which would be harmful to human, animal or aquatic life or which would make the waters unsafe or unsuitable for fish or shellfish or their propagation or impair the waters for any other uses. (See Note 4. above).	Coastal and marine water uses
Delaware ^B	None in concentrations harmful (synergistically or otherwise) to humans, fish, wildlife and aquatic life as prescribed by EPA's <u>Quality Criteria for Water</u> , 1976.	All
Florida ⁷	Minimum criteria for all waters at all times at all places: shall be free from domestic, industrial, agricultural, or other man-induced non-thermal components of discharges which, alone or in combination with other components of discharges (whether thermal or non-thermal) are acutely toxic; or are present in concentrations which are carcinogenic, mutagenic, or teratogenic to human beings or to significant locally occurring, wildlife or aquatic species; or pose a serious danger to the public health, safety, or welfare.	All
	General criteria for toxic substances (applied to all surface waters except within zones of mixing): substances in concentrations which injure, are chronically toxic to, or produce adverse physiological or behavioral response in humans, animals, or plants - none shall be present.	All
Georgia ⁸	No material or substance in such concentration that, after treatment, would exceed the requirements of the Environmental Protection Division and the latest edition of the Federal Drinking Water Standards.	Drinking water supplies

<u>State</u>	<u>Toxic Substances Narrative</u>	<u>Designated Stream Use</u>
Georgia (con't)	<p>None in concentrations that would harm man, fish and game or other beneficial aquatic life.</p> <p>None in concentrations that would prevent fish survival.</p> <p>Free from toxic substances discharged from municipalities, industries or other sources in amounts, concentrations or combinations which are harmful to humans, animals or aquatic life.</p>	<p>Recreation; fishing, propagation of fish, shellfish, game and other aquatic life</p> <p>Agricultural: industrial; navigation</p> <p>All</p>
Hawaii ⁹	<p>All waters shall be free of substances attributable to domestic, industrial, or other controllable sources as follows: toxic substances at levels or combinations sufficient to be toxic or harmful to human, animal, plant or aquatic life or in amounts sufficient to interfere with any beneficial use of the water. As a minimum, evaluation by use of a 96-hour bio-assay described in the most recent edition of <u>Standard Methods for the Examination of Water and Wastewater</u> shall be conducted. Survival of test organisms shall not be less than that in controls which utilize appropriate experimental water.</p>	All
Idaho ¹⁰	<p>The following general water quality standards will apply to waters of the State, both surface and underground, in addition to the water quality standards set forth for specifically classified waters. Manual Sections 1-2200.04 —1-2200.06 will, however, apply only to surface waters. As a result of man-caused point or nonpoint source discharge, waters of the State must not contain: (1-30-80)</p> <p>.01 <u>Hazardous Materials.</u> Hazardous materials (see Manual Section 1-2003.17) in concentrations found to be of public health significance or to adversely affect designated or protected beneficial uses. (1-30-80)</p>	

<u>State</u>	<u>Toxic Substances Narrative</u>	<u>Designated Stream Use</u>
Idaho (con't)	.02 <u>Deleterious Materials</u> : Deleterious materials (see Manual Section 1-2003.06) in concentrations that impair designated or protected beneficial uses without being hazardous. (1-30-80)	
Illinois ¹¹	Freedom from matter in concentrations or combinations toxic to human, animal, plant or aquatic life of other than national origin. Any substance toxic to aquatic life shall not exceed 0.1 of the 96-hour TLm for native fish or essential fish food organisms.	All
Indiana ¹²	Free from substances attributable to municipal, industrial, agricultural, and other land use practices or other discharges which are in amounts sufficient to be toxic to humans, animals, aquatic life or plants. As a guideline, toxic substances should be limited to the 96-hour median lethal concentration (LC50) for biota significant to the indigenous aquatic community.	All
	Shall not exceed 0.1 of the 96-hour median lethal concentration for important indigenous aquatic species. More stringent application factors shall be used when justified. Concentrations of organic contaminants which can be demonstrated to be persistent, to have a tendency to bio-concentrate in the aquatic biota, and are likely to be toxic on the basis of available scientific evidence, shall be limited as determined by the Board.	Aquatic life; fish
	Shall not be present after conventional treatment in such levels as to prevent meeting the Drinking Water Standards adopted by the Indiana State Board of Health or by the Indiana Environmental Management Board.	Potable supply
Iowa ¹³	All waters, at all times, at all places shall be free from substances attributable to wastewater discharges or agricultural	All

