



Sediments – Human Health and Ecological Evaluation

a Fact Sheet prepared by the Minnesota Pollution Control Agency
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The Minnesota Pollution Control Agency (MPCA) is developing guidelines for evaluating risks to human health and the environment at sites that may require investigation or response actions in the Superfund and Voluntary Investigation and Cleanup Programs pursuant to the Minnesota Environmental Response and Liability Act, Minn. Stat. §§ 115B.01 to 115B.24 (MERLA). This fact sheet identifies the need for guidance on the human health and ecological pathways at sites where sediment contamination is suspect or present. Once this guidance document is complete it will be incorporated into the Risk-Based Site Evaluation that provides a preferred process for making decisions based on an evaluation of risk to humans and the environment.

Increased awareness of aquatic sediment contamination problems in the past decade has prompted the MPCA to develop guidance on human health and ecological evaluations in relation to sediment contamination. Human exposure to contaminated sediments may occur by incidental ingestion and by dermal contact during recreational activities (e.g., swimming), as well as indirectly through ingestion of fish contaminated by uptake from sediment. Human health sediment screening criteria based on direct contact with contaminated sediments do not exist but will be developed on a site specific basis. Some preliminary guidelines for estimating exposure point concentrations along with general considerations are available upon request through the site team. Ecological exposure to contaminated sediments may occur to organisms living in or ingesting contaminated sediments, food chain uptake, or ingestion of aquatic vegetation.

Ecological screening criteria can be found in the MPCA Site Response Section “*April 26, 1996 Working Draft Site Screening Evaluation Guidelines*” and additional information may be obtained upon request through the site team.

In a risk based site evaluation process a three tiered approach of quantitative risk evaluation and analysis is used to evaluate contaminated sites utilizing spreadsheets with inputs corresponding to site concentrations. Tier evaluations allow a minimum amount of information to be collected in order to confirm a release of regulated contaminants and to make a preliminary estimate of its potential impact to human health and the environment. Additional historic and quantitative information may be required in order to refine the criteria and make it more site specific. As discussed above, human health sediment screening criteria will be developed by MPCA staff.

Ecological screening criteria specifically intended to be protective of benthic invertebrate communities will consist of sediment guideline concentration values derived by various regulatory agencies. A Tier 1 evaluation is conducted to determine whether conditions at a site require further evaluation or investigation and possible cleanup due to potential risk to the environment. A Tier 2 evaluation differs in that it can be modified to account for some site specific considerations such as bioavailability adjustments, or bioaccumulation potential. A Tier 3 evaluation allows a very site specific evaluation typical of the most complex or unique site and may include bioassays, bioavailability studies, and toxicity testing.

The guidance on *Sediment: Human Health and Ecological Evaluation* will enable the user to evaluate risk presented by all sites with contaminated aquatic sediments. The guidance will simplify and expedite the decision making process for sites with contaminated aquatic sediments while being protective of human health and the environment.

Draft Document Availability

All draft guidelines are to be used with assistance from Minnesota Pollution Control Agency staff assigned to a specific site. Draft sections of the site evaluation manual will be available for public comment as they are completed. A photocopy fee of approximately \$0.20 per page will be charged for pages in excess of 20. To receive copies of the current and future documents or to be placed on a mailing list to receive notices regarding the guidance development efforts please send written requests to:

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Written comments regarding the guidelines may be sent to the *Guidance Coordination Team* at the same address.

