# Exhibit SNC 000067

# NOAA Screening Quick References Tables


# Screening Quick Reference Tables

**These tables were developed for screening purposes only: they do not represent official NOAA policy and do not constitute criteria or clean-up levels. All attempts have been made to ensure accuracy; however, NOAA is not liable for errors. Values are subject to changes as new data become available.**

This set of NOAA Screening Quick Reference Tables, or SQuiRTs, presents screening concentrations for inorganic and organic contaminants in various environmental media. Additional reference material, such as guidelines for sample preservation, are also included.

NOAA identifies potential impacts to coastal resources and habitats likely to be affected by hazardous wastes. To screen for substances which may threaten natural resources of concern to NOAA, environmental concentrations are compared to these screening levels. These tables are intended for preliminary screening purposes only: they do not represent official NOAA policy and do not constitute criteria or clean-up levels. NOAA does not endorse their use for any other purposes. Screening levels are reported with the number of significant figures they were originally reported with.

In this new version, column headings link to OR&R's web site wherebrief descriptions of the benchmark may be found. However, detailed guidance on the recommended application of various screening guidelines is provided in the original sources (listed in each SQuiRT section, with web links for many). Users of the SQuiRT cards are strongly encouraged to review supporting documentation to determine appropriateness for their specific use.

The SQuiRT card set has been re-organized from earlier versions to accommodate expansion. Benchmarks from numerous new sources have been incorporated, and the list of analytes vastly increased. The SQuiRT cards present benchmarks representing different degrees of protectiveness. Multiple benchmarks are also provided in many cases: the user is advised to review the derivation of any particular benchmark before selecting a specific value. Information is still presented in sections, with *new sections* appearing in this expanded version:

- Inorganics in Sediment (freshwater and marine)
- Inorganics in Water (groundwater and surface water)
- Organics in Water and Soil
- *Toxic Equivalency Factors*
- Guidelines for Sample Collection & Storage
- Analytical Methods for Inorganics
- Inorganics in Soil
- Organics in Sediment
- *PCB Composition*
- *Composition by Carbon Range*
- Analytical Methods for Organics

Footnotes within each SQuiRT section which appear at the bottom of the page are only to aid in deciphering the nature of specific entries. Due to space constraints, notations which relate to the source for individual values are explained at the end of the section. Organic chemicals are now listed alphabetically, without categorization. A few synonyms are provided, but CAS numbers are also presented to aid in identifying and finding specific analytes. Except as noted, all concentrations in the SQuiRT cards are in parts per billion.

For surface water samples, because releases from hazardous waste sites are often continuous and long-term, concentrations are most often compared directly with chronic benchmarks, when available. Groundwater concentrations are also screened against chronic benchmarks. However, suitable site-specific dilution factors should be applied to allow for dilution upon migration and discharge of groundwater to surface water. The SQuiRT cards present U.S. Environmental Protection Agency (EPA) Maximum Contaminant Levels (MCLs), applicable to drinking water sources and secondary MCLs applicable to groundwater, supplemented by values from Canada and the United Nations World Health Organization.

Preference for surface water and groundwater benchmarks is given to U.S. EPA Ambient Water Quality Criteria (AWQC). This is generally followed by Tier II Secondary Acute Values (SAVs) or available standards and guidelines from other regulatory agencies. Tier II SAVs are derived using a similar approach to AWQC, but do not have sufficient supporting data for full criteria calculation. Lowest Observable Effect Levels (LOELs) were originally published by EPA with AWQC. Around 2000, EPA stopped publishing these values, however, LOELs are reproduced here when no other benchmark is available, because in many instances, they formed the basis for state standards.

For many trace elements, AWQC are now expressed in terms of the "dissolved" fraction, which is essentially defined operationally as a filtered fraction. Likewise, the toxicity of many trace elements is related to the water hardness, and the values presented are for a default hardness of 100 mg/L $CaCO_3$. Equations are provided in the SQuiRT cards to calculate the exact criteria for a given hardness, or, to convert from unfiltered, total concentrations to "dissolved" fractions.