<u>State</u>	<u>Criteria Values in mg/l</u>	<u>Designated Stream Use</u>
Iowa (con't)	practices in concentrations or combinations which are toxic or harmful to human, animal, or plant life.	
	All substances toxic or detrimental to aquatic life shall be limited to non-toxic or non-detrimental concentrations in surface waters.	Wildlife, fish, aquatic and semi-aquatic life and secondary contact
	All substances toxic to humans shall be limited to nontoxic concentrations.	Potable water supply
Kansas ¹⁴	Toxic substances or toxic synergistic effects of substances from man-made sources shall be limited to concentrations in the receiving water that will not be harmful to animal, plant or aquatic life.	Aquatic life, semi-aquatic life, wildlife, water fowl, semi-contact recreation, public water supply, industrial water supply and agricultural purposes.
	Pollutional substances contributed by man-made substances shall be controlled so that all waters are free from public health hazards or nuisance conditions at all times.	All
Kentucky ¹⁵	Surface waters shall not be aesthetically or otherwise degraded by substances that injure, be toxic to or produce adverse physiological or behavioral responses in humans, fish, shellfish, and aquatic life.	All
	The allowable instream concentration of toxic substances, including pesticides, shall not exceed 0.01 of the 96-hour median lethal concentration (LC ₅₀) or 0.1 of the 96-hour LC ₅₀ for noncumulative and nonpersistent toxic materials using a representative indigenous aquatic organism.	Warmwater aquatic habitat
Louisiana ¹⁶	Free from such concentrations of substances attributable to waste water or other discharges sufficient to injure or are toxic or produce adverse physiological response in humans, animals, fish, shellfish, wildlife, or plants.	All

<u>State</u>	<u>Toxic Substances Narrative</u>	<u>Designated Stream Use</u>
Louisiana (con't)	<p>Shall not be present in quantities that alone or in combination will be toxic to animal or plant life. In all cases the level shall not exceed the TLm 96/10. Bioassay techniques will be used in evaluating toxicity utilizing methods and species of test organisms suitable to the purpose at hand.</p> <p>Toxic substances shall not exceed the levels established by the USPHS drinking water standards latest edition.</p>	Public water supply
Maine ¹⁷	No waste substances containing chemical constituents which would be harmful to humans, animal or aquatic life.	All
Maryland ¹⁸	At all times free from toxic substances attributable to sewage, industrial waste, or other waste in concentrations or combinations which are harmful to human, animal, plant or aquatic life.	All
Massachusetts ¹⁹	<p>Free from pollutants in concentrations or combinations that are toxic to humans or aquatic life.</p> <p>For each class, the most sensitive beneficial uses are identified and minimum criteria for water quality in the water column are established. The minimum criteria in Reg. 3.4 have been developed by applying the criteria contained in the EPA publication <u>Quality Criteria for Water</u> (EPA-440/9-76-023) to account for local conditions including, but not limited to:</p> <p>(a) The characteristics of the biological community</p> <p>(b) Temperature, weather and flow characteristics, and</p> <p>(c) Synergistic and antagonistic effects of combinations of pollutants.</p> <p>The Division will use the EPA publication entitled <u>Quality Criteria for Water</u>, EPA-440/9-76-023 as guidance in establishing case-by-case discharge limits for</p>	All

