



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFFICE OF
LAND AND EMERGENCY
MANAGEMENT

MEMORANDUM

SUBJECT: Superfund Radon Vapor Intrusion Screening Level 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 announce the release of the final “Superfund Radon Vapor Intrusion Screening Level Electronic Calculator” (“RVISL”), which is accessible at the following website: <http://epa-visl.ornl.gov/radionuclides/index.html>.

BACKGROUND

The U.S. Environmental Protection Agency (EPA) developed the RVISL calculator to help risk assessors, remedial project managers, on-scene coordinators and others involved in risk assessment and decision-making at releases/sites with radon contamination intruding into buildings. The electronic calculator is a tool, which provides estimated screening levels under the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)¹

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 or non-zero maximum contaminant level goals established under the Safe Drinking Water Act.

This electronic calculator is a tool, which 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

for evaluating radon releases into residential and commercial/industrial buildings.

Initially applied at a project's scoping phase using readily available information, RVISLs based on risk and applicable or relevant and appropriate requirements (ARARs) generally are modified based on site-specific data gathered during the remedial investigation/feasibility study or engineering evaluation/cost analysis. The development and use in screening of RVISLs should assist staff in streamlining the consideration of remedial alternatives. Radionuclide-specific RVISLs usually are derived concentrations based on: (1) potential ARARs and (2) carcinogenic risk assessment. Concentration limits set by other environmental regulations, such as Safe Drinking Water Act maximum contaminant levels, are often included in ARARs. Risk-based calculations that set concentration limits using toxicity values under specific exposure conditions are the second RVISL data source.

The RVISL calculator's 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 screening levels or preliminary remediation goals 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 electronic calculator and the dose assessment approach in ARAR Dose Compliance Concentrations Goals for Radionuclides in Buildings electronic calculator for all three radons, and Q17 of the 2014 guidance document "Radiation Risk Assessment at CERCLA Sites: Q & A" for radon-222 and radon-220. The Q & A guidance may be found at: <https://semspub.epa.gov/work/HQ/176329.pdf>.

IMPLEMENTATION

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 radionuclide cleanup levels generally should be within the National Oil and Hazardous Substances Pollution Contingency Plan's (NCP's) carcinogenic risk range when ARARs are not available or are not sufficiently protective. Thus, cleanups generally should achieve a risk level within the 10^{-4} to 10^{-6} carcinogenic risk range based on an individual's reasonable maximum exposure. As addressed in the 1997 guidance, regions should

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.

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 RVISL calculator is part of the Office of Superfund Remediation and Technology Innovation's continuing effort to provide updated guidance for addressing radioactively contaminated sites in a manner consistent with guidance for addressing chemically contaminated sites while accounting for radionuclides and chemicals' technical differences. The effort's intent is to facilitate NCP-consistent decisions at radioactively contaminated sites and to incorporate new information based on Superfund programmatic improvements. The RVISL calculator is consistent with the Vapor Intrusion Screening Level calculator, which identifies chemicals considered to be sufficiently volatile and toxic to warrant a soil gas intrusion pathway investigation when present as subsurface contaminants.

CONCLUSION

If you have any questions about the RVISL calculator, please contact Mr. Stuart Walker (Walker.Stuart@epa.gov), the OSRTI lead who developed this guidance.

Cc: Dana Stalcup, OLEM/OSRTI
Brigid Lowery, OLEM/OSRTI
Schatzi Fitz-James, OLEM/OSRTI
Laurence Libelo, OLEM/OSRTI
Stuart Walker, OLEM/OSRTI
Greg Gervais, OLEM/FFRRO
Cyndy Mackey, OECA/OSRE
Lorie Schmidt, OGC/SWERLO
Kathleen Salyer, OLEM/OEM
Jonathan Edwards, OAR/ORIA
Regional Remedial Branch Chiefs, Regions 1-10
NARPM Co-Chairs