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Chapter, Section, or Subject: Appendix 6F – Mercury

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Access Date: August 5, 2022

(See below)

Database or Model and version: Not applicable

URL: <https://www.epa.gov/wqc/national-recommended-water-quality-criteria-aquatic-life-criteria-table>

Assumptions: Not applicable

Search Fields and Search Terms: Mercury

Filepath to saved: Not applicable

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Chapter, Section, or Subject	Appendix 6F – Mercury
Citation	USEPA 2022
Reference	United States Environmental Protection Agency (USEPA). 2022. National Recommended Water Quality Criteria.
Access Date:	August 5, 2022 (See below)
results:	
How results were used	Current National Recommended Water Quality Criteria for Aquatic Life for mercury were described in Appendix 6F.

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Related Topics: [Water Quality Criteria](https://epa.gov/wqc) <https://epa.gov/wqc>

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National Recommended Water Quality Criteria – Aquatic Life Criteria Table

This table contains the most up to date criteria for aquatic life ambient water quality criteria. Aquatic life criteria for toxic chemicals are the highest concentration of specific pollutants or parameters in water that are not expected to pose a significant risk to the majority of species in a given environment or a narrative description of the desired conditions of a water body being "free from" certain negative conditions. The table lists EPA's recommended aquatic life criteria. State and tribal governments may use these criteria or use them as guidance in developing their own.

Select pollutant name for current criteria document.

On this page:

- National Recommended Aquatic Life Criteria Table
- Appendix A - Conversion Factors for Dissolved Metals
- Appendix B - Parameters for Calculating Freshwater Dissolved Metals Criteria That Are Hardness-Dependent

Related Information

- [Aquatic Life Criteria and Methods for Toxics](https://epa.gov/wqc/aquatic-life-criteria-and-methods-toxics) <https://epa.gov/wqc/aquatic-life-criteria-and-methods-toxics>
- [Human Health Criteria Table](https://epa.gov/wqc/national-recommended-water-quality-criteria-human-health-criteria-table) <https://epa.gov/wqc/national-recommended-water-quality-criteria-human-health-criteria-table>
- [Organoleptic Effects Criteria Table](https://epa.gov/wqc/national-recommended-water-quality-criteria-organoleptic-effects) <https://epa.gov/wqc/national-recommended-water-quality-criteria-organoleptic-effects>
- [Historical Water Quality Criteria Documents](https://epa.gov/wqc/historical-water-quality-criteria-documents) <https://epa.gov/wqc/historical-water-quality-criteria-documents>

National Recommended Aquatic Life Criteria table

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Pollutant (P = Priority Pollutant)	CAS (Chemical Abstracts Service) Number	Freshwater CMC (Criteria Maximum Concentration) ¹	Freshwater CCC (Criterion Continuous Concentration) ²	Saltwater CMC (Criteria Maximum Concentration) ¹	Saltwater CCC (Criterion Continuous Concentration) ²	Publication Year	Notes
		(acute) (µg/L)	(chronic) (µg/L)	(acute) (µg/L)	(chronic) (µg/L)		
Mercury < https://epa.gov/sites/default/files/2019-03/documents/1995-updates-wqc-protection-al.pdf > * (P)	7439976 22967926	1.4	0.77	1.8	0.94	1995	Freshwater and saltwater criteria for metals are expressed in terms of the dissolved metal in the water column. Refer to Office of Water Policy and Technical Guidance on Interpretation and Implementation of Aquatic Life Metals Criteria < https://epa.gov/sites/default/files/2019-03/documents/metals-criteria-interpret-aqlife-memo.pdf >.

Showing 1 to 1 of 1 entries (filtered from 61 total entries)

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* It is important to note that the mercury aquatic life criterion includes a caution that it might not be adequately protective of such important fishes as the rainbow trout, coho salmon and bluegill. The criterion was derived from data for inorganic mercury (II), but is applied to total mercury and may be under-protective if a substantial portion of the mercury in the water column is methylmercury. Also, even though inorganic mercury is converted to methylmercury and methylmercury bioaccumulates to a great extent, this criterion does not account for uptake via the food chain because sufficient data were not available when the criterion was derived. In light of these issues, EPA is working on an update to the mercury criterion.

Appendix A

Conversion Factors for Dissolved Metals

Metal	Freshwater CMC	Freshwater CCC	Saltwater CMC	Saltwater CCC
Arsenic	1.000	1.000	1.000	1.000
Cadmium	$1.136672 \cdot [(\ln \text{hardness}) + 0.041838]$	$1.101672 \cdot [(\ln \text{hardness}) + 0.041838]$	0.994	0.994
Chromium III	0.316	0.860	—	—
Chromium VI	0.982	0.962	0.993	0.993
Copper	0.960	0.960	0.83	0.83
Lead	$1.46203 \cdot [(\ln \text{hardness}) + 0.145712]$	$1.46203 \cdot [(\ln \text{hardness}) + 0.145712]$	0.951	0.951

Metal	Freshwater CMC	Freshwater CCC	Saltwater CMC	Saltwater CCC
Mercury	0.85	0.85	0.85	0.85
Nickel	0.998	0.997	0.990	0.990
Selenium	—	—	0.998	0.998
Silver	0.85	—	0.85	—
Zinc	0.978	0.986	0.946	0.946

Appendix B

Parameters for Calculating Freshwater Dissolved Metals Criteria That Are Hardness-Dependent

Chemical	mA	bA	mC	bC	Freshwater Conversion Factors (CF)	
					CMC	CCC
Cadmium	0.9789	-3.866	0.7977	-3.909	$1.136672 - [(\ln(\text{hardness})) (0.041838)]$	$1.101672 - [(\ln(\text{hardness})) (0.041838)]$
Chromium III	0.8190	3.7256	0.8190	0.6848	0.316	0.860
Lead	1.273	-1.460	1.273	-4.705	$1.46203 - [(\ln(\text{hardness})) (0.145712)]$	$1.46203 - [(\ln(\text{hardness})) (0.145712)]$
Nickel	0.8460	2.255	0.8460	0.0584	0.998	0.997
Silver	1.72	-6.59	—	—	0.85	—
Zinc	0.8473	0.884	0.8473	0.884	0.978	0.986

Hardness-dependant metals' criteria may be calculated from the following:

$$\text{CMC (dissolved)} = \exp\{mA [\ln(\text{hardness})] + bA\} \text{ (CF)}$$

$$\text{CCC (dissolved)} = \exp\{mC [\ln(\text{hardness})] + bC\} \text{ (CF)}$$

1/ CMC: Criterion Maximum Concentration

2/ CCC: Criterion Continuous Concentration

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