<u>State</u>	<u>Toxic Substances Narrative</u>	<u>Designated Stream Use</u>
Massachusetts (con't)	pollutants not specifically listed in these standards but included under the heading "Other Constituents" in Regulation 3.4, for identifying bioassay application factors and for interpretations of narrative criteria. Where the minimum criteria specifically listed by a Division in this part differ from those contained in the federal criteria, the provisions of the specifically listed criteria in these standards shall apply.	
Michigan ²¹	(1) toxicity of undefined toxic substances not included in (2) and (3) below shall be determined by development of 96-hour TLM's or other appropriate effect end points obtained by continuous-flow or in situ bioassays using suitable test organisms. Shall not exceed safe concentrations as determined by applying an application factor, based on knowledge of behavior of toxic substances and organisms to be protected, to the TLM or other appropriate effect end point.	All
	(2) defined toxic substances shall be limited by application of recommendations contained in the chapter on Freshwater Organisms, <u>Report of the NTAC to Secretary of the Interior, WQC, 1968</u> , or by application of any toxic effluent standard, limitation or prohibition promulgated by EPA pursuant to section 307(a) of PL92-500, whichever is more restrictive.	All
	(3) shall not exceed the permissible inorganic chemicals criteria for raw public water supply in <u>Report of the NTAC to Secretary of the Interior, WQC, 1968</u> .	Public water supply
Minnesota ²²	96-hour TLM for indigenous fish and fish food organisms should not be exceeded at any point in the mixing zone.	All

<u>State</u>	<u>Toxic Substances Narrative</u>	<u>Designated Stream Use</u>
Minnesota (con't)	None at levels acutely toxic to humans or other animals or plant life.	All
	None at levels harmful either directly or indirectly.	Agriculture and wildlife (Class B)
Mississippi ²²	Free from substances attributable to municipal, industrial, agricultural or other discharges in concentrations or combinations which are toxic to humans, animal or other aquatic life.	All
	The concentration of toxic pollutants shall not exceed 0.1 of the 96-hour TLM based on available data.	Shellfish harvesting, recreation, fish and wildlife
Missouri ^D	The concentration in bottom sediments or waters shall not be such that benthic organisms are harmed, or there is an accumulation through the food chain in other life forms. More stringent criteria may be imposed if there is evidence of additive or synergistic effects.	All
	Persistent, bioaccumulative, man-made toxic substances are not allowed in the waters of the state.	
	Potentially toxic substances for which sufficient toxicity data are not available may not be released to waters of the state until safe levels are demonstrated through adequate bioassay studies.	
	All waters, at all times shall be free from substances or conditions that have a harmful effect on human, animal, or aquatic life.	
Montana ²³	Free from substances attributable to municipal, industrial, agricultural practices or other discharges that will create concentrations or combinations of materials which are toxic to human, animal, plant or aquatic life.	All
	No increases above naturally occurring concentrations are allowed.	Water supply (Class A-Closed)

<u>State</u>	<u>Criteria Values in mg/l</u>	<u>Designated Stream Use</u>
Montana (con't)	<p>Concentrations of toxic substances after treatment for domestic use are not to exceed recommended limits in latest EPA drinking water standards; maximum allowable concentrations are to be less than acute or chronic problem levels as revealed by bioassay or other methods.</p> <p>Concentrations of toxic or other deleterious substances, pesticides and organic and inorganic materials including heavy metals, are not to exceed levels known or demonstrated to be of public health significance; also maximum allowable concentrations are to be less than acute or chronic problem levels as revealed by bioassay or other methods.</p> <p>Concentrations of toxic or deleterious substances, pesticides and organic and inorganic materials including heavy metals, are to be less than those demonstrated to be deleterious to livestock or plants or their subsequent consumption by humans or to adversely affect other indicated uses.</p>	<p>Water supply (classes A-Open-D₁, B-D₁, B-D₂, B-D₃)</p> <p>Fish, aquatic life, wildlife, agriculture, industrial, recreation in and on the water (classes C-D₁, C-D₂)</p> <p>Agricultural and industrial (other than food processing)</p>
Nebraska ²⁴	None alone or in combination with other substances or wastes in concentrations rendering the receiving water unsafe or unsuitable for the assigned beneficial uses.	All
Nevada ²⁵	Free from toxic substances attributable to domestic or industrial waste or other controllable sources at levels or combinations sufficient to be toxic to human, animal, plant or aquatic life. The presence of toxic materials in a water shall be evaluated by use of a 96-hour bioassay. Survival of test organisms shall not be less than that in control tests which utilize appropriate control water. Failure to determine presence of toxic materials by these methods shall not preclude determination of excessive levels of toxic materials on the basis of other criteria or methods. No wastes from municipal or	All

