The Seattle Times | Winner of a 2010 Pulitzer Prize

Originally published Tuesday, April 5, 2011 at 8:20 PM

Universities come through in monitoring for radiation

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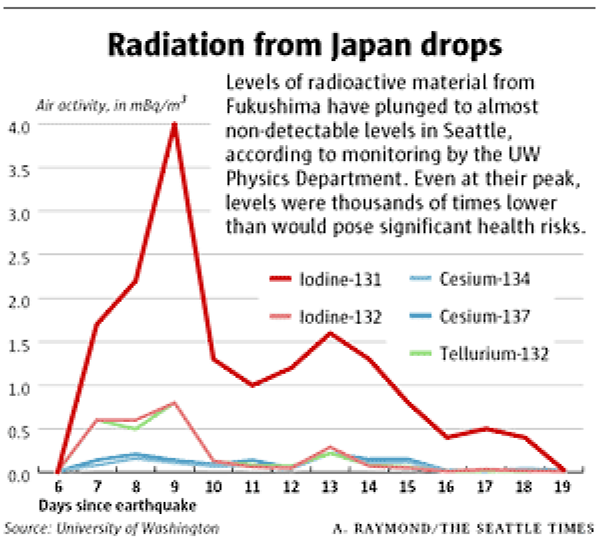

The amount of radioactive material reaching Washington and the rest of the West Coast from Japan's crippled nuclear reactors is dropping off sharply — but you'd be hard-pressed to know the details if you relied on government agencies for your information.

Federal and state officials have doled out only snippets of monitoring data in the weeks since the earthquake and tsunami on March 11. The most complete picture of the types and amounts of isotopes wafting across the ocean has come from a surprising source: university scientists.

A team at the University of Washington rigged a detection system as soon as it became clear the Japanese reactors were damaged. Unlike some agencies, they have shared their full results with the public — including the newest measurements that show levels are now a tenth of what they were on March 20, when concentrations of radioactive material peaked in Seattle.

"It's starting to drop below our threshold for detection," said Michael Miller, UW research associate professor of physics.

Scientists at the University of California, Berkeley have been collecting and posting daily air readings, as well as conducting their own testing on milk, produce and drinking water.

The public response has been phenomenal, said Kai Vetter, UC Berkeley professor of nuclear engineering. "Many people realize this is the only source of hard data out there — which was a surprise to me."

The researchers' measurements confirm government assertions that the fallout poses no significant health threat, Vetter said. But the scientists have found themselves fielding hundreds of questions from worried people who can't find the detailed information they want anywhere else.

Few details released

It's not that government agencies aren't tracking the spread of radioactive materials. But they have so far released very little actual data on isotopes of concern to human health, including iodine-131 and cesium-137.

The Washington Department of Health posts only gross radiation levels, with no information on specific isotopes. The U.S. Environmental Protection Agency, which operates a nationwide network of air, rainwater and milk monitoring stations, has released a few batches of data, including two results from milk testing: a sample from Des Moines that showed no detectable radiation and one from Spokane with trace amounts of iodine-131. Scientists from the Department of Energy's (DOE) Pacific Northwest National Laboratory (PNNL) in Richland shared some of the initial data from ultrasensitive instruments designed to detect fallout from nuclear tests, but have since declined to make other results public.

The EPA on Monday reported its first findings of radionuclides from Japan in U.S. drinking water in Richland and Boise, a week after the samples were collected and six days after the Berkeley team posted similar findings for tap water on its campus.

"If a university professor and his students can collect samples and turn them around in a reasonable amount of time and report it, you would think government officials could do the same," said Robert Alvarez, senior scholar at the liberal think tank Institute for Policy Studies and a former DOE deputy assistant secretary for national security.

Alvarez agrees that U.S. levels are not dangerous, but the "lack of transparency" fuels mistrust, he said.

EPA Press Secretary Brendan Gilfillan said Tuesday the agency is releasing data as fast as it can process samples and verify results. EPA labs are so backed up that lag times of a week are common. Washington state's Health Department is focused on testing and analysis and only alerts the public of significant findings, said spokesman Donn Moyer.

A PNNL spokesman said scientists there are delaying release of their monitoring results until they can be peer-reviewed.

Government agencies need to take extra steps to ensure the accuracy of their data, Vetter pointed out. University scientists running an informal network can be more casual — and quick.

Do-it-yourselfers

It was partially frustration with the lack of information that inspired Miller and his UW colleagues to build their own "McGyver" monitoring system. Even minute quantities of radioactive material can interfere with physics experiments, so the scientists need to know what's in the air.

The team found a high-flow air duct atop the Physics-Astronomy building on campus, and pulled one of the filters, where radioactive material hitching a ride on dust particles would likely collect.

In the lab, they rigged a detector using instruments on hand and lead-block shielding to screen out background radiation. They got their first positive reading from filters that were in place on March 17-18, about a week after the earthquake.

Isotope levels spiked on March 20, when iodine-131 activity measured about 4.5 millibecquerels, or 0.12 picocuries, per cubic meter of air. The biggest peak appears to correspond with the initial hydrogen explosions at the Japanese reactors, Miller said. Subsequent explosions generated a much smaller peak that reached Seattle about nine days later. Since then, levels have diminished to the point that they will be undetectable in a day or so, Miller predicts.

The crippled reactors are still emitting radioactive material, Alvarez said, particularly in the form of contaminated water being dumped into the sea. But the type of releases that loft isotopes into air currents headed for North America appear to have stopped for now.

The Berkeley team's highest measurements came from rainwater samples collected on March 23. Iodine-131 levels were 540 picocuries per liter. That's 180 times higher than EPA's 3 picocurie per liter standard for radioactive iodine in drinking water. On Monday, EPA reported that rainwater in Olympia collected on March 24 contained 125 picocuries per liter, about 42 times higher than the standard.

But rainwater is not drinking water. EPA says their standard is designed to protect a person who drinks two liters a day of contaminated water for 70 years.

Critiquing comparisons

Vetter and his colleagues try to put the health risks in perspective by pairing their data with calculations of "effective doses." For example, a person would have to drink 134 liters of the rainwater with the highest radiation levels to equal the average radiation exposure from flying cross-country. And radiation is dropping off quickly.

Alvarez is critical of those kinds of comparisons, which are also offered by EPA and health agencies.

Isotopes like iodine-131 are not part of normal background radiation, and have unique properties that background radiation does not, like accumulating in the thyroid gland, he pointed out.

"The doses are extremely small, and so, too, are the risks," he said. "But they liken it to everyday life and it's not like everyday life. You shouldn't have radioactive iodine even in tiny quantities finding its way into your milk supplies."

As levels of radioactive material plummet, the UW scientists plan to wrap up their monitoring within the next few days. Vetter said the Berkeley team will stay at it as long as public interest remains high.

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