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**Site-Specific Fish Tissue
Screening Concentrations**



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Appendix O

Site-Specific Fish Tissue Screening Concentrations

This appendix includes an updated version of Table 6-43 from the final Baseline Ecological Risk Assessment (BERA) for the Red Devil Mine (RDM) site (E & E 2014). The table was augmented with site-specific fish tissue screening concentrations (TSCs) for cadmium, copper, lead, and nickel. The TSCs were developed as described in Section 6.3.6 of the final BERA for the RDM site (E & E 2014). Table O-1 lists the site-specific fish TSCs used in the BERA supplement and values used to derive them, including contaminant concentrations in sculpin and surface-water samples from Red Devil Creek and chronic water quality criteria. Hardness-dependent water quality criteria were adjusted using the average hardness of Red Devil Creek surface water (104.2 mg/L as CaCO₃).

Reference

Ecology and Environment, Inc. (E & E). 2014. *Final Remedial Investigation Report, Red Devil Mine, Alaska*, prepared for U.S. Department of Interior, Bureau of Land Management, Anchorage Field Office, Anchorage, AK by E & E Seattle, WA.

Table O-1. Fish TSCs Developed from Chronic Water Quality Criteria and Site-Specific Bioconcentration Factors for Red Devil Creek Fish (Slimy Sculpin).

Parameter	RDC Filtered Surface Water (mg/L)	RDC Sculpin (mg/kg wet weight) ^a	BCF (L/Kg) ^{b,d}	Value (mg/L)	Basis	Fish TSC (mg/kg wet weight) ^{c,d}
Antimony	0.0185	5.16	280	0.03	Suter and Tsao (1996). Tier II SCV.	8.4
Arsenic	0.0211	6.96	330	0.15	EPA (2009a) WQC.	50
Barium	0.0288	3.05	106	0.194	MacDonald et al. (1999).	20.6
Chromium	0.00009	0.045	518	0.074	EPA (2009a) WQC.	38
Cadmium	0.0000048	0.020	4167	0.00025	ADEC (2008d).	1.1
Copper	0.00021	1.12	5432	0.0093	ADEC (2008d).	50
Lead	0.000022	0.0088	400	0.0026	ADEC (2008d).	1.1
Manganese	0.0246	12.41	504	0.12	Suter and Tsao (1996). Tier II SCV.	61
Mercury	0.0000068	0.326	47923	0.000012	EPA (1986b).	0.58
Nickel	0.00063	0.062	98	0.054	ADEC (2008d).	5.3
Selenium	0.000148	1.17	7858	0.005	EPA (2009a) WQC.	39
Vanadium	0.000104	0.069	660	0.02	Suter and Tsao (1996). Tier II SCV.	13.2
Zinc	0.000246	24.13	98109	0.118	ADEC (2008d).	11,577

Notes:

- a. See Appendix G in BERA Supplement for RDC sculpin metals data.
- b. $BCF = (\text{sculpin concentration}) / (\text{filtered surface water concentration}) = (\text{mg/kg}) / (\text{mg/L}) = \text{L/kg}$.
- c. $TSC = (BCF) \times (\text{chronic water quality criterion}) = (\text{L/kg}) \times (\text{mg/L}) = \text{mg/kg}$.
- d. See Section 6.3.6 in final BERA (E&E 2014) for method of derivation.

Key:

ADEC = Alaska Department of Environmental Conservation

BCF = Bioconcentration factor (sculpin concentration / surface water concentration)

EPA = United States Environmental Protection Agency

Gray shading = Added for BERA Supplement for Kuskokwim River Assessment Area.

L/kg = liters per kilogram

mg/kg = milligrams per kilogram

mg/L = milligrams per liter

RDC = Red Devil Creek

SCV = Secondary Chronic Value

TSC = Tissue Screening Concentration

WQC = Water Quality Criterion