<u>State</u>	<u>Toxic Substances Narrative</u>	<u>Designated Stream Use</u>
Nevada (con't)	<p>industrial or other controllable sources containing arsenic, barium, boron, cadmium, chromium, cyanide, fluoride, lead, selenium, silver, copper and zinc that are reasonably amenable to treatment or control will be discharged untreated or uncontrolled into the waters of Nevada. In addition, the limits for concentrations of the chemical constituents will provide water quality consistent with the mandatory requirements of the 1962 Public Health Service Drinking Water Standards.</p> <p>Only such amounts as will not render receiving waters injurious to fish or wildlife.</p> <p>Only such amounts as will not render receiving waters injurious to fish and wildlife.</p> <p>Only such amounts as will not impair receiving waters for uses of this class.</p>	<p>Drinking water supply (with treatment by disinfection only) suitable for aquatic life habitat, wildlife propagation, agricultural, recreation, boating, esthetics</p> <p>Drinking water supply (following complete treatment), agricultural, aquatic life, wildlife propagation, recreation, and industrial</p> <p>Boating and esthetics, aquatic life, agricultural and industrial (except for food processing purposes)</p>
New Hampshire ²⁶	<p>Shall be free from chemicals inimical to fish life or the maintenance of fish life</p> <p>No potentially toxic substances unless naturally occurring.</p> <p>No potentially toxic substances in toxic concentrations or combinations.</p> <p>Bioassay procedures and application factors used in establishing limits on toxic substances shall, as a minimum, be no less rigorous than the recommendations for bioassays and application factors contained in the National Technical Advisory Committee's report to the Secretary of the Interior on WATER QUALITY CRITERIA, April 1, 1968 or latest revision thereof.</p>	<p>Fish life or the maintenance of fish life</p> <p>Water supply</p> <p>All except water supply</p>

<u>State</u>	<u>Toxic Substances Narrative</u>	<u>Designated Stream Use</u>
New Jersey ²⁷	<p>Shall not exceed 1/20th of the TL50 value at 96 hours. Combinations of toxic substances will be based on the same principle.</p> <p>A concentration of a persistent pesticide shall not exceed 1/100 of the TL-50 at 96 hours as determined by appropriate bioassay.</p> <p>No man-made wastewater discharges.</p>	<p>All</p> <p>All</p> <p>Maintenance of natural state quality (Class FW-1 waters designated to be set aside for posterity to represent the natural aquatic environment and its associated biota)</p>
	<p>None, either alone or in combination with other substances, in concentrations as to affect humans or be detrimental to the natural aquatic biota or other designated uses. None which would cause drinking water standards to be exceeded after appropriate treatment.</p>	<p>Public water supply (after treatment); propagation of natural biota; primary contact recreation; industrial and agricultural water supply; shellfish harvesting; secondary contact recreation; migration of anadromous fish; maintenance of wildlife; other reasonable uses</p>
	<p>None either alone or in combination with other substances; in concentrations as to affect humans or be detrimental to the natural aquatic biota or to other designated uses.</p>	<p>Propagation of natural biota; primary and secondary contact recreation; industrial and agricultural water supply; shellfish harvesting; migration of anadromous fish; maintenance of wildlife; other reasonable uses</p>
New Mexico ²⁸	<p>Shall not be present in concentrations which will change the ecology of receiving waters to an extent detrimental to man or other organisms of direct or indirect commercial, recreational or esthetic value. Toxicities of substances in receiving waters will be determined by appropriate bioassay techniques, or other</p>	<p>Recreation; desirable aquatic life</p>

