Preliminary Remediation Goals for Radionuclides (PRG)

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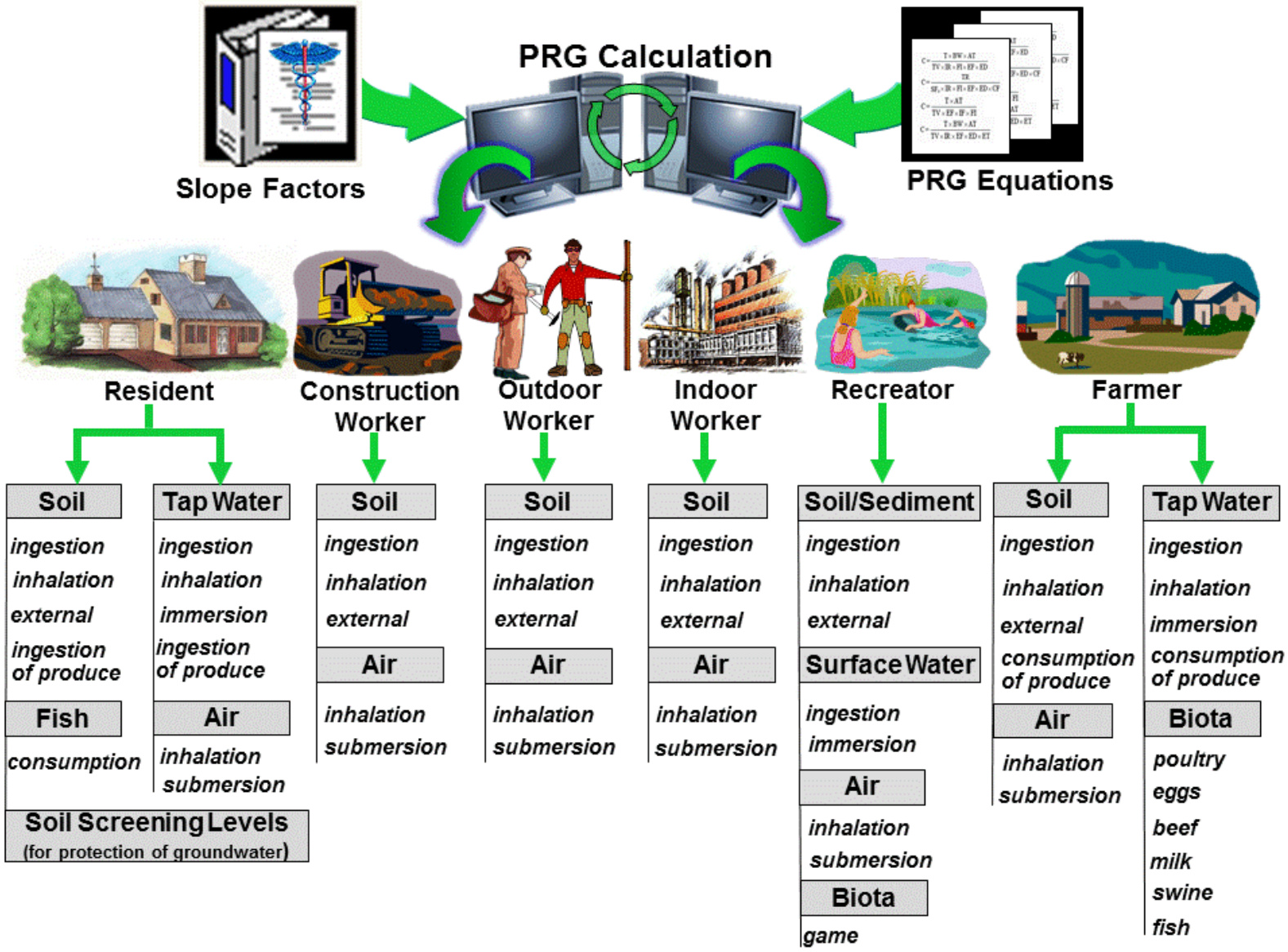

Welcome

Welcome to the EPA's Superfund Radionuclide Preliminary Remediation Goals for Radionuclides (PRG) Download and Calculator website. The recommended PRGs on this website are preliminary remediation goals (PRGs) for contaminated soil, water, and air. PRGs are addressed in the NCP and EPA CERCLA guidance. Typically PRGs are risk-based, conservative screening values to identify areas and contaminants of potential concern (COPCs) that may warrant further investigation.

