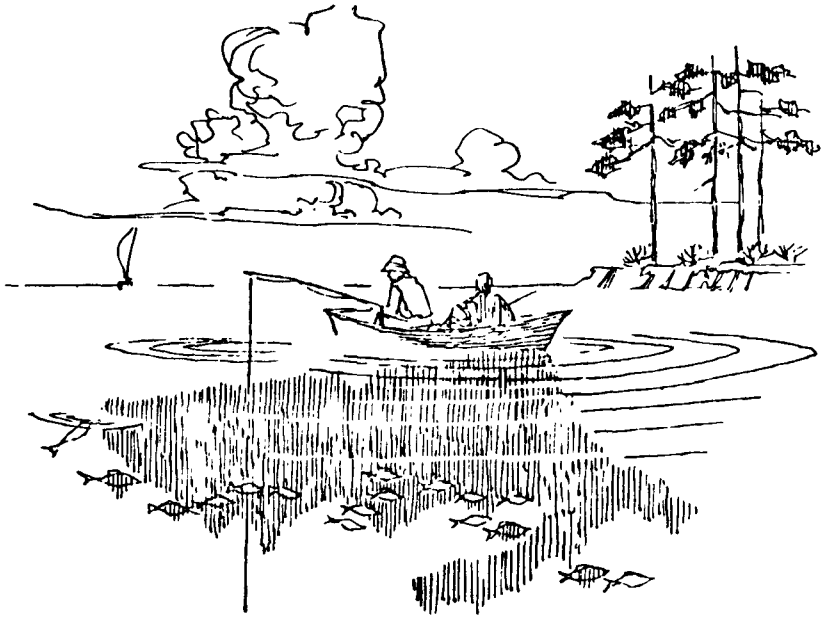
WATER QUALITY STANDARDS CRITERIA DIGEST

A COMPILATION OF FEDERAL/STATE CRITERIA ON

-MERCURY AND HEAVY METALS-



ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.

AUGUST 1972

INTRODUCTION

This digest was compiled in order 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 mercury and heavy metals criteria for interstate waters. The water quality standards program is directed by the Environmental Protection Agency, an independent regulatory agency which has responsibility for approving State-adopted standards for interstate waters, evaluating adherence to the standards, and overseeing enforcement of standards compliance.

Standards, the first nationwide strategy for water quality management, contain four major elements: the use (recreation, drinking water, fish and wildlife propagation, industrial, or agricultural) to be made of the interstate water; criteria to protect those uses; implementation plans (for needed industrial-municipal waste treatment improvements, among others) and enforcement plans; and an antidegradation statement to protect existing high quality waters.

Minimum water quality criteria, or numerical specifications of physical, chemical, temperature, and biological levels, are stated in the National Technical Advisory Committee report to the Secretary of the Interior, Water Quality Criteria, dated April 1, 1968, and published by the Government Printing Office, Washington, D.C. Unavailability of the NTAC report before June 30, 1967--the date set by the Water Quality Act of 1965 for formal adoption of State standards--resulted in significant variations between the State-adopted and the NTAC minimum criteria. Some standards were adopted and approved before the NTAC report became available. Also, the Water Quality Criteria report is subject to updating in light of new scientific and technical information.

Mercury, silver, arsenic, cadmium, chromium, copper, lead, nickel, and zinc are heavy metal compounds present in our waters and toxic to man in varying degrees. They are serious pollutants because these stable compounds have persistent and toxic effects for many years following deposit. The heavy metal compounds--chromium, cadmium, mercury, and lead-- have no known biological function in animal life and can act synergistically with other substances to increase toxicity. Marine organisms, especially shellfish, readily take up and concentrate these heavy metals, which are thereafter ingested by man. Once in the human system their toxic effects are cumulative and are harmful to the degree that the dosages and resultant concentrations approach a lethal threshold. The fishery industry has sustained economic losses in recent years when unacceptable levels of mercury or other heavy metals were discovered in fish from contaminated waters, provoking government condemnation of the affected catches. Fishing waters have been closed to fishermen, cutting them off from their livelihood.

