Preliminary Remediation Goals for Radionuclides in Buildings (BPRG)

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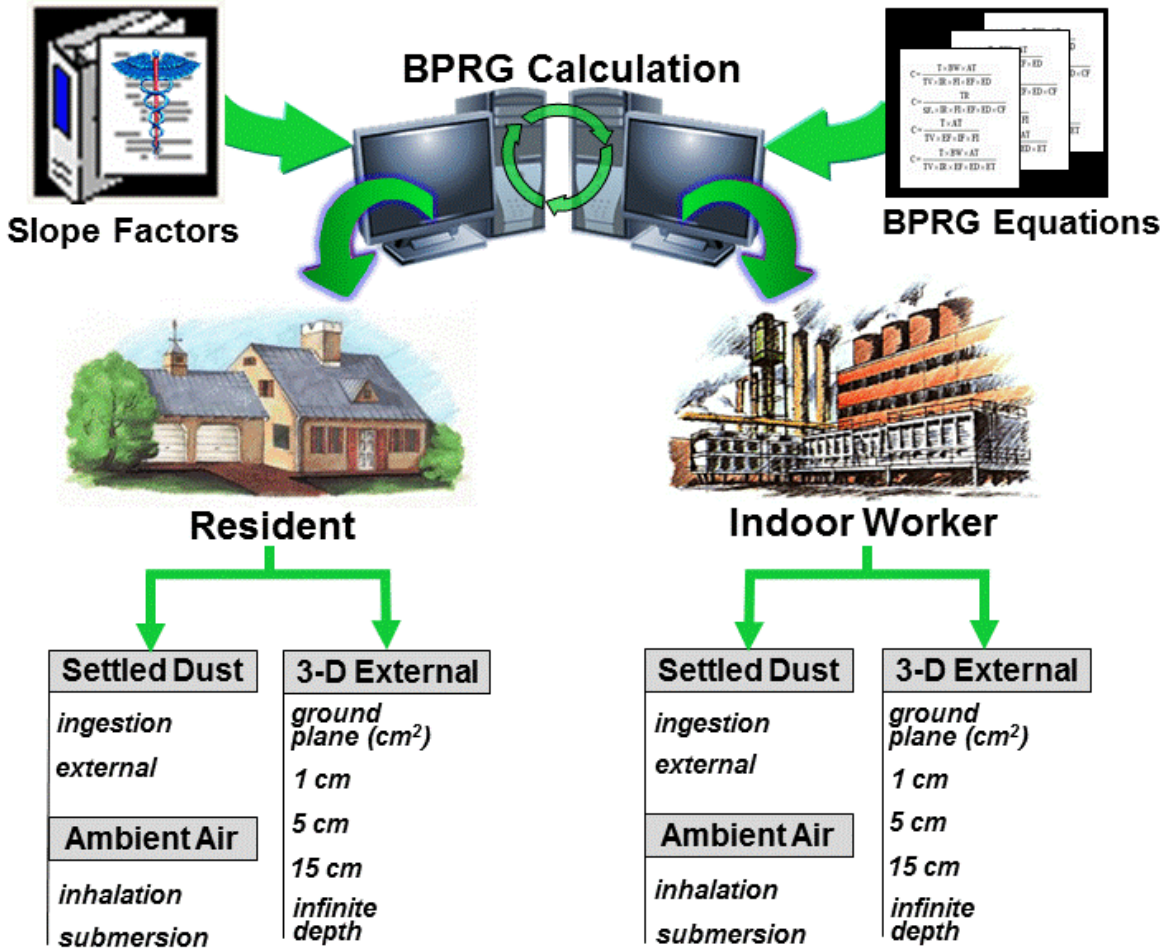

Welcome

Welcome to the EPA's "Preliminary Remediation Goals for Radionuclides in Buildings at Superfund Sites" (BPRG) Download and Calculator website. The recommended BPRGs on this website are preliminary remediation goals (PRGs) for contaminated buildings, as referenced in the NCP and EPA CERCLA guidance. EPA's CERCLA guidance on addressing building contamination can be found here.

PRGs generally are risk-based, conservative screening values that can be used to identify areas and contaminants of potential concern (COPCs) that either do or do not warrant further investigation.

This tool presents recommended risk-based BPRGs calculated using suggested default input parameters and the latest toxicity values. In addition, the user may to modify the input parameters to create site-specific BPRGs to meet the needs of your site, considering factors such as within the limitations of the underlying exposure scenarios, pathways and routes. To ensure accurate application of BPRGs, please see further guidance located in the "User's Guide", "What's New", 'FAQ", and "Download Area" links. Below is a general description of BPRG use involving radionuclides. The EPA has prepared a fact sheet for the general public that describes BPRG uses, BPRG calculator operation and land uses available for assessment. Additionally, this fact sheet describes the BPRG and BDCC calculators in greater detail for EPA staff. The OSWER Directive, Superfund Radiation Risk Assessment: A Community Toolkit was also developed by the EPA to help the public understand more about the risk assessment process used at Superfund sites with radioactive contamination.

