



United States Nuclear Regulatory Commission

Protecting People and the Environment

Introduction to the Interagency Workshop on Early Leak Detection at Nuclear Facilities

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NRC Nuclear Safety Regulation

- NRC is an independent federal agency
 - *NRC regulates commercial and institutional uses of nuclear energy*
- Mission: To protect public health and safety
 - *Establish standards and regulations*
 - *Issue licenses for nuclear facilities and users of nuclear materials*
 - *Inspect facilities and users of nuclear materials to ensure compliance with safety and security requirements*
 - *Incident response*

Three Main NRC Mission Areas

- **Reactors**
 - Commercial reactors for generating electricity
 - Research and test reactors
- **Materials**
 - Uses of nuclear materials in medical, industrial, and academic settings
 - Facilities that produce nuclear fuel
- **Waste**
 - Transportation, storage, and disposal of nuclear materials and waste
 - Decommissioning of nuclear facilities from service



NPP Releases of Radioactive Liquids

- Controlled, permitted releases take place at all plants
- Majority of plants have also had unintentional releases (spills, leaks in underground or buried piping)
 - Most of these releases have not impacted soil or groundwater outside of site boundary
 - Some sites (~15) currently have onsite radionuclide concentrations in groundwater in excess of EPA drinking water standards (mainly tritium)
 - No sites currently detecting radionuclides in offsite environment or reporting offsite radionuclide concentrations in groundwater in excess of EPA drinking water standards
- Both NRC and Nuclear Industry have initiatives underway to address the issue of leaks in buried piping
- Current leaks do not present a health risk to the public, but public confidence in NRC and Industry has suffered

This workshop is part of a larger project :

EXTENDED IN-SITU AND REAL-TIME MONITORING

For each task, perform a “scoping study” to identify, in concert with the nuclear industry, those sensors and techniques that have the most promising commercial viability and fill a critical inspection or monitoring need.

Task 1: Real-time materials degradation

Task 2: Severe accident conditions

Task 3: Performance of long-term dry cask storage systems

Task 4: Compliance with 10CFR Part 20.1406 involving early detection of abnormal radioactive releases