

HOW WOULD WE KNOW WHAT TO DO AFTER A RADIOLOGICAL INCIDENT?

If a large-scale accident or attack dispersed radioactivity, many people in the affected area might be forced to leave their homes and close their shops; to stop farming or consuming local produce, dairy or meat; and to start drinking only bottled water – at least until the radioactivity had been cleaned up. For each determination of what is safe, government officials would need to rely on data collected by hundreds of people performing radiation surveys throughout the affected areas.

But how does anyone know when enough data has been collected to make these decisions? Further, how can officials and citizens know that data can be trusted?

To help assure data quality in the aftermath of a radiological or nuclear incident, the U.S. Department of Homeland Security (DHS) Science and Technology Directorate's (S&T's) [National Urban Security Technology Laboratory \(NUSTL\)](#) is funding scientists from the Pacific Northwest National Laboratory (PNNL) to develop a set of manuals, quick reference guides, spreadsheets, checklists, and other tools and technical guidance to help federal, state, local, tribal, and territorial (FSLTT) government agencies. This "Data Quality Assessment Toolkit" will help officials understand how much sampling and surveying is required, how trustworthy their collected data is, and when they have enough data to determine that it is safe for people to return home, play at the park, or plant a vegetable garden.

WHAT COUNTS AS TRUSTWORTHY DATA?

When officials at any level of government make key decisions following a radiological/nuclear incident, the three data weaknesses they must avoid are:

- **Not having enough data**, which can lead agencies to make a wrong decision; for example, allowing the sale of food that might not yet be safe to eat.

- **Having too much data**, which can unnecessarily delay decision-making because it drives up the time needed to collect, sift through, and analyze the information without enhancing information quality.
- **Having poor-quality data**, which can lead government agencies to make erroneous decisions.

The Data Quality Assessment project will help FSLTT government officials take a critical look at the information being collected to determine how trustworthy that information is and when they have enough of it to make good decisions. This will help protect the health and safety of the public and get them back to a normal life as quickly as possible. Moreover, it will save governments' money in the wake of a crisis by helping them more effectively deploy personnel and equipment and helping those who are ensuring data quality to do so as quickly, effectively, and accurately as possible.

PROCESS & END PRODUCTS

PNNL got the project underway by studying existing scientific literature, determining what resources are already available, and talking with the people who would collect, assess the quality of, and make decisions about public health based on radiological data. This process helped PNNL's scientists learn more about how this work is currently accomplished and what could make it easier, faster, and more fool-proof for those performing it.

This information will be used to develop the toolkit of data forms, spreadsheets, and other guides for agencies at all levels of government to use during a response to an event involving radioactivity. Throughout the development process, scientists from PNNL and NUSTL will check these materials to ensure they are technically and scientifically sound, helpful to end users, and easy to use.

The last product of this collaboration will be a description of how a software tool might speed up and/or automate many of the data quality procedures involved. Creating such a tool to process more data, more quickly, and more accurately than is currently possible is a goal for consideration in the future.