

Screening Quick Reference Tables:

SQuiRT UPDATE

SQuiRTS

- Provide benchmark screening levels
- Info for:
 - surface water
 - ground water
 - soil
 - Sediment
 - Plus sample preservation & analysis
- Have become a standard for Eco Screening



Uses

- Selection of appropriate benchmark levels for ecological SCREENING
 - Multiple levels of protection can be chosen for range finding or prioritization
- They are not *de facto* clean-up targets !
- They are NOT NOAA criteria, nor standards

- Proper application requires understanding of the philosophy behind screening

What's Updated?

- Some new sediment guidelines added
- Numerous new sources for water, especially surface water
- Soil benchmarks added toxicology values
- New topics added
- New functionality added

These changes led to major restructuring.

Sediment Guideline Additions

■ Consensus

- Average of several already listed in SQuiRT cards

■ Logistic

■ SLC

- Based on benthic community analysis

■ A complete suite of Dutch values for sediment/soil

■ Miscellaneous others

Benchmarks with unique derivations, not comprehensive compilation

Water Benchmarks

- Same basic perspective/presentation of acute and chronic toxicity
- Numerous new sources for standards or benchmarks though
- Progression of presented values
- Multiple values listed in some cases

Water: Benchmark Sources

- Groundwater Additions
 - Canadian and WHO
 - Dutch values
- Surface water Additions
 - Tier II
 - EPA EcoUpdate
 - Canadian standards
 - EU standards
 - Miscellaneous

Water: Benchmark Sources

- Progression of presented values
 - EPA AWQC
 - Tier II
 - Canadian standards
 - Other gov't standards
 - LOELs
- Multiple values listed in some cases

New Topics

- TEF factors for dioxins and PCBs
- PCB composition of Aroclors
- Product characterization of hydrocarbons

Dioxin/PCB TEFs

- TEF factors for:
 - Mammals
 - Fish
 - Birds
- Additional information for calculation of TEQs

Allows for *prioritization*, not risk assessment

PCB Composition

- Per cent by chlorination by Aroclors
- Prominent congeners by Aroclor
- Unique congener by Aroclor
- Range of congeners by Aroclor
- Other diagnostics

Allows for *preliminary* screening of *potential* source characterization.

NOT to be used for source apportionment!

Functional Enhancements



Screening Quick Reference Table for Inorganics in Sediment

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.

Analyte		FRESHWATER SEDIMENT									MARINE SEDIMENT						
		"Background" ¹	ARCS <i>H. azteca</i> 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



Functional Enhancements



Screening Quick Reference Table for Inorganics in Water

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ELEMENT <small>All concentrations in parts per billion unless specified otherwise</small>	GROUND WATER ¹	SURFACE WATERS ²			
		Freshwater		Marine	
		Acute	Chronic	Acute	Chronic
Tin as [Di-N-Butyl Triethyl]		0.08 BC			
Tin as Triethyl		0.4 BC			
Tin as Triphenyl		0.022 BC		34 BC	
Titanium	Ti	2,000 BC			
Uranium	U	30	46 T	0.5 NZ	500 BC
Vanadium	V		280 T	19 E	50 BC
Zinc (Zn)	Zn	5,000 *	120 †	120 †	90
Zirconium	Zr		310 T	17 T	
Hydrogen Sulfide			2		2
Cyanide, free	CN	200	22	5.2	1

Freshwater criterion for certain elements (†) are expressed as a function of hardness (mg/L) in the water column. The values shown assume 100 mg/L. Values for a different hardness may be calculated using the following equation to arrive at a CMC or CCC for filtered samples. Hardness may range up to 400 mg/L as calcium carbonate. For hardness above this range, use 400 mg/L as the maximum value allowed. For salinity between 1 and 10 ppt, use the more stringent of either fresh or marine values.

Sources

1 – Primary entry is the US EPA MCL value, followed by the WHO drinking water guidelines.

Maximum Contaminant Levels (MCLs): <http://www.epa.gov/safewater/index.html>

W – World Health Organization's (WHO) Drinking water guidelines: http://www.who.int/water_sanitation_health/dwg/en/

C – Canadian water Quality Guidelines: <http://www.ec.gc.ca/CEQG-RCQE/English/Ceqq/Water/default.cfm>

2 – Primary entry is the US Ambient Water Quality Criteria, followed by the lowest of Tier II SAVs or available standards and guidelines.

EPA Ambient water Quality Criteria (AWQC): <http://www.epa.gov/waterscience/criteria/aqlife.html>

T – Tier II Secondary Acute Value: <http://www.esd.ornl.gov/programs/ecorisk/tools.html>

BC – British Columbia Water Quality Guidelines (either working or recommended): <http://www.env.gov.bc.ca/wat/wq/>

NZ – Australian & New Zealand ECLs and Trigger values: ANZECC Oct 2000, Volume 1, The Guidelines. www.mfe.govt.nz/publications/

E – EcoUpdate: www.epa.gov/oswer/riskassessment/ecoup/

Lowest Observable Effect Levels (LOELs) previously published by EPA are also included since these essentially were the basis for many state standards.

EPA LOELs: EPA Water quality Criteria Summary, Office of Science & Technology, Health & Ecological Criteria Div., Ecological Risk Assessment Branch, 1991.

Full listings appeared in various Fed. Register notices and in EPA's Quality Criteria for Water, 1992.

1: * – Secondary standard

2: pH – criteria is pH dependent; p – proposed; † – hardness dependent; * – EPA LOEL; (1/2) – CMC is halved to compare to 1985 Guideline derivation

Organics

- No longer grouped by class
- Use CAS to search

The Goal