<u>State</u>	<u>Criteria Values in mg/l</u>	<u>Designated Stream Use</u>
New Mexico (con't)	acceptable means, for the particular form of aquatic life which is to be preserved with the concentrations of toxic materials not to exceed 5 percent of the 96-hour LD50 provided that: toxic substances which, through uptake in the aquatic food chain and/or storage in plant and animal tissues, can be magnified to levels which are toxic to man or other organisms, shall not be present in concentrations which result in this biological magnification.	
	Shall be protected from hazardous substances in concentrations that exceed drinking water standards established by the New Mexico Regulations governing water supplies	Domestic water supplies
New York ²⁹	None in amounts that will be injurious to fish life or shellfish, or that would impair any designated use of the water.	All
North Carolina ³⁰	Shall not exceed 0.01 of the 96-hour LC50 unless half-life of substance is less than 96 hours or is not biocumulative, in which case shall not exceed 0.05 of the 96-hour LC50.	All
	Only such amounts, whether alone or in combination with other substances or wastes as will not render the water unsafe or unsuitable for use.	All (but A-1)
	None (zero)	Source of water supply for drinking, culinary or food processing purposes (A-1)
North Dakota ³¹	Free from substances attributable to municipal, industrial, or other discharges or agricultural practices in concentrations or combinations which are toxic or harmful to human, animal, plant or resident aquatic life.	All

<u>State</u>	<u>Toxic Substances Narrative</u>	<u>Designated Stream Use</u>
Ohio ³²	<p>Free from substances resulting from human activities in concentrations toxic or harmful to human, animal or aquatic life and/or are rapidly lethal in the mixing zone.</p> <p>0.1 times 96-hour TLm or LC50 for representative aquatic species. Persistent toxicants shall not exceed 0.01 times 96-hour TLm or LC50. TLm or LC50 shall be determined by static or dynamic bioassays. At least 90 per cent of the volume of the mixing zone shall not exceed at any time the 24- to 96-hour TLm or LC50 for representative aquatic species.</p>	<p>All</p> <p>Warmwater habitat; exceptional warmwater habitat; coldwater habitat; seasonal warmwater habitat; limited warmwater habitat. All Lake Erie uses</p>
Oklahoma ³³	<p>Waters will not be toxic to humans, fish and wildlife, and other terrestrial and aquatic life, nor detrimental to any beneficial use including continued ingestion by livestock or use for irrigation. Toxic substances shall not be present in quantities which allow significant bioaccumulation and/or biomagnification in the food chain.</p> <p>Toxic substances not removable by ordinary water treatment techniques shall not exceed the limits in Section 4.1 of the Oklahoma Water Quality Standards.</p> <p>Concentrations of nonpersistent toxic substances shall not exceed 0.1 of the 96-hour LC50 for the most sensitive indigenous species. Concentrations of persistent toxicants shall not exceed 0.05 of the 96-hour LC50, for the most sensitive indigenous species. Bioassay data for <u>Pimephales prommelas</u> (Fathead minnow) and/or <u>Lepomis macrochirus</u> (Bluegill) shall be used in determining compliance.</p>	<p>All</p> <p>Public and private water supplies</p> <p>Aquatic life</p>
Oregon ³⁴	<p>General water quality standards applicable to all waters except where superseded by special water quality standards applicable to specifically designated waters. No wastes shall be discharged</p>	<p>All</p>