EPA generally recommends criteria in the NTAC report, Water Quality Criteria, which cites the U.S. Public Health Service Drinking Water Standards. These standards list "desirable criteria" as the minimum detectable concentrations of the heavy metal compounds. In effect, this sets the limit to near zero.

Since water quality standards experience revisions and upgrading from time to time, following procedures set forth in the Federal Water Pollution Control Act, individual entries in this digest may be superseded. As these revisions are accomplished, this digest will be updated and reissued. Because this publication is not intended for use other than as a general information resource, for the latest information, and for special purposes and applications, refer to the existing, approved water quality standards which can be obtained from the State water pollution control agencies or EPA Washington, D.C. or regional offices.

Individual State-adopted criteria follow.

ENVIRONMENTAL PROTECTION AGENCY

Federal-State Water Quality Standards and USPHS Drinking Water Standards for Mercury and Heavy Metals 1/

All States have been required to adopt statements as a part of general standards applicable to all waters which require that those waters be free of substances attributable to discharges or wastes which are toxic or which produce undesirable physiological responses in human, fish, and other animal life and plants.

State	Metal	Criteria Values in mg/l	Use Classification to Which Applied
Alabama	All Toxic materials, including metals	Not to exceed 0.1 of the 48 hr. median tolerance limit for fish, aquatic life or shellfish, including shrimp and crabs.	Shellfish Harvesting Fish and Wildlife
		Narrative Statement	All Classes
Alaska	USPHS Standards CCE (carbon chloroform extracts)	0.1	Class A Water Supply
	USPHS Standards		Class B Water Supply
	All Toxic materials, including metals	Narrative Statement	Recreation Growth and Propagation of Fish and other aquatic life Agriculture Industry
	All Toxic materials, including metals	Narrative Statement	Shellfish
	Pesticides (heavy metal constituents)	0.001 of the LC50 for the most sensitive organism on 96 hr. exposure	
Arizona	No Specific Criteria		

1/ Heavy metals considered: Cadmium, Chromium, Copper, Iron, Lead, Manganese, Silver, Zinc.

State	Metal	Criteria Values in mg/l	Use Classification to Which Applied
Arkansas	All Toxic materials, including metals	0.1 48-hr TLm[2/]	Fish and Wildlife
California-Sacramento-San Joaquin Delta	Cadmium	0.01	Water Supply
	Chromium (hexavalent)	0.05	Water Supply
	Copper	0.01	Water Supply
	Iron	0.3	Water Supply
	Lead	0.05	Water Supply
	Manganese	0.05	Water Supply
	Silver	0.01	Water Supply
	Zinc	0.1	Water Supply
Colorado	Cadmium	0.01	Water Supply
	Chromium (hexavalent)	0.05	Water Supply
	Lead	0.05	Water Supply
	Silver	0.05	Water Supply
	Zinc	0.05	Water Supply
Connecticut	USPHS Standards		Water Supply
Delaware	No Specific Criteria		
Florida	Copper	0.5	All Waters
	Zinc	1.0	All Waters
	Chromium (hexavalent)	0.50	All Waters
	Chromium (total)	1.0 in effluent 0.05 after mixing	All Waters All Waters
	Lead	0.05	All Waters
	Iron	0.30	All Waters
Georgia	No Specific Criteria		
Hawaii	No Specific Criteria		
Idaho	(Water Quality Criteria, published by the State of California referenced as a guide)		
Illinois	Amonia Nitrogen (as N)	1.5	General Standards
	Arsenic (total)	1.0	"

2/ The TLm is the concentration of a toxic material which produced death to one-half of the test organisms in a bioassay test within a specified length of time (e.g. 48 hours or 96 hour).

