



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFFICE OF
LAND AND EMERGENCY
MANAGEMENT

MEMORANDUM

SUBJECT: Distribution of the Superfund Radon Vapor Intrusion Screening Level (RVISL) Electronic Calculator-

FROM: Larry Douchand, Director
Office of Superfund Remediation and Technology Innovation

TO: Superfund National Policy Managers, Regions 1-10

Purpose

The purpose of this Memorandum is to transmit the final "Superfund Radon Vapor Intrusion Screening Level (RVISL) Electronic Calculator." The RVISL calculator is found at the following website:

<http://epa-visl.ornl.gov/radionuclides/index.html>.

Role of the Calculator

EPA developed the electronic calculator to help risk assessors, remedial project managers, on-scene coordinators, and others involved with risk assessment and decision making at releases/sites with radon contamination intruding into buildings. The electronic calculator is a tool that provides estimated screening levels for the evaluation of radon that is releasing inside a building under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980

(CERCLA)¹. The calculator addresses radon releases inside a building that will have a residential or a commercial/industrial land use.

Initially applied at the scoping phase of a project using readily available information, risk and ARAR-based RVISLs generally are modified based on site-specific data gathered during the Remedial Investigation and Feasibility Study (RI/FS) or Engineering Evaluation/Cost Analysis (EE/CA). RVISL development and use in screening should assist staff in streamlining the consideration of remedial alternatives. Radionuclide-specific RVISLs usually are derived: (1) concentrations based on potential applicable or relevant and appropriate requirements (ARARs) and (2) concentrations based on carcinogenic risk assessment. ARARs often include concentration limits set by other environmental regulations, such as Safe Drinking Water Act maximum contaminant levels (MCLs). The second source for RVISLs, are risk-based calculations that set concentration limits using toxicity values under specific exposure conditions.

The RVISL calculator output provides comparison values and risk and dose estimates for residential and commercial/industrial exposures to radon in soil gas, air, and groundwater. Note that for CERCLA remedial actions, dose assessment is generally done only to show compliance with a dose based ARAR. In addition, the calculator presents the option to compare the indoor air concentration, entered by the user or derived from groundwater or soil gas activities, to state standards or Uranium Mill Tailings Radiation Control Act (UMTRCA) standards, which also may be potential ARARs.

The RVISL calculator tool provides updated modeling estimations incorporating current guidance for developing SLs or preliminary remediation goals (PRGs) for indoor radon-222, radon-220, and radon-219 that are risk or dose based, and for showing compliance with the UMTRCA indoor radon standards for radon-222 and radon-220. The RVISL therefore supersedes the risk assessment approach in Preliminary Remediation Goals for Radionuclides in Buildings (BPRG) electronic calculator and the dose assessment approach in ARAR Dose Compliance Concentrations Goals for Radionuclides in Buildings (BDCC) electronic calculator for

¹ The electronic calculator transmitted by this memorandum is a tool that provides guidance on screening levels under CERCLA and is consistent with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). It does not alter the NCP's general expectations for remedial actions, such as those regarding treatment of principal threat waste and the use of containment and institutional controls for low-level threat waste. Consistent with CERCLA and the NCP, remedial actions need to attain or waive applicable or relevant and appropriate requirements (ARARs); potential ARARs for contaminated ground water at radiation sites typically include Maximum Contaminant Levels (MCLs) or non-zero Maximum Contaminant Level Goals (MCLGs) established under the Safe Drinking Water Act.

This electronic calculator is a tool that provides guidance to U.S. Environmental Protection Agency (EPA) staff on how to establish risk and ARAR-based RVISLs. The guidance is designed to be consistent with EPA's national guidance on these values. The electronic calculator does not, however, substitute for EPA's statutes or regulations, nor is it a regulation itself. Thus, it cannot impose legally binding requirements on EPA, states, or the regulated community, and may not apply to a particular situation based upon the circumstances. EPA may change this guidance in the future, as appropriate.

all three radons, and Q17 of the guidance document “Radiation Risk Assessment At CERCLA Sites: Q & A” issued on May 2014 for radon-222 and radon-220. The Q & A guidance may be found at the following website
<https://semspub.epa.gov/work/HQ/176329.pdf>.

Background

EPA issued guidance entitled “Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination” (OSWER No. 9200.4-18, August 22, 1997). This 1997 guidance clarified how to establish protective cleanup levels for radioactive contamination at CERCLA sites. The guidance reiterated that cleanup levels of radionuclides generally should be within the risk range for carcinogens established in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) when ARARs are not available or are not sufficiently protective. Thus, cleanups generally should achieve a level of risk within the 10^{-4} to 10^{-6} carcinogenic risk range based on the reasonable maximum exposure for an individual. As addressed in the 1997 guidance, regions should include exposures from all potential pathways and through all media (e.g., soil, groundwater, surface water, sediment, air, structures, etc.), when calculating cleanup levels. The guidance also provides a listing of radiation standards that are likely to be used as ARARs to establish cleanup levels or to conduct remedial actions.

The attached RVISL calculator is part of a continuing effort by the Office of Superfund Remediation and Technology Innovation (OSRTI) to provide updated guidance for addressing radioactively contaminated sites consistent with our guidance for addressing chemically contaminated sites (except to account for the technical differences between radionuclides and chemicals). OSRTI intends for this effort to facilitate decisions that are consistent with the NCP at radioactively contaminated sites and to incorporate new information based on improvements to the Superfund program that have been implemented through the program's administrative reforms. The RVISL calculator is consistent with the Vapor Intrusion Screening Level (VISL) calculator which identifies chemicals that are considered to be sufficiently volatile and toxic to warrant an investigation of the soil gas intrusion pathway when they are present as subsurface contaminants.

Implementation

If you have any questions about the RVISL calculator, please contact Mr. Stuart Walker (email: Walker.Stuart@epa.gov; telephone: 703-603-8748; fax: 703-603-9132; mail code: 5204P), the OSRTI lead staff person who developed this guidance.

Attachment

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