

Ohio EPA
Division of Environmental Response and Revitalization
Assessment, Cleanup & Reuse Section, Remedial Response Program

TECHNICAL DECISION COMPENDIUM

Title: Use of U.S. EPA's Regional Screening Levels as Screening Values in Human Health Risk Assessments

Date: 21 August 2009

Key Words: Regional Screening Levels, RSLs, Region 9, PRGs, screening values

Purpose: The purpose of this document is to identify acceptable toxicologically-based screening values for use in human health risk assessments for sites under the oversight of the Division of Environmental Response and Revitalization (DERR) Remedial Response Program and Federal Facilities Section. This TDC supersedes the 24 March 2008 TDC on use of the Region 9 PRGs as screening values.

Background: Risk-based screening values are often used in baseline human health risk assessments to focus efforts on contaminants of concern (COCs) by eliminating compounds that are below levels considered to adversely impact human health. The Ohio EPA, DERR Remedial Response Program and Federal Facilities Section has allowed the use of screening values in the Data Collection and Evaluation phases of human health risk assessments. Presently, several sources of toxicologically-based screening values are available to risk assessment professionals.

Decision: The U.S. EPA Regional Screening Levels (RSLs) values may be used with an adjustment of 1/10 the values based on non-cancer effects, with the exception of inorganic lead (Pb¹), as screening values for human health risk assessments. Specifically, the screening value for each COC would be the residential value listed on the RSL table for carcinogenic compounds and 1/10 the value for non-carcinogenic compounds. The RSLs can also be used as generic preliminary remediation goals (PRGs). The U.S. EPA RSL Table may be found at: <http://www.epa.gov/region09/superfund/prg/>. Contaminants with maximum soil or ground water concentrations that are less than the corresponding values may be excluded from a human health evaluation, providing that future use of the site is not anticipated to result in exposures of human

¹ Pb* - U.S. EPA used an Integrated Exposure Uptake Biokinetic (IEUBK) model to derive a residential soil value for lead based on predictions of blood lead concentrations in children exposed to lead from various sources (<http://www.epa.gov/region09/waste/sfund/prg/files/04usersguide.pdf>). The PRG for lead should not be aggregated with the other PRGs and should not be adjusted (*i.e.*, 400 mg/kg).

receptors greater than those used in the derivation of the PRGs.

In addition, contaminants identified in surface water may be eliminated from a human health evaluation if their maximum concentrations are below the adjusted tap water screening values. Contaminants identified in sediments may also be excluded from a human health evaluation when their maximum concentrations are below the adjusted residential soil screening values. However, surface water and sediment contamination also needs to be evaluated for compliance with the State of Ohio Water Quality Standards (chapter 3745-1 of the Ohio Administrative Code) and for the potential impact to ecological receptors. See the DERR ecological risk assessment guidance document (<http://www.epa.ohio.gov/portals/30/rules/RR-031.pdf>) for additional information on conducting ecological assessments.

The U.S. EPA RSLs should only be used to screen out chemicals below a level of concern in exposure media (*i.e.*, direct contact soil or potable use water). Additional evaluation is warranted if contaminants in one medium function as a source impacting other media. For example, volatile organic compounds in soil and ground water may be excluded from further evaluation in the human health risk assessment for the ingestion route of exposure. However, they may need to be assessed for their potential to pose adverse effects through the indoor air pathway. Ohio EPA DERR-RRP should be contacted for advice on evaluating potential indoor air exposure.

The use of the RSLs is recommended as they replaced the U.S. EPA Region 9 PRGs (<http://www.epa.gov/region09/superfund/prg/>). However, sites that are in the process of completing a remedial investigation/feasibility study, that have relied upon the PRGs may continue to do so until a convenient/appropriate point has been reached and data quality objectives (DQOs) have been adequately updated. All new investigations should use the RSLs.

Rationale: The primary U.S. EPA screening values from Regions 3, 6 and 9 have been harmonized into the RSLs. The RSLs tables are a living document that reflects the current state of the science of toxicology and risk assessment. Of the available risk-based screening values, the RSLs have been developed using U.S. EPA recommended default exposure assumptions and exposure pathways that are most consistent with the risk assessment process used for Remedial Response sites. In addition, the RSLs for carcinogenic compounds and the adjusted values for non-carcinogenic compounds are an order of magnitude below the DERR lifetime excess cancer risk goal of 1E-5 and hazard level of an HQ or HI equal to 1. The RSLs are therefore considered to be health protective and acceptable for use as screening values for chemicals in exposure media for human health risk assessments.

Contact: Brian Tucker, Central Office, 614-644-3120.