Fukushima radiation has reached North American shores

Tracy Loew, Statesman Journal

11:35 a.m. PDT April 6, 2015

Seaborne radiation from Japan's Fukushima nuclear disaster has reached North America.

Scientists at the Woods Hole Oceanographic Institution detected small amounts of cesium-134 and cesium-137 in a sample of seawater taken in February from a dock on Vancouver Island, British Columbia.

It's the first time radioactivity from the March 2011 triple meltdown has been identified on West Coast shores.

Woods Hole chemical oceanographer Ken Buesseler emphasized that the radiation is at very low levels that aren't expected to harm human health or the environment.

“Even if the levels were twice as high, you could still swim in the ocean for six hours every day for a year and receive a dose more than a thousand times less than a single dental X-ray,” Buesseler said. “While that's not zero, that's a very low risk.”

Massive amounts of contaminated water were released from the crippled nuclear plant following a 9.0 magnitude earthquake and tsunami. More radiation was released to the air, then fell to the sea.

Frustrated by the absence of monitoring by U.S. federal agencies, Buesseler last year launched a crowd-funded, citizen-science seawater sampling project.

He's tracked the radiation plume across 5,000 miles of the Pacific Ocean, using highly sensitive, expensive equipment at his Cape Cod, Massachusetts, laboratory. There, he analyzes samples sent to him by West Coast volunteers and scientists aboard research cruises.

In October, he reported that a sample taken about 745 miles west of Vancouver, British Columbia, tested positive for cesium-134, the so-called fingerprint of Fukushima because it can only have come from that plant.

It also showed higher-than-background levels of cesium-137, another Fukushima isotope that already is present in the world's oceans because of nuclear testing in the 1950s and 1960s.

In November, Buesseler reported that Fukushima radiation had been identified in 10 offshore samples, including one 100 miles off the coast of Eureka, California.

The Vancouver Island sample was taken Feb. 19 from a dock in Ucluelet, a working harbor community in Pacific Rim National Park Reserve.

It contained 1.5 becquerels per cubic meter (Bq/m3) of cesium-134, the Fukushima
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Scientific models have predicted that in general, the plume would hit the shore in the north first, then head south toward California.

That may be difficult to document, however, because Buesseler's sampling is not regular or systematic and depends on volunteer fundraising.

In Oregon, particularly, there have been only four sampling sites, and only one still is active.

And ocean currents can be unpredictable.

"We expect more of the sites will show detectable levels of cesium-134 in coming months, but ocean currents and exchange between offshore and coastal waters is quite complex," Buesseler said. "Predicting the spread of radiation becomes more complex the closer it gets to the coast, and we need the public's help to continue this sampling network."

Buesseler's group has recently teamed with a similar, Canadian-funded program called InFORM, led by Jay Cullen at the University of Victoria, Canada. It will add about a dozen monitoring stations along the coast of British Columbia.

Cruises with the Scripps Institution of Oceanography in La Jolla, California, will add about 10 new sampling sites offshore.

And Woods Hole has received support from the National Science Foundation to analyze about 250 seawater samples that will be collected next month on a research ship traveling between Hawaii and the Aleutian Islands in Alaska.

tloew@statesmanjournal.com, (503) 399-6779 or follow at Twitter.com/SJWatchdog

To learn more about the radiation monitoring project, visit www.ourradioactiveocean.org. The most recent seawater sampling results will be posted on the site by midday Monday, April 6.

Projected levels of cesium-137 from Fukushima Dai-ichi, 2011-2021

from Woods Hole Oceanographic Inst.
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