

**Determining Cleanup Goals at  
Radioactively Contaminated Sites:  
Case Studies**

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## EXECUTIVE SUMMARY

This document summarizes the various regulatory standards and requirements that dictate the cleanup at radioactively contaminated sites. It discusses processes used to develop cleanup levels and presents case studies from 12 selected sites to demonstrate variations in the decision-making framework and basis:

- Brookhaven National Laboratory, New York
- Enewetak Atoll, Marshall Islands
- Fernald Environmental Management Project, Ohio
- Fort Dix, New Jersey
- Hanford Site, Washington
- Johnston Atoll
- Linde Site, New York
- Nevada Test Site and Associated Ranges, Nevada
- Rocky Flats, Colorado
- Oak Ridge, Tennessee
- Savannah River Site, South Carolina
- Weldon Spring Site, Missouri

An analysis of the case studies has produced conclusions that could prove useful in enhancing consistency of decision making and application of risk assessment approaches at radioactively contaminated sites.

Calculations of cleanup levels vary from site to site due to different physical settings, cleanup authorities, risk assessment methodologies, etc. To compare existing cleanup levels and to help in the development of future cleanup levels, the basis for decision making must be understood. Different cleanup authorities (Comprehensive Environmental Response, Compensation, and Liability Act; Nuclear Regulatory Commission; Department of Energy; state radiation control regulations; etc.) require varying approaches used in radiation risk assessment (e.g., based on dose or on slope factor). Recently, new data and concepts in radiation risk assessment, such as risk coefficients, updated slope factors, and soil screening levels for radionuclides, have been developed that refine these approaches further.

A common understanding among states, stakeholders, sites, and agencies of how various cleanup levels have been or could be derived will make this process more efficient, defensible, and consistent. The use of science-based cleanup criteria reduces the likelihood of delayed cleanup due to litigation and other factors. Decision makers at DOE and other facilities need to be aware of the context used to establish cleanup levels at other sites contaminated with radionuclides. Consistency in decision making for developing cleanup goals will enhance selection and deployment of appropriate environmental remediation and characterization technologies.