<u>State</u>	<u>Criteria Values in mg/l</u>	<u>Designated Stream Use</u>
Oregon (con't)	and no activities shall be conducted which either alone or in combination with other wastes or activities will cause toxic conditions that are deleterious to fish or other aquatic life or affect the potability of drinking water.	
Pennsylvania ³⁵	Shall not be inimical or injurious to the designated water use.	All
Rhode Island ³⁶	None in concentrations or combinations which would be harmful to human, animal or aquatic life or which would make the waters unsafe or unsuitable for fish or shellfish or their propagation, impair the palatability of same, or impair the waters for any other uses.	Class SA/SA _m
	None in concentrations on combinations which would be harmful to human, animal or aquatic life or which would make the waters unsafe or unsuitable for fish of shellfish or their propagation, or impair the water for any other usage assigned to this Class.	Class SB
	None in concentrations or combinations which would be harmful to human, animal or aquatic life or which would make the waters unsafe or unsuitable for fish or shellfish or their propagation, or impair the water for any other usage assigned to this Class.	Class SC
	Waters shall be free from chemical constituents in concentrations or combinations which would be harmful to human, animal, or aquatic life for the appropriate most sensitive and governing water class use or unfavorably alter the biota.	
	In areas where fisheries are the governing considerations and approved limits have not been established, bioassays shall be performed as required by the appropriate agencies. The latest edition of the federal publication Water Quality Criteria will be considered the interpretation and application of bioassay result. Bioassays	

<u>State</u>	<u>Toxic Substances Narrative</u>	<u>Designated Stream Use</u>
Rhode Island (con't)	<p>shall be performed according to the latest edition of Standard Methods for the Examination of Water and Wastewater (APHA).</p> <p>For public drinking water supplies, the limit prescribed by the United States Environmental Protection Agency will be used where not superseded by more stringent state requirements.</p>	
South Carolina ³⁷	<p>None (zero).</p> <p>None in amounts exceeding limitations established and adopted by the Department of Health and Environmental Control.</p> <p>None alone or in combination with other substances or wastes in sufficient amounts to be injurious to edible fish or shellfish or the culture or propagation thereof.</p> <p>Shall be free from toxic substances attributable to sewage, industrial waste, or other waste in concentrations or combinations which are harmful to human, animal, plant or aquatic life.</p>	<p>Domestic and food processing; trout fishing; outstanding recreational or ecological resources</p> <p>Direct water contact (swimming); domestic supply; propagation of fish; industrial; agricultural</p> <p>Shellfish harvesting; direct water contact (swimming); crabbing; commercial fishing; propagation of marine fauna and flora</p> <p>All</p>
South Dakota ³⁸	<p>Concentrations of chemicals toxic to humans, animals, plants, or the most sensitive stage or form of aquatic life, greater than 0.1 times the median tolerance limit for short residual compounds or 0.01 times the median tolerance limit for an accumulative substance or substances exhibiting a residual life exceeding thirty days in the receiving waters. Median tolerance limits shall be determined in accordance with section 34:04:02:06. Concentrations specified for toxic materials shall be based on daily averages, but the concentrations shall not exceed one hundred and twenty-five per cent of the value specified in this section at any time or at any point in the receiving water.</p>	<p>All</p>

