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Subject: Re: Comments on LWG's acute and chronic water screening levels for Portland Harbor

Eric,

Attached are my comments on the LWG's "Process for Selecting Acute and Chronic Water Screening Levels for Portland Harbor Survace Water, Groundwater, and Transition Zone Water" dated April 29, 2005.

General Comments:

Given that the purpose of a water screening level is to "provide a threshold value below which adverse effects on aquatic life are not expected" (page 1 of document), we question the need for any acute screening values in the PRE. Calculation of chronic screening levels should be sufficient to define threshold values below which adverse effects to aquatic life should not occur. Note that this comment does not preclude the use of acute toxicity values in conjunction with appropriate safety factors during the development of chronic screening levels.

The next version of the document must contain a table that presents the screening level values from all sources used to derive screening levels. The first column of the table should be the list of chemicals for which screening levels are being developed. Each subsequent column should list the screening levels from each source in the hierarchy used to select the screening levels. The final column should list the screening level selected for use at Portland Harbor.

Specific comments:

Section 1, Introduction, definition of biologically active zone, page 1, 1st paragraph. What is the basis for defining the 0 - 1 foot stratum the biologically active zone in sediment? Several studies (Thoms et al. 1995, Boudreau 1994, McCall and Tevesz 1982) all have observed that the bioturbation zone of both freshwater and marine sediments is within the top 10 cm of sediment 80% or more of the time it has been measured. We recognize that for the purposes of studies in Portland Harbor, the definitions of the biologically active and transition zones may not be identical. But for the purposes of the ecological risk assessment, it should be made clear that the biologically active zone may not be fully contiguous with the transition zone as it is defined for Portland Harbor.

Section 2.2.5, Other Literature Sources, page 4. When all else fails for finding criteria or guidelines that can be used as screening values, EPA recommends that you consult a compendium of environmental

quality guidelines developed by MacDonald et al. (1999) for
Environment Canada. MacDonald et al. has compiled guidelines for a
large number of chemicals from governments around the world, and is
particularly good for chemicals where EPA, Environment Canada, and
other national governmental agencies have yet to develop water
quality criteria. This reference can be found on the Internet at:
http://www.pyr.ec.gc.ca/georgiabasin/reports/Environmental%20Benchmarks/GB-99-01_E.pdf
Section 2.3.2, Chronic SLs, page 5. We have no objections to the
individual sources of screening levels included in the hierarchy, and
concur with the first two sources in the hierarchy. EPA believes the
following additional sources of water quality criteria not listed in
the hierarchy should be included as the third and fourth levels of
the hierarchy: 3.) Canadian Water Quality Guidelines, which can be
found at http://www.ccme.ca/assets/pdf/e1_062.pdf 4.) The USEPA
(2004) proposed PAH specific final chronic values for individual PAH
compounds found in Table 3-4 of USEPA (2004). Use of the individual
PAH guidelines from USEPA (2004) as screening levels would eliminate
the need to use a screening level for benzo(a)pyrene as a surrogate
for other PAH compounds. Finally, we recommend that the most
protective LCV from Suter and Tsao (1996), which is the LWG's fifth
level in the proposed hierarchy, be moved ahead of the acute federal
AWQC divided by a safety factor of 10 level of the hierarchy. With
the incorporation of the Canadian water quality guidelines and EPA
PAH final chronic values as discussed earlier, the Suter and Tsao
(1996) most protective LCV would remain as the fifth level of the new
hierarchy, while the acute federal AWQC divided by a safety factor of
10 would become the sixth level of the hierarchy. Addition of these
additional tiers in the hierarchy, combined with information in the
MacDonald et al. (1999) compendium should minimize the number of
chemicals for which screening levels cannot be developed.
Section 2.3.4, amphibian specific screening levels, page 6. Is there
a reason the chronic screening levels as developed from the hierarchy
described in Specific Comment 3 would not also be protective of the
tadpole or larval stage of amphibians? EPA does not object to the
development of separate screening levels for amphibians, but would
like to ensure they are actually needed for the PRE.
Section 3.1, Chemicals Considered as Mixtures, pages 7 - 8. In
addition to the approach described in the draft document, EPA
recommends that screening levels be derived for total PCBs and total
chlordane.
Section 3.1.4, Total Petroleum Hydrocarbons, page 8. EPA and ODEQ
are jointly working to develop TPH guidelines that may be useable as
screening levels for gasoline and lighter weight diesel mixtures.
EPA believes that water column screening levels for heavier TPH
fractions can not be feasibly developed, as the toxicological
literature indicates that the maximum water solubility of the heavier
TPH fractions would have to be exceeded before toxicity is elicited
in aquatic species. If water solubility has to be exceeded before
TPH toxicity is elicited, the observed toxicity may be due to
chemical or physical processes, or a mixture of both, making it
difficult to develop a screening level that is protective of aquatic
life. The EPA/ODEQ screening levels for TPH mixtures will be
presented to LWG once their derivation has been completed and the
values reviewed by the two agencies.

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McCall, P.L. and M.J.S. Tevesz. 1982. The effects of benthos on physical properties of freshwater sediments. p. 105-176 in McCall, P.L. and M.J.S. Tevesz, eds. Animal-Sediment Relations. Plenum Press, New York, NY.

Thoms, S.R., G. Matisoff, P.L. McCall and X. Wang. 1995. Models for Alteration of Sediments by Benthic Organisms. Report D43014, Project 92-NPS-2, Water Environment Research Foundation, Alexandria, VA.

USEPA . 2004. Procedures for the Derivation of Equilibrium Partitioning Sediment Benchmarks (ESBs) for the Protection of Benthic
Organisms: PAH Mixtures. EPA-600-R-02-013, Office of Research and Development, Washington, D.C.

Best regards,

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