

E. Calculation of Dissolved Metals Criteria

Metals criteria values in 40 CFR 131.36(b)(1), as amended today, are now shown as dissolved metal. These criteria have been calculated in one of two ways. For freshwater metals criteria that are hardness-dependent (denoted by footnote "e" in the matrix), the dissolved metal criteria value must be calculated separately for each hardness using the table at § 131.36(b)(2), as amended today. The hardness-dependent freshwater criteria values presented in the matrix at § 131.36(b)(1) have been calculated using a hardness of 100 mg/L CaCO₃ for comparative purposes only. Saltwater metals criteria and freshwater criteria that are not hardness-dependent (criteria denoted by footnote "m" in the matrix) are calculated by taking the total recoverable criteria values (from EPA

National Ambient Water Quality Criteria Documents) before rounding, and multiplying them by the appropriate conversion factors from Table 2 or 3 of Section C of this preamble. (The total recoverable criteria values are shown to four figures, where available, because they are intermediate values in the calculation of dissolved metals criteria.) The final dissolved metals criteria values, as they appear in the matrix at § 131.36(b)(1), are rounded to two significant figures. Tables 4a and 4b below, summarize the conversions for saltwater criteria and freshwater criteria that are not hardness-dependent.

EPA notes that if a non-NTR State adopts standards, or an NTR State adopts its own standards (for subsequent withdrawal from the NTR), it may prefer a more conservative approach and adopt total recoverable metals criteria. In doing so, the State

may use EPA's total recoverable criteria from Tables 4a and 4b (rounded to two significant figures) or, for hardness-dependent freshwater criteria, omit the conversion factor from the formula presented in § 131.36(b)(2).

Tables 4a and 4b use the following abbreviations and formulas for calculating dissolved metals criteria (CMC and CCC are defined in 40 CFR 131.36(b)(1), footnote d):

CMC—Criterion Maximum Concentration

CCC—Criterion Continuous Concentration

CF—Conversion Factor

Formulas for Calculating Dissolved Metals Criteria:

$$CMC_{dissolved} = CMC_{total\ recoverable} \times Acute\ CF$$

$$CCC_{dissolved} = CCC_{total\ recoverable} \times Chronic\ CF$$

TABLE 4a.—CALCULATION OF FRESHWATER DISSOLVED METALS CRITERIA THAT ARE NOT HARDNESS-DEPENDENT

METAL	Total Recoverable Metals Criteria ¹ (µg/L)		Conversion factors ²		Dissolved metals criteria ³	
	CMC	CCC	Acute	Chronic	CMC	CCC
Arsenic	359.1	188.9	1.000	1.000	360	190
Chromium(VI)	15.74	10.80	0.982	0.962	15	10
Mercury	2.428	0.0122	0.85	N/A	2.1	N/A

¹ From EPA National Ambient Water Quality Criteria Documents.
² From Table 2.
³ Final dissolved metals criteria have been rounded to two significant figures.

TABLE 4b.—CALCULATION OF SALTWATER DISSOLVED METALS CRITERIA

Metal	Total recoverable metals criteria ¹ (µg/L)		Conversion factors ²		Dissolved metals criteria ³	
	CMC	CCC	Acute	Chronic	CMC	CCC
Arsenic	68.55	36.05	1.000	1.000	69	36
Cadmium	42.54	9.345	0.994	0.994	42	9.3
Chromium (III)	N/A ⁴	N/A ⁴	N/A ⁴	N/A ⁴	N/A ⁴	N/A ⁴
Chromium (VI)	1079	49.86	0.993	0.993	1100	50
Copper	2.916	2.916	0.83	0.83	2.4	2.4
Lead	217.16	8.468	0.951	0.951	210	8.1
Mercury	2.062	.0250	0.85	N/A ⁵	1.8	N/A ⁵
Nickel	74.60	8.293	0.990	0.990	74	8.2
Selenium	293.8	70.69	0.998	0.998	290	71
Silver	2.3	N/A ⁴	0.85	N/A ⁴	1.9	N/A ⁴
Zinc	95.10	86.14	0.946	0.946	90	81

¹ From EPA National Ambient Water Quality Criteria Documents.
² From Table 3.
³ Final dissolved metals criteria have been rounded to two significant figures.
⁴ Not applicable, national criteria not available.
⁵ The CCC for mercury is expressed as total recoverable.

F. Site-Specific Criteria Modifications

EPA has issued guidance (Water Quality Standards Handbook, Second Edition-1993, EPA-823-B-93-002 and update #1, EPA-823-B-94-006, August 1994, at page 3-38 and Appendix L), describing three site-specific criteria development methodologies:

recalculation procedure, indicator species procedure (also known as the water-effect ratio (WER)) and resident species procedure. Only the first two of these have been widely used.

In the NTR, EPA identified the WER as the method for optional site-specific criteria development for certain metals. On February 22, 1994, EPA issued

Interim Guidance on the Determination and Use of Water-Effect Ratios for Metals, EPA 823-B-94-001, now incorporated into the updated Second Edition of the Water Quality Standards Handbook, Appendix L. In accordance with the WER guidance and where application of the WER is deemed