UNMET NEEDS

- Provide $10 million to CDC, as requested by the FY09 proposed Presidential budget, to build a radiological component of the Laboratory Response Network.
- Direct CDC to include funding in the Public Health Emergency Preparedness grant for radiochemistry activities.
- Provide additional funding to CDC to develop methods and to provide technology transfer to state and local laboratorians.

Since the 1950s, the threat of a radiological event evokes fear in hearts around the world. However, radiological preparedness in laboratories has long been ignored. It was not until a recent hearing in the House Committee on Science and Technology that most people understood there is a complete lack of capacity to screen and test for radionuclides. During this hearing, members of Congress expressed concern about the lack of readiness for a radiological event. However, they have yet to appropriate funding to improve this.

CDC is developing unique laboratory measurements in urine to determine whether people have radionuclides in their bodies and, if so, how much. This information will identify exposed individuals, assess their health risk and determine effective treatment. With the exception of a few radionuclides, it is not possible to determine this exposure without these new techniques being developed at CDC.

CDC’s development of the Urine Radionuclide Screen (URS) will need this for identifying which radionuclide a person is exposed to and the level of exposure or contamination. The URS is targeting more than 20 high-priority radionuclides on the basis of likely radiologic terrorism scenarios. Currently, CDC is working to complete the URS, which would provide results within 24 hours of receiving a sample.

Almost all state public health laboratories lack the capability to test human samples for the presence of radionuclides. This is due to a lack of funding and the workforce shortage affecting the radiochemistry field. Few new scientists are being trained on radiological analytical methods. Most laboratories do not have support for a radiological program and, therefore, there are few jobs for future radio-analytical scientists.

- On average, state public health laboratories (SPHLs) have fewer than two trained staff for radiological activities. To assess clinical radiologic samples, SPHLs average no staff.
- No state public health laboratory had high-resolution equipment for radiological analyses and only five laboratories have one that could be used for measuring radionuclides in Fiscal
Year 2007.
• Only 15 state public health laboratories can measure human specimens for radionuclides. Seventy-five percent of those laboratories can only measure for one radionuclide (Uranium).

The recent assassination of Alexander Litvinenko illustrates just how quickly a radiation event can escalate. Only one person, Litvinenko, was targeted, but tens of thousands of people were potentially exposed. More than 1,000 people needed to be tested, and several buildings in the UK will be sealed for the next five years, due to contamination.

RADIOLOGICAL LABORATORY RESPONSE NETWORK

After a radiological event, there will be a myriad of questions: who was exposed, to what substance and to what extent. Experts’ opinions vary as to medical treatment but, in general, the treatment window varies between one day to two weeks. The current laboratory methods can return results within 3–21 days, assuming a method even exists. In an effort to improve state public health laboratory capacity, CDC has proposed adding a radiological component to the Laboratory Response Network (LRN-R.) In this network, five state public health laboratories would provide surge capacity to CDC to analyze samples for priority radionuclides using the URS. Having this capability will drastically reduce response time for providing local, state and federal decision makers with high-quality, interpretable analytical results in the immediate response phase of a radiologic or nuclear attack. This essential national radioanalytical laboratory capacity should markedly reduce morbidity and mortality resulting from a radiological or nuclear event.

To help address gaps in the nation’s ability to respond to radiologic terrorism, APHL is requesting:
• $6.3 million for developing and expanding CDC’s URS to measure 22 high-priority radionuclides. This extensive research effort includes:
  • Research on the best measurement approaches for approximately 11 of the 22 targeted radionuclides in human urine.
  • Supporting essential extramural research with Department of Energy national laboratories.
  • Purchasing specialized equipment and supplies, including instruments capable of measuring alpha, beta and gamma radiation, in addition to two high-resolution mass spectrometers.
  • Developing radiologic reference materials for method validation and proficiency testing.
  • Developing and maintaining both a clinical radiological proficiency testing program and a training and technology-transfer program.
• $4 million for establishing and maintaining five LRN laboratories to create and maintain regional radiological LRN capability. Funding would be used to:
  • Purchase specialized instruments, including those that can measure alpha, beta and gamma radiation, and high-resolution mass spectrometers.
  • Hire radiologic laboratory staff in states.
  • Support training for the radiologic lab staff.
  • Support participation in CDC’s proficiency testing program.