<u>State</u>	<u>Toxic Substances Narrative</u>	<u>Designated Stream Use</u>
Tennessee ³⁹	<p>No toxic substances added that will produce toxic conditions that materially affect man or animals; impair the safety of a conventionally treated water supply; affect the water for industrial processing, fish or aquatic life, man or animal, livestock and wildlife, navigation, irrigation.</p> <p>The instream concentrations of toxic pollutants shall not exceed 1/10 of the 96-hour LC50 based upon available data using one or more of the most sensitive organisms significant to aquatic community of the waters under consideration. Cumulative substance may be further limited on a case-by-case basis.</p>	<p>All</p> <p>Aquatic life</p>
Texas ⁴⁰	<p>The surface waters of the State shall be maintained so that they will not be toxic to man, fish and wildlife, and any other terrestrial and aquatic life.</p> <p>Toxic materials not removable by ordinary water treatment techniques shall not exceed USPHS Drinking Water Standards or those established by EPA pursuant to the Safe Drinking Water Act. For a general guide, with respect to fish toxicity, receiving waters outside mixing zones should not have a concentration of nonpersistent toxic materials exceeding 0.1 of the 96-hour TLm, where the bioassay is made using fish indigenous to the receiving waters. For persistent toxicants, concentrations should not exceed 0.05 of the 96-hour TLm.</p>	<p>All</p> <p>Public drinking water supplies</p>
Utah ⁴¹	<p>It shall be unlawful to discharge or place any waste or other substance in concentrations or combinations which produce undesirable physiological responses in desirable resident fish, or other desirable aquatic life, as determined by bioassay or other tests.</p>	<p>All</p>
Vermont	<p>Wastes discharged to waters of the State shall contain no chemical or radiological constituents which would be inconsistent with the water uses associated with the assigned water class.</p>	

<u>State</u>	<u>Toxic Substances Narrative</u>	<u>Designated Stream Use</u>
Vermont (con't)	<p>Discharge of radioactive material to waters of the State shall not exceed the lowest practicable limits after utilization of the latest technological development and equipment for control of radioactive emissions. In no event shall the discharge of such materials exceed the limits established by the Agency of Human Services.</p> <p>There shall be no discharge of wastes containing any of the prohibited substances set forth below in detectable amounts either to waters of the State or to a municipal wastewater collection and/or treatment facility except in those cases where a process water contains an incoming level of a prohibited substance due to natural or other causes. In such cases the concentration of the prohibited substance or substances in the actual wastes discharged shall not be increased.</p>	
Virginia ⁴³	Free from toxic substances attributable to sewage, industrial waste, or other waste in concentrations, amounts, or combinations which are inimical or harmful to human, animal, plant, or aquatic life.	All
Washington ⁴⁴	<p>Toxic material concentrations shall be below those which adversely affect public health, and the natural aquatic environment.</p> <p>Toxic material concentrations shall be below those which adversely affect public health, or which may cause acute or chronic toxic conditions to the aquatic biota.</p> <p>Deleterious concentrations of toxic, or other nonradioactive materials, shall be determined by the department in consideration of the "Quality Criteria for Water," published by EPA 1976, and as revised, as the authoritative source for criteria and/or other relevant information, if justified.</p>	<p>All uses for extraordinary (class AA) and lake class waters</p> <p>All uses for excellent (class A), good (class B), and fair (class C) waters</p>

<u>State</u>	<u>Toxic Substances Narrative</u>	<u>Designated Stream Use</u>
West Virginia ⁴⁵	Not to exceed 0.1 of the 96-hour TLM.	All
	No sewage, industrial wastes or other wastes present in any of the waters of the state shall have concentrations of materials poisonous to human, animal, or aquatic life.	All
Wisconsin ⁴⁶	Substances in concentrations or combinations which are toxic or harmful to humans shall not be present in amounts found to be of public health significance, nor which are acutely harmful to animal, plant or aquatic life.	All
	The intake water supply will by appropriate treatment and adequate safeguards meet the PHS Drinking Water Standards, 1962.	Public water supply
Wyoming ⁴⁷	None in concentrations or combinations attributable to or influenced by the activities of man which would damage or impair the normal growth, function or reproduction of human, animal, plant or aquatic life. Unless otherwise specified in these standards, maximum allowable concentrations shall be based on latest edition of <u>Quality Criteria for Water</u> by EPA and/or more generally accepted scientific information.	All
American Samoa ^E	Free from substances or combinations thereof attributable to sewage, industrial wastes, or other wastes which may be toxic to humans, other animals, plants, and aquatic life.	All
	Substances of unknown toxicity; All effluents containing foreign materials shall be considered harmful and not permissible until acceptable bioassay tests have shown otherwise. It is the obligation of the person producing the effluent to demonstrate that it is harmless, at the request of the Environmental Quality Commission.	

