

Can You Average Soil Sample Results?

Consultants in the Remediation and Redevelopment (RR) Program's Technical Focus Group have asked whether it is allowable to average the results of individual soil samples in order to determine the risk of direct contact with contaminated soil at an individual property.

Normally, the best way to deal with most soil contamination is to locate "hot spots", or source areas, for treatment or disposal, and test those hot spots. However, the question of averaging arises because human exposure to contaminated soil – for example, an employee at an industrial facility – may occur over a wide area for a long period of time, not necessarily at the specific location where the most contaminated sample was collected. There may be circumstances where it makes sense to average sample results, such as properties where contaminants are widespread, generally at low levels and consistent in concentration.

The RR Program's *Soil Cleanup Levels for Polycyclic Aromatic Hydrocarbons (PAHs) Interim Guidance* indicates that use of the 95 percent upper confidence limit (UCL) on the arithmetic mean, rather than concentrations from discrete samples, may be the best way to estimate overall exposure.

The EPA's web site provides a program that may be downloaded to calculate the UCL. The EPA program helps users understand whether or not the discrete sample results are appropriate for averaging and can be accessed at the following web site:
<http://www.epa.gov/esd/tsc/download.htm>.

Consultants may request that RR project managers consider averaging soil sample results for comparison to the table values in chapters NR 720 and 746, Wis. Adm. Code, or for comparison to a site-specific residual contaminant level (RCL) proposed by the consultant. Program staff strongly recommend that, prior to submitting a request for case closure, consultants obtain approval to use sample averaging by sending a separate request for technical assistance. This will avoid the time and expense involved in preparing a closure request that may not be approved. Such requests for sample averaging should be submitted to DNR's regional project manager, who will provide a written response upon payment of the \$500 fee, as required under NR 749, Wis. Adm. Code.

Consultants may also consider using sample averaging to calculate background levels of some substances. In cases where the consultant wants to use the background level as the site-specific RCL, the background concentration must be determined using a DNR approved method per s. NR 720.11(5)(b), Wis. Adm. Code. The fee for review and approval of a background-based RCL is \$500, if the consultant asks for approval before submittal of a case closure request.

However, Chapter NR 720 does not address averaging of soil sample results. The RR Program currently is revising Chapter NR 720 and expects to clarify sample averaging in the revised rule language.

For more information, please contact Mark Gordon at 608-266-7278 or mark.gordon@dnr.

state.wi.us. For more information about the RR Program's Technical Focus Group, please contact Laurie Egge at 608-267-7560, or at laurie.egge@dnr.state.wi.us. The group meets quarterly and is open to anyone with an interest in the technical aspects of environmental investigation and cleanup.