The BPRG calculator results were previously externally and internally verified, and the documentation of those reviews may be seen here. The BPRG calculator was previously peer reviewed, and the documentation of those peer reviews may be seen here. A comparison review that focused on describing the default parameters in various models may be found here.

Introduction

The purpose of this recommended BPRG calculation tool is to assist risk assessors, remedial project managers, and others involved with risk assessment and decision-making at sites with contaminated buildings.

This website has been updated after new EPA guidance has been issued. The website was initially made available for use in a transmittal memo entitled "Distribution of Superfund Preliminary Remediation Goals for Radionuclides in Buildings (BPRG) Electronic Calculator", August 29, 2007.

Preliminary Remediation Goals

This recommended calculator is based on Risk Assessment Guidance for Superfund: Volume I, Human Health Evaluation Manual (Part B, Development of Risk-based Preliminary Remediation Goals) (RAGS Part B). RAGS Part B provides guidance on using EPA toxicity values and exposure information to calculate risk-based BPRGs. Initially used at the scoping phase of a project using readily available information, risk-based BPRGs generally are modified based on site-specific data gathered during the RI/FS study. BPRG development and screening typically should assist staff in streamlining the consideration of remedial alternatives. Radionuclide-specific BPRGs normally are derived from two general sources: (1) concentrations based on potential Applicable or Relevant and Appropriate Requirements (ARARs) and (2) concentrations based on 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 BPRGs, and the focus of this recommended database tool, is risk-based calculations that set concentration limits using toxicity values under specific exposure conditions.

The recommended approach for developing remediation goals is to identify BPRGs at scoping, modify them as needed at the end of the investigation or during the remediation phase based on site-specific information from the baseline risk assessment, and ultimately select remediation levels. In order to set radionuclide-specific BPRGs in a site-specific context, however, assessors should answer fundamental questions about the site. Information on the radionuclides that are present onsite, the specific contaminated media, building-use assumptions, and the exposure assumptions behind pathways of individual exposure generally should be considered in developing radionuclide-specific BPRGs. This recommended calculation tool provides the ability to modify the suggested standard default BPRG exposure parameters to calculate site-specific BPRGs.

Where this recommended database tool is used to develop standard BPRGs or calculate site-specific BPRGs, it is important to clearly document the equations and exposure parameters used in the calculations. Discussion of the assumptions that go into the BPRGs calculated should be included in the document where the BPRGs are presented such as a Remedial Investigation (RI) Report or Feasibility Study.

This recommended database tool presents suggested standardized risk-based BPRGs and variable risk-based BPRG calculation equations for radioactively contaminated buildings. Recommended BPRGs are presented for resident and indoor worker exposure. The recommended risk-based BPRGs for radionuclides are based on the carcinogenicity of the analytes. The suggested standardized BPRGs are based on default exposure parameters and incorporate exposure factors that present RME conditions. This recommended database tool presents BPRGs in both activity per area and mass per area units.

This website combines current cancer slope factors (SFs) with "standard" exposure factors to estimate contaminant concentrations in environmental media (soil and water) that are protective of humans (including sensitive groups) over a lifetime. SFs used are provided by the Center for Radiation Protection Knowledge. The main report is Calculations of Slope Factors and Dose Coefficients and the tables of slope factors are in a separate appendix.

Sufficient knowledge about a given site may warrant the use of site-specific assumptions which may differ from the defaults. Exceeding a PRG usually suggests that further evaluation of the potential risks is appropriate. The PRG concentrations presented on this website can be used to screen pollutants in environmental media, trigger further investigation, and provide initial cleanup goals, if applicable.

Related CERCLA Calculators and Guidance

It should also be noted that calculating a BPRG addresses neither human radionuclide dose or noncancer toxicity, nor potential ecological risk. Of the radionuclides generally found, at CERCLA sites, only uranium has potentially significant noncancer toxicity. When assessing sites with uranium as a contaminant, it may also be necessary to consider the noncancer toxicity of uranium, using other tools, such as EPA's Regional Screening Levels (RSLs) for Chemical Contaminants at Superfund Sites electronic calculator for uranium in soil, water, or air, and the WTC for uranium inside buildings. EPA's PRG Calculator should be used to assess radionuclide cancer risk in soil, water and air, and the SPRG Calculator for cancer risk for hard outside surfaces. EPA's DCC Calculator should be used to assess radionuclide dose for soil, water, and air, BDCC Calculator for radionuclide dose inside buildings, and the SDCC Calculator for radionuclide dose for hard outside surfaces. Similarly, some sites with radiological contaminants in sensitive ecological settings may also need to be evaluated for potential ecological risk. EPA's guidance "Ecological Risk Assessment Guidance for Superfund: Process for Designing and Conducting Ecological Risk Assessment" contains an eight step process for using benchmarks for ecological effects in the remedy selection process.

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