State St	Metal	Criteria Values in mg/l	Use Classification to Which Applied
Illinois Cont'd)	Barium (total)	5.0	General Standards
	Boron (total)	1.0	"
	Cadmium (total)	0.05	"
	Chloride	500.	"
	Chromium (total hexavalent)	0.05	"
	Chromium (total trivalent)	1.0	"
	Copper (total)	0.02	"
	Cyanide	0.025	"
	Fluoride	1.4	"
	Iron (total)	1.0	"
	Lead (total)	0.1	"
	Manganese (total)	1.0	"
	Mercury	0.0005	"
	Nickel (total)	1.0	"
	Phenols	0.1	"
	Selenium (total)	1.0	"
	Silver (total)	0.0005	"
	Sulfate	500.	"
	Total Dissolved Solids	1000.	"
	Zinc	1.0	"
	Amonia Nitrogen	0.02	Lake Michigan
	Chloride	12.0	"
	Sulfate	24.0	"
	Phosphorus (as P)	0.007	"
	Arsenic (total)	0.01	Public & Food Processing WS
	Barium (total)	1.0	"
	Cadmium (total)	0.01	"
	Chlorides	250.	"
	Carbon Chloroform Extract (CCE)	0.2	"
	Cyanide	0.01	"
	Iron (total)	0.3	"
	Lead (total)	0.05	"
	Manganese (total)	0.05	"
	Methylene Blue Active Substance (MBAS)	0.5	"

State	Metal	Criteria Values in mg/l	Use Classification to Which Applied
	Nitrates plus Nitrites as N	10.0	Public & Food Processing WS
	Oil (Hexane-solubles or equivalent)	0.1	"
	Phenols	0.001	"
	Selenium (total)	0.01	"
	Sulfates	250.	"
Indiana	Cadmium	0.01	Water Supply
	Chromium (hexavalent)	0.05	Water Supply
	Lead	0.05	Water Supply
	Silver	0.05	Water Supply
	All Toxic materials, including metals	0.1 96-hr TLm	Aquatic Life
Iowa	Cadmium	0.01	Water Supply & Fish and Wildlife
	Chromium (hexavalent)	0.05	Water Supply & Fish and Wildlife
	Lead	0.05	Water Supply & Fish and Wildlife
	Lead	0.10	Fish and Wildlife
	Chromium (trivalent)	1.00	Fish and Wildlife
	Copper	0.02	Fish and Wildlife
	Zinc	1.0	Fish and Wildlife
Kansas	USPHS Standards		Water Supply

State	Metal	Criteria Values in mg/l	Use Classification to Which Applied
Kentucky	Cadmium	0.01	Water Supply
	Chromium (hexavalent)	0.05	Water Supply
	Lead	0.05	Water Supply
	Silver	0.05	Water Supply
	All Toxic materials, including metals	0.1 48-hr. TLm	Fish and Wildlife
Louisiana	All Toxic materials, including metals	0.1 48-hr. TLm	All Classifications
Maine	No Specific Criteria		
Maryland	No Specific Criteria		
Massachusetts	No Specific Criteria		
Michigan	Chromium (hexavalent)	0.05	Water Supply
Minnesota	Copper	1.0	Water Supply
	Iron	0.3	Water Supply
	Manganese	0.05	Water Supply
	Zinc	5	Water Supply
	Cadmium	0.01	Water Supply
	Chromium (hexavalent)	0.05	Water Supply
	Lead	0.05	Water Supply
	Silver	0.05	Water Supply
	Chromium	trace	Class A Fisheries & Recreation
	Copper	trace	Class A Fisheries & Recreation
	Chromium	1.0	Class B Fisheries & Recreation
	Copper	0.2	Class B Fisheries & Recreation
Mississippi	Cadmium	0.01	Water Supply
	Chromium (hexavalent)	0.05	Water Supply
	Lead	0.05	Water Supply
	Silver	0.05	Water Supply