This tool presents risk-based preliminary remediation goals (PRGs) calculated using default input parameters and the latest toxicity

values. In addition, you are able to modify the input parameters to create site-specific PRGs to meet the needs of your site. To ensure proper application of the PRGs, please see further guidance on how to use the PRGs presented on this site located in the "PRG User's Guide", "PRG What's New", "PRG FAQ", and "PRG Download Area" links. The EPA has prepared a fact sheet for the general public that describes PRG uses, PRG calculator operation and land uses available for assessment. Additionally, this fact sheet describes the PRG and Dose Compliance Concentrations (DCC) calculators in greater detail for EPA staff. The Office of Solid Waste and Emergency Response (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 PRG calculator results were previously internally verified and externally verified, and the documentation of these reviews may be seen here. The PRG calculator was previously peer reviewed, and the documentation of those peer reviews may be seen here.

Introduction

A purpose of this guidance is to provide a PRG calculation tool to assist risk assessors, remedial project managers, and others involved with risk assessment and decision-making at Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) sites (commonly known as Superfund) in developing PRGs.

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 OSWER Radionuclide Preliminary Remediation Goals (PRGs) for Superfund Electronic Calculator", February 7, 2002.

Preliminary Remediation Goals

This database 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 calculating risk-based PRGs. Initially used at the scoping phase of a project using readily available information, risk-based PRGs may be modified based on site-specific data gathered during the Remedial Investigation or Feasibility Study (RI/FS) report. PRG development and screening should assist staff in streamlining the consideration of remedial alternatives. Chemical-specific PRGs are from two general sources. These are: (1) concentrations based on potential Applicable or Relevant and Appropriate Requirements (ARARs) and (2) risk-based concentrations. ARARs include concentration limits set by other environmental regulations such as Safe Drinking Water Act maximum contaminant levels (MCLs). The second source for PRGs, and the focus of this database tool, is risk-based calculations that set concentration limits using carcinogenic toxicity values under specific exposure conditions.

The recommended approach for developing remediation goals is to identify PRGs at scoping, modify them as needed at the end of the RI or during the FS based on site-specific information from the baseline risk assessment, and ultimately select remediation levels in the Record of Decision (ROD). In order to set radionuclide-specific PRGs in a site-specific context, however, assessors must answer fundamental questions about the site. Information on the radionuclides that are present onsite, the specific contaminated media, land-use assumptions, and the exposure assumptions behind pathways of individual exposure is necessary in order to develop radionuclide-specific PRGs. The PRG calculator provides the ability to modify the standard default PRG exposure parameters to calculate site-specific PRGs.

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

Study.

This recommended database tool presents suggested standardized risk-based PRGs and variable risk-based PRG calculation equations for radioactively contaminated soil, water, air, and foods. Recommended PRGs are presented for residential soil, composite worker soil, outdoor worker soil, indoor worker soil, construction worker soil, recreator soil, air, farmer soil, farmer water, recreator water, farm products, tap water, and fish ingestion. The recommended risk-based PRGs for radionuclides are based on the carcinogenicity of the analytes. The suggested standardized PRGs are based on default exposure parameters and incorporate exposure factors that present RME conditions. This recommended database tool presents PRGs 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 PRG 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, and air, and the WTC for uranium inside buildings. EPA's SPRG Calculator should be used to assess radionuclide cancer risk for hard outside surfaces, and the BPRG Calculator for radionuclide cancer risk inside buildings. 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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