The Tenuous Future of Radiological Laboratories

Addressing the Declining Operational Readiness for Mission Critical Activities of Radiological Laboratories

Developed by :Integrated Consortium of Laboratory Networks (ICLN)
Radiological Laboratory Response Subgroup

Presenter : John Griggs, PhD, Lab Director, NAREL US EPA
Chair, ICLN Radiological Laboratory Response Subgroup

Executive Summary

The nation's radiological laboratories face **serious challenges** in the near future that threaten to compromise their ability to support functions that are vital to the missions of their respective agencies and to adequately respond to a radiological or nuclear terrorist attack or a major nuclear accident.

There are several **critical challenges**

Executive Summary

The **most critical challenges** include:

- A crippling loss of expertise in radiochemistry due to personnel retirements coupled with a shrinking number of qualified replacements;
- Aging and difficult-to-maintain radioanalytical instrumentation and equipment;
- Deteriorating radiological laboratory facilities that jeopardize the generation of essential data.

Human Capital Challenges

- The number of trained radiochemists is shrinking
  - A significant reduction in the number of experienced radiochemists in the next 5-10 years
    - Aging and retirement of the current workforce (**more than 40% eligible in the next 10 years**)
    - Fewer qualified replacements and academic programs (growth and funding stagnation since 1980's)
  - Need a period of overlap between the retiree and the new hire so the "institutional knowledge" can be passed on

This will have **dire consequences** in responding to a radiological or nuclear terrorist incident or major nuclear accident

Laboratory Instrumentation

- Aging analytical instrumentation negatively impacts:
  - The high throughput analytical needs of a critical large-scale emergency response
  - Critical capacity and capability to perform mission essential functions
- Computer software challenges with aging equipment (compatibility issues with operating systems)
- Aging instrumentation will cause **significant delays,** impeding informed public health decisions and other mission critical activities

To be able to apply the best science, laboratories need to replace aging, less sensitive and less capable instrumentation

Facilities Infrastructure

- Facility infrastructure (buildings, chemical fume hoods, HVAC, electrical systems, etc.) is deteriorating, and **will only continue to worsen**
  - Many facilities were built up to six decades ago
  - Decreases the ability to produce essential analytical results
- Many newer instruments have environmental requirements that cannot be met
  - Can prevent even the best/newest radiological test equipment from producing high-quality data

These conditions could cause laboratories to shutdown - **greatly impacting** mission critical functions and the response to a radiological incident