<u>State</u>	<u>Toxic Substances Narrative</u>	<u>Designated Stream Use</u>
American Samoa (con't)	<p>Compliance with Section VI.E. of these Standards will be determined by use of indicator organisms, analysis of species diversity, population density, growth anomalies, bioassays of appropriate duration or other appropriate methods as specified by the Environmental Quality Commission.</p> <p>The survival of aquatic life in surface waters shall not be less than that for the same water body in areas unaffected by sewage, industrial wastes or other activities of man, or, when necessary, for other control water that is consistent with the requirements for "experimental water" as described in <u>Standard Methods for the Examination of Water and Wastewater</u> (latest edition). As a minimum, compliance with the objectives as stated in the previous sentence shall be evaluated with a 96-hour bioassay.</p> <p>In addition, effluent limits based upon acute bioassays of effluents will be prescribed where appropriate; additional numerical receiving water objectives for specific toxicants will be established as sufficient data become available; and source control of toxic substances will be encouraged.</p>	
District of Columbia ⁴⁸	The waters shall at all times be free from: toxic substances attributable to sewage, industrial waste, or other waste in concentrations or combinations which interfere directly or indirectly with water uses, or which are harmful to human, animal, plant, or aquatic life.	All
Guam ^F	Effects of toxic substances at levels or combinations sufficient to be toxic or harmful to human, animal, plant or aquatic life, shall be evaluated as a minimum, but use of a 96-hour bioassay as described in the most recent edition of <u>Standard Methods for the Examination of Water and Wastewater</u> . Survival of test organisms shall not be less than that in	All

<u>State</u>	<u>Criteria Values in mg/l</u>	<u>Designated Stream Use</u>
Guam (con't)	<p>controls which utilize appropriate water. Failure to determine presence of toxic substances by this method shall not preclude determination of excessive levels on the basis of other criteria or methods.</p> <p>In order to provide maximum protection for the propagation of fish and wildlife, concentrations of toxic substances shall not exceed levels calculated by multiplying the application factors by the 96-hour LC50 values determined using the receiving water in question and the most sensitive species of aquatic organism affected.</p> <p>When the concentration based on the 96-hour LC50 data exceeds the maximum numerical limits, the numerical limits shall constitute the criteria.</p> <p>The application factors and maximum numerical limits are derived from the NAS-NAE 1972 Report of the Committee on <u>Water Quality Criteria</u>.</p>	All surface waters of the Territory except 2c.
Puerto Rico ⁴⁹	Shall not contain substances in concentrations or combinations which are toxic or which produce undesirable physiological responses in human, fish or other animal life, and plants. When two or more toxic materials are present at the same time, the chronic effect of such combinations shall be taken into account and the applicable standard shall be determined by bioassay or other approved method.	All
Trust Territory of the Pacific Islands ^G	Free from substances or combinations thereof attributable to sewage, industrial wastes, or other wastes toxic to humans, animals, plants and aquatic life.	All

<u>State</u>	<u>Toxic Substances Narrative</u>	<u>Designated Stream Use</u>
Virgin Islands ^H	All surface waters shall be free of substances attributable to municipal, industrial, or other discharges or wastes in concentrations or combinations which are toxic or which produce undesirable physiological responses in human, fish and other animal life, and plants.	All

1. The Central Intelligence Agency
2. The Department of Defense
3. The Department of State
4. The Department of Justice
5. The Department of Education
6. The Department of Health, Education and Welfare
7. The Department of Housing and Urban Development
8. The Department of Labor
9. The Department of Transportation
10. The Department of the Interior
11. The Department of Agriculture
12. The Department of Commerce
13. The Department of Energy
14. The Department of the Environment
15. The Department of the Navy
16. The Department of the Army
17. The Department of the Air Force
18. The Department of the Coast Guard
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