# Screening Quick Reference Table for Inorganics in Sediment

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| Analyte | | FRESHWATER SEDIMENT | | | | | | | | | MARINE SEDIMENT | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| All concentrations in parts per billion dry weight unless specified otherwise | | "Background" [1] | ARCS *H. azteca* TEL [2] | TEC [3] | TEL [3] | LEL [4] | PEC [3] | PEL [3] | SEL [4] | UET [1] | $T_{20}$ [5] | TEL [6] | ERL [6] | $T_{50}$ [5] | PEL [6] | ERM [6] | AET [7] |
| **Predicted Toxicity Gradient:** | | > Increasing | | | | | | | | | > Increasing | | | | | | |
| Aluminum (%) | Al | 0.26% | 2.55% | | | | | | | | | | | | | | 1.8% N |
| Antimony | Sb | 160 | | | | | | | | 3,000 M | 630 | | | 2,400 | | | 9,300 E |
| Arsenic | As | 1,100 | 10,798 | 9,790 | 5,900 | 6,000 | 33,000 | 17,000 | 33,000 | 17,000 I | 7,400 | 7,240 | 8,200 | 20,000 | 41,600 | 70,000 | 35,000 B |
| Barium | Ba | 700 | | | | | | | | | | 130,100# | | | | | 48,000 A |
| Cadmium | Cd | 100-300 | 583 | 990 | 596 | 600 | 4,980 | 3,530 | 10,000 | 3,000 I | 380 | 680 | 1,200 | 1,400 | 4,210 | 9,600 | 3,000 N |
| Chromium | Cr | 7,000-13,000 | 36,286 | 43,400 | 37,300 | 26,000 | 111,000 | 90,000 | 110,000 | 95,000 H | 49,000 | 52,300 | 81,000 | 141,000 | 160,000 | 370,000 | 62,000 N |
| Cobalt | Co | 10,000 | | | | 50,000+ | | | | | | | | | | | 10,000 N |
| Copper | Cu | 10,000-25,000 | 28,012 | 31,600 | 35,700 | 16,000 | 149,000 | 197,000 | 110,000 | 86,000 I | 32,000 | 18,700 | 34,000 | 94,000 | 108,000 | 270,000 | 390,000 MO |
| Iron (%) | Fe | 0.99-1.8 % | 18.84% | | | 2% | | | 4% | 4% I | | | | | | | 22% N |
| Lead | Pb | 4,000-17,000 | 37,000 | 35,800 | 35,000 | 31,000 | 128,000 | 91,300 | 250,000 | 127,000 H | 30,000 | 30,240 | 46,700 | 94,000 | 112,000 | 218,000 | 400,000 B |
| Manganese | Mn | 400,000 | 630,000 | | | 460,000 | | | 1,100,000 | 1,100,000 I | | | | | | | 260,000 N |
| Mercury | Hg | 4-51 | | 180 | 174 | 200 | 1,060 | 486 | 2,000 | 560 M | 140 | 130 | 150 | 480 | 700 | 710 | 410 M |
| Nickel | Ni | 9,900 | 19,514 | 22,700 | 18,000 | 16,000 | 48,600 | 36,000 | 75,000 | 43,000 H | 15,000 | 15,900 | 20,900 | 47,000 | 42,800 | 51,600 | 110,000 EL |
| Selenium | Se | 290 | | | | | | | | | | | | | | | 1,000 A |
| Silver | Ag | <500 | | | | 500 + | | | | 4,500 H | 230 | 730 | 1,000 | 1,100 | 1,770 | 3,700 | 3,100 B |
| Strontium | Sr | 49,000 | | | | | | | | | | | | | | | |
| Tin | Sn | 5,000 | | | | | | | | | | 48 * | | | | | > 3,400 N |
| Vanadium | V | 50,000 | | | | | | | | | | | | | | | 57,000 N |
| Zinc | Zn | 7,000-38,000 | 98,000 | 121,000 | 123,000 | 120,000 | 459,000 | 315,000 | 820,000 | 520,000 M | 94,000 | 124,000 | 150,000 | 245,000 | 271,000 | 410,000 | 410,000 I |
| Lead 210 $^{bq}/_{g}$ dw | | | | | | 0.5 ^ | | | < 9.7 ^ | | | | | | | | |
| Polonium 210 $^{bq}/_{g}$ dw | | | | | | 0.6 ^ | | | < 8.7 ^ | | | | | | | | |
| Radium 226 $^{bq}/_{g}$ dw | | | | | | 0.1 ^ | | | < 13 ^ | | | | | | | | |
| Sulfides | | | | | | | | | | 130,000 M | | | | | | | 4,500 MO |

\# - Based on SLC approach using sensitive species HC5%; ES&T 2005 39(14):5148-5156.
* - Based upon EQp approach using current AWQC CCC
^ - Based on SLC approach to derive LEL and SEL; Env'al Monitor & Ass'ment 2005 110:71-85
\+ - Carried over from Open Water disposal Guidelines; treated as if LEL for management decisions.
Bioassay endpoints: M – Microtox; B – Bivalve; E – Echinoderm larvae; O – Oyster larvae; A – Amphipod; N – Neanthes; L –Larval bioassay; plus, I – Infaunal community impacts

## Sources


1 – Buchman, M. 1999. NOAA HAZMAT Report 99-1.
2 – EPA 905-R96-008
3 – Arch ET&C 2000, 39(1)20- TEL and PEL are also known as Canadian ISQGs and PELs
4 – Guidelines for the protection and management of aquatic sediment quality in Ontario Aug 1993
5 – ET&C 2002, 21(9)1993-
6 – Ecotox. 1996, 5(4):253-
7 – Chapter 173-204 WAC, 1991/95 as supplemented by WA Dept of Ecology staff with unpublished data.