



Minnesota Pollution Control Agency

March 2, 1998

Dear Sir / Madam:

RE: Risk-Based Site Evaluation Manual Under Development

The Minnesota Pollution Control Agency (MPCA) Site Response Section is in the process of developing a Risk-Based Site Evaluation Manual outlining a risk-based approach to decision making during site investigation and cleanup. The manual will provide a streamlined and consistent process for determining risks to human health and the environment, and will provide policies and procedures to assure that adequate site investigation and appropriate remedy selection under the state's Superfund and the Voluntary Investigation and Cleanup (VIC) Programs take place. The attached fact sheet introduces another section, "*Draft Guidelines, Natural Attenuation of Chlorinated Solvents in Ground Water.*" Other sections of the manual will be available for public review in the near future. The guidance documents may be used on individual sites with the approval of Site Response Section staff.

To receive a fact sheet on the manual development process, a specific draft guidance, or to have your name remain or placed on a mailing list for information or notices on the availability of draft sections for public review, please mail or fax your written request to:

Trudy Cramlet
Minnesota Pollution Control Agency
Ground Water and Solid Waste Division
520 Lafayette Road
St. Paul, Minnesota 55155-4194
Fax: (612) 296-9707

The MPCA appreciates your interest and assistance in this manner, and looks forward to hearing from you.

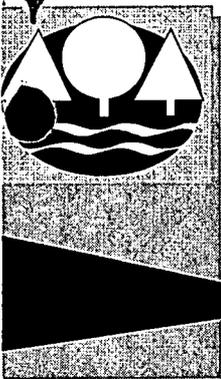
Sincerely,

A handwritten signature in cursive script that reads "Richard J. Sandberg".

Richard J. Sandberg, Manager
Site Response Section
Ground Water and Solid Waste Division

RJS:tac

Enclosure



Natural Attenuation of Chlorinated Solvents in Ground Water

a Fact Sheet prepared by the Site Response Section
of the Minnesota Pollution Control Agency

February 1998

The nature of decision-making regarding how to investigate, evaluate and remediate environmental contamination at Superfund sites, "Brownfield" properties, and other contaminated sites is evolving. In response to these changes, the Minnesota Pollution Control Agency's (MPCA) Site Response Section (SRS) staff are developing a manual that outlines a risk-based approach to decision-making during site investigation and remedy selection. The Risk-Based Site Evaluation Manual (the Manual) will provide a tiered process for making decisions by evaluating risks to public health and the environment at sites under the Superfund and Voluntary Investigation and Cleanup (VIC) Programs. Each tier requires increasing amounts of site-specific data collection and analysis. This Guidance on "Natural Attenuation of Chlorinated Solvents in Ground Water" is a working draft chapter from the Manual under development. Decisions on ground water use will be presented in a separate document.

This document, "Natural Attenuation of Chlorinated Solvents in Ground Water," provides guidance on the selection of natural attenuation as a remedy for chlorinated solvents in ground water. Specifically, it describes a phased approval process that begins with a screening procedure. For those sites passing the screening criteria, additional site characterization, verification, and implementation steps are proposed that are meant to support the selection of a natural attenuation remedy.

The document emphasizes the subtle though important distinction between the intrinsic biodegradation of contaminants in ground water and the process of selecting natural attenuation as a remedy for a particular site. As defined in this document, "natural attenuation is the demonstration that intrinsic degradation will reduce the concentrations of the contaminants before they pose unacceptable levels of risk to human health or the environment, or exceed ground water criteria at established points of compliance". Therefore, it is critical that 1) a natural attenuation remedy not be confused as a "no action" alternative, and 2) a natural attenuation remedy be clearly demonstrated on a site-by-site basis.

The screening phase involves sampling monitoring wells at background locations and within the plume. Samples are analyzed for a range of specific organic and inorganic compounds that, in addition to field measurements, indicate whether the oxidation/reduction status of the groundwater is favorable to the biodegradation of the contaminant. Preliminary modeling, including assumed biodegradation rates, provides a rapid means to determine whether natural attenuation is a promising remedy for the site.

The second phase consists of a detailed site characterization that is analogous to a feasibility study. It includes refining site specific biodegradation rates, obtaining hydrogeological data, lithology, plume definitions, exposure pathways, and distances to receptors of the ground water. Contour maps of contaminant concentrations, electron acceptors, and ground water elevations are developed. Fate-and-transport modeling refines predictions about plume dynamics over time.

Implementation of the remedy includes the placement of "sentry" wells between the plume edge and exposure points, establishing a long term sampling plan, and drawing up contingency plans in the event of unforeseen plume expansion.

The guidance includes brief technical discussions where needed to clarify certain points, cites references in support of major concepts, and provides some biodegradation rate data helpful in the screening stages of the remedy.

Draft Document Availability

Individual sections of the RBSE Manual are being released to the public in draft form for comment as they become available. Guidelines to be released include ground water policy, site characterization and sampling requirements, remedy selection, and evaluation of soil to ground water leaching. All draft guidelines are to be used with assistance from Minnesota Pollution Control Agency staff assigned to a specific site.

A photocopy fee of approximately \$0.20 per page will be charged for draft sections of the RBSE Manual in excess of 20 pages. 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:

Trudy Cramlet
Minnesota Pollution Control Agency
Ground Water and Solid Waste Division
520 Lafayette Road
St. Paul, MN 55155-4194
FAX (612) 296-9707

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