

Charge Document for the Building Preliminary Remediation Goals (BPRG) for Radionuclides Peer Review

Background

The U.S. Environmental Protection Agency (EPA) has issued guidance entitled “Establishment of Cleanup Levels for CERCLA Sites with Radioactive Contamination” (OSWER No. 9200.4-18, August 22, 1997). This 1997 guidance provided clarification for establishing protective cleanup levels for radioactive contamination at CERCLA sites. The guidance reiterated that cleanups of radionuclides are governed by the risk range for all carcinogens established in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) when Applicable or Relevant and Appropriate Requirements (ARARs) are not available or are not sufficiently protective. Cleanup should generally achieve a level of risk within the 10^{-4} to 10^{-6} carcinogenic risk range based on the reasonable maximum exposure for an individual. In calculating cleanup levels, one should include exposures from all potential pathways, and through all media (e.g., soil, ground water, surface water, sediment, air, structures, etc.) 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 draft Radionuclide BPRG calculator that is the subject of this peer review 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 that is consistent with our guidance for addressing chemically contaminated sites, except to account for the technical differences between radionuclides and chemicals. This effort is intended to facilitate compliance with the NCP at radioactively contaminated sites while incorporating the improvements to the Superfund program that have been implemented through Administrative Reforms.

Today’s draft Radionuclide BPRG calculator is similar to risk assessment procedures that an EPA multi-agency task force developed to evaluate indoor environments for cleanup after the World Trade Center incident. The World Trade Center indoor environmental assessment may be found at http://www.epa.gov/wtc/copc_study.htm.

Regional staff requested clarification of establishing risk-based PRGs for radioactively contaminated buildings at CERCLA sites. Today’s draft guidance responds to that request. A preliminary draft of the Radionuclide BPRG electronic calculator was distributed to various Regional staff in November 2003, May 2004, and October 2004 and a presentation was made at the National Superfund Radiation Meeting held in Las Vegas in February 2004. This version reflects comments that we received on those drafts and the presentation.

Purpose and Goals of Peer Review

Through peer review, the Agency seeks to ensure that science is used credibly and appropriately in its work. The primary function of the peer reviewer should be to judge whether the Agency’s choice and interpretation of available data and models are scientifically sound and appropriate for their intended use. In addition, the Agency looks to peer reviewers as sources for alternatives or solutions to problems that may be identified. Therefore, it is extremely important not only to

critique the work, but also to recommend improvement that are practical to achieve in the near term.

Charge to Peer Reviewers

Peer reviewers are asked to review the *Building Preliminary Remediation Goals (BPRG) for Radionuclides* calculation tool found at the Website: <https://epa-bprg.ornl.gov/>. The user name and password for access to this site are “bprg” and “test.”

Peer reviewers are asked to review the calculation tool, including all materials and guidance developed specifically as part of the tool, and comment on the following general and specific questions. In considering these questions, peer reviewers shall evaluate the scientific and technical merit of the calculator, including supporting materials. Peer reviewers are asked to provide specific comments, describing any issues and suggested improvements. Suggested improvements should be specific, clear, and consistent with existing EPA regulations, policy, and guidance and should cite, where applicable, relevant technical documents and/or other resources.

General questions

1. Are the purpose and scope of the guidance document clear? Does the document accurately represent existing guidance regarding risk-based PRGs and explain how it fits within this existing context? Does the document clearly state for what purposes it is applicable and for what purposes it should not be used? Please explain.
2. Is the intended audience of the BPRG calculator clear? Can the calculator be effectively used as is currently presented for site-specific BPRG calculations? Does the supporting material provide the appropriate level of detail, technical content, and referencing for the intended audience? Please explain and identify specific recommendations for improving the BPRG calculation tool.
3. Is the approach reflected in the BPRG calculator consistent with existing risk-based PRG guidance and practice and does the calculator adequately account for differences between: a) outdoor and indoor environments; and b) chemical and radiological contaminants? What other important factors, if any, should be considered in the BPRG equations? Please explain.
4. Are the BPRG equations, sources of toxicity information, and exposure parameter default variables and values supported by risk assessment literature, existing guidance, and/or site-specific BPRG experience? Does the BPRG calculator address the most important and appropriate exposure scenarios, exposure pathways, and exposure routes? Is the construction of the calculator appropriate and reasonable given the available methods, documented experience, and current practice? Please explain.
5. In addition to comments provided in response to the above questions, are there any shortcomings of the guidance that diminishes its effectiveness? Is anything missing that, if included, would improve its effectiveness? Please explain and identify specific recommendations for improving the calculator.

Specific topics

6. Is the discussion of background sources of radionuclide contamination complete and are adequate guidance and citations provided to account for background in BPRG calculations? Please explain.

The following peer review questions relate to BPRGs for specific exposure pathways.

7. BPRGs for Settled Dust

- a. Are the equations, default values, and other input parameters appropriate for establishing risk-based BPRGs for this pathway? Please explain.
- b. Do the equations, default values, and other input parameters adequately account for risks to children? Please explain.
- c. Is the use of the external ground plane slope factor appropriate? Please explain.
- d. Is the use of the dissipation rate, including a default input parameter of 0, appropriate? Please explain.

8. BPRGs for Indoor Air

- a. Are the equations, default values, and other input parameters appropriate for establishing risk-based BPRGs for this pathway? Please explain.
- b. Do the equations, default values, and other input parameters adequately account for risks to children? Please explain.
- c. Is the use of the external submersion slope factor appropriate? Please explain.

9. BPRGs for External Exposure

- a. Are the equations, default values, and other input parameters appropriate for establishing risk-based BPRGs for this pathway? Please explain.
- b. Do the equations, default values, and other input parameters adequately account for risks to children? Please explain.
- c. Is the adjusted dose rate in for using the external infinite source slope factor in a contaminated room appropriate? Please explain.