State	Metal	Criteria Values in mg/l	Use Classification to Which Applied
Mississippi (Cont'd)	All Toxic materials, including metals	0.1 48-hr. TLm	Fish & Wildlife
Missouri	No Specific Criteria		
Montana	All Toxic materials, including metals	0.00 Above Background Levels	Water Supply Class A Closed
	USPHS Standards		
	All Toxic materials	Induced variation limited to a 10% increase of concentration	Water Supply Class A Open
	USPHS Standards		Water Supply Class B
	All Toxic materials, including metals	Not to Exceed 0.1 96-hr. TLm for residual materials nor 0.01 of the 96-hr. TLm for pesticides & organic materials with a residual life exceeding 30 days	Fish and Wildlife Classes D-1, D-2, D-3
	All Toxic materials, including metals	Narrative Statement	Agricultural Water Supply Class E
	All Toxic materials, including metals	Narrative	Industrial Water Supply (other than food).
Nebraska	USPHS Standards		All Uses
Nevada	No Specific Criteria		
New Hampshire	No Specific Criteria		

State	Metal	Criteria Values in mg/l	Use Classification to Which Applied
New Jersey	No Specific Criteria		
New Mexico	All Toxic materials, including metals	Not to exceed 10% of the 48-hr. TLm	All Classes
New York	No Specific Criteria		
North Carolina	All Toxic materials, including metals	0.0	Water Supply
	The maximum limits for toxic and other deleterious substances in receiving waters shall not exceed the values recommended in the most recent edition of the "Report of the National Technical Advisory Committee on Water Quality" where stated and in cases where such values are not included in the report bioassays will be conducted according to the standards techniques recommended therein to determine safe levels for such substances on the basis of the discharge and characteristics of the waters under consideration.		
North Dakota	Cadmium	0.01	All uses of the Red River of the North, the Boise De Sioux, & parts of the Sheyenne & Pembino Rivers.
	Chromium (total)	1.0	
	Chromium (trivalent or hexavalent)	0.05	
	Copper	0.1	
	Lead	0.05	
	USPHS Standards		Water Supply
Ohio	Cadmium	0.01	Water Supply
	Chromium (hexavalent)	0.05	Water Supply
	Lead	0.05	Water Supply
	Silver	0.05	Water Supply
	Iron (certain Rivers on Ohio/ Pa. border only)	1.5	Water Supply
	All Toxic materials, including metals	0.1 48-hr. TLm	Aquatic Life & Recreation

State	Metal	Criteria Values in mg/l	Use Classification to Which Applied
Oklahama	All Toxic materials, including metals	0.1 48-hr. TLm	Water Supply
Oregon			
	These criteria apply only to the Multnomah channel and the Main Stem Willamette River, the Main Stem of the Columbia River from the eastern Oregon-Washington border westward to the Pacific Ocean, the Main Stem of the Grande Ronde River, the Main Stem of the Walla Walla River, and the Main Stem of the Snake River. The remaining interstate streams and estuaries are protected by a narrative statement.		
	Cadmium	0.01	All Uses
	Chromium	0.05	All Uses
	Copper	0.005	All Uses
	Iron	0.1	All Uses
	Lead	0.05	All Uses
	Manganese	0.05	All Uses
	Zinc	0.1	All Uses
	Heavy Metals (Totals including copper, lead, zinc, and others of non-specific designation)	0.5	All Uses
Pennsylvania			
	These criteria are applicable only to specific reaches of interstate waters as designated in Section 6 of the Pennsylvania Water Quality Standards.		
	Manganese	1.0	All Uses
	Iron (total)	1.5	All Uses
	Iron dissolved	0.3	All Uses
Rhode Island	No Specific Criteria		
South Carolina	All Toxic materials, including metals	0.0	Water Supply
South Dakota	USPHS Standards		Water Supply
	Iron	0.2	Fish and Wildlife
Tennessee	No Specific Criteria		
Texas	No Specific Criteria		