



ITRC TEAM PROJECT SUMMARY STATEMENT PRE-IMPLEMENTATION

ITRC Radionuclides Team

*Decontamination and Decommissioning of Radiologically Contaminated Facilities
(RAD-5)*

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TECHNOLOGY/METHODOLOGY SUMMARY

State of the Technology/Methodology

Decontamination and decommissioning (D&D) of radiologically contaminated facilities presents numerous challenges. D&D involves many tasks that require adherence to a complex array of federal and state regulations and policies, attention to health and safety issues for workers and the public, monitoring and management of schedules and costs, and interaction with a potentially large number of stakeholders who have an interest in the present activities and future plans for sites undergoing D&D.

A large body of knowledge has been accumulated on D&D operations. Presently, approximately 90 commercial power reactors, 250 research reactors, 100 mines, 5 reprocessing facilities, and 14 fuel fabrication plants have been retired from operation. Internationally, at the end of 2005, the International Atomic Energy Agency reported that 8 power plants had been completely decommissioned and dismantled, with the sites released for unconditional use; 17 had been partly dismantled and safely enclosed; 31 were being dismantled prior to eventual site release; and 30 were undergoing minimum dismantling prior to long-term enclosure.

Conclusion: In light of the current state of operations and certainty of future legacies, successful D&D operations ensure realization of cost and time savings during site closure.

The Future

In addition to the present status of facility closure, thousands of commercial facilities licensed to handle radioactive materials are or will be slated to undergo decommissioning. Since 1960, more than 70 test, demonstration, and power reactors have been retired, most of them relatively small. In addition, approximately 200 Nuclear Regulatory Commission materials licenses are terminated each year. As additional facilities cease operations, it is anticipated that D&D operations will have an expanded role in the industry.

TEAM SUMMARY

ITRC Team Process Attributes

The ITRC Radionuclides Team intended to introduce D&D practices by describing the general D&D process, examining the types of facilities undergoing D&D, and summarizing rules and regulations typically applicable to D&D activities. The team addressed the associated regulatory framework by addressing and discussing the two major regulatory authorities governing D&D—the Atomic Energy Act and the Comprehensive Environmental Response, Compensation, and Liability Act. The team also explored other important aspects of D&D, including costs and project management, applicable technologies, potential stakeholder issues, and health and safety. In UXO-5, the team integrated the aforementioned elements through a set of case studies of sites that have undergone D&D, where some of the potential problems and decisions are explored. Finally, the team provided lessons learned and drew conclusions about D&D practices.

In addition to the written technical/regulatory guidance, the Radionuclides Team also developed an Internet-based training course to convey key concepts and findings to audiences interested in D&D. The curriculum is composed of four modules:

- Introduction and Regulatory Basis for D&D
- Factors for Implementing D&D
- Preliminary Remediation Goal Calculators
- Case Studies and Lessons Learned

Key Learning

Since large-scale D&D operations at nuclear facilities began in the 1970s, one of the most noticeable advances has been dramatic decreases in decommissioning cost. This change is the result of a combination of accumulated decommissioning operational experience reducing the high initial cost estimates (which were high due to uncertainties and poorly defined boundaries), evolution of regulatory guidance, and continuously developing technologies.

ITRC Team Next Steps

The team believes that, with experience, there will be further improvements in D&D operating efficiencies consistent with a learning curve. With the increase in efficiency, some cost reduction is anticipated. This ITRC document will serve as a guide and signpost for facility owners, cleanup contractors, technology providers, and others involved in the D&D portion of the cleanup process.