

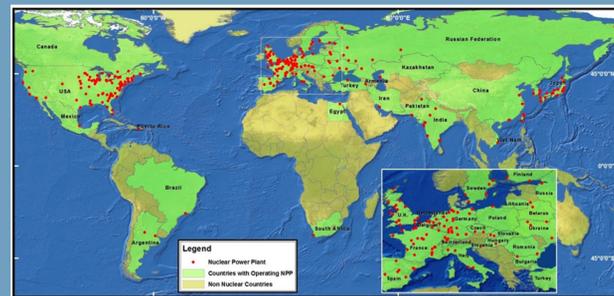
# ASTM TESTING STANDARDS DEVELOPMENT FOR D&D TECHNOLOGIES

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## Introduction: Requirement for Standards Development

An opportunity to better enhance technology development and deployment methods in the nuclear industry has become apparent. Currently, the lack of uniform testing protocols and performance metrics for testing, evaluating, and comparing D&D technologies designed to facilitate the safe cleanup of the environmental legacy of the government's nuclear weapons program, as well as the private sector nuclear industry, has been identified by community stakeholders.



Nuclear facilities across the U.S. and internationally are being scheduled for D&D at an unprecedented rate, and serious attention needs to be focused on implementing measures that enhance the essential role and effectiveness technology will have in this final phase of the nuclear facility life cycle.



## Areas of Implementation

Several National Research Council reports have identified active needs in broad categories where technology development could make significant contributions to solving the unique challenges in D&D problem sets. These include, but are not limited to:

- **Characterization of Contaminated Materials**
- **Remote Intelligent Systems/ Robotic Capabilities**
- **Decontamination of Equipment and Facilities**
- **D&D of Reactors and Entombment End States.**

Implementing fundamental testing and evaluation principles will ensure these various efforts are sound, responsive, and defensible.

## Key Milestones

ASTM International's E10 Committee on Nuclear Technologies and Applications is coordinating a collaborative effort with federal agencies, private sector, academia, and international D&D communities to develop and ultimately promulgate uniform performance metrics and testing protocols for the various categories of D&D technologies. In particular, the Subcommittee E10.03 on Radiological Protection for Decontamination and Decommissioning of Nuclear Facilities and Components will serve as an ideal central working group for coordinating a phased approach with the various stakeholders in accomplishing this critical requirement. Key milestones accomplished / planned include:

- January 2016 → Standards development in support of D&D technologies was briefed and approved by ASTM International's E10 Committee on Nuclear Technologies and Applications.
- March 2016 → ASTM International E10.03 Subcommittee designated as lead
- March- June 2016 → ASTM Standardization News article on this initiative published in the March/April edition
- June 2016 → Moving forward with establishment of a designated working group (WG)
- June 2016 → Initial WG meeting scheduled during ASTM International semi-annual conference

## Application

Uniform testing protocols, evaluation, and comparison will be most effective during TRL phases 5-9 where the technology has a high operational readiness and is approaching deployment into its intended environment.

TRL 9	Actual Technology Proven Through Successful Use in an Operational Environment	Real World
8	Actual Technology Completed and Qualified Through Tests and Demonstrations	
7	System Prototype Demonstration in an Operational Environment	
6	System/Subsystem Model or Prototype Demonstrated in a Simulated Environment	Simulated World
5	Component Validation in a Simulated Environment	
4	Component Validation in a Laboratory Environment	Research Lab
3	Analytical and Experimental Critical Function and/or Characteristic Proof-of-Concept	
2	Technology Concept and/or Application Formulated	
TRL 1	Basic Principles Observed and Reported	

## Benefits

- Facilitate decision making in technology acquisition phase.
- Enhance technology evaluation.

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