

Citizen Monitoring of Seawater Radiation on the Sonoma Coast

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Citizen scientists in Sonoma County have detected Cesium-137 in the seawater at Bodega Head that appears to originate from Fukushima Daiichi. The seawater sample, taken in October, 2017, registered 6.9 Becquerels of Cesium-137 per cubic meter of seawater (6.9 Bq $^{137}\text{Cs}/\text{m}^3$). (Bq/ m^3 is the number of decay events per second per 260 gallons of water.) This is the highest level of ^{137}Cs observed on the Pacific Coast since the nuclear accident in March, 2011. However, the levels are still barely detectable and are much lower than they were in the 1960s when nuclear weapons were tested in the atmosphere.

A group of Sonoma County nonprofit groups and private citizens have banded together to monitor radiation levels on our coast, and have been working with Woods Hole Research Institute (WHOI), International Medcom, Safecast and others to collect and process data, build scientific credibility into the program, and to share the data. The local nonprofits are Peace Roots Alliance, Fukushima Response and Whalesong Project.

For each sample, volunteers collect five gallons of seawater from the beach at Bodega Head and ship it to WHOI in Massachusetts for analysis with a multi-channel analyzer. Other high samples in the Woods Hole data set are from Eureka, CA, which had 6.2 Bq $^{137}\text{Cs}/\text{m}^3$ and from the Big Island of Hawaii with 4.6 Bq $^{137}\text{Cs}/\text{m}^3$. Readings are online:

<http://ourradioactiveocean.org/results.html>

In Sonoma County, International Medcom has also installed a radiation sensor in fresh ocean water at the U. C. Davis Bodega Marine Lab to provide continuous real-time data. That sensor data is routed to Safecast's real-time sensor network and can be viewed online (<http://realtime.safecast.org/sensors/201051/>). [Safecast](#), a nonprofit organization formed after Fukushima to make radiation data freely available worldwide, is affiliated with MIT Media Lab and Japan's Keio University.

The sensor at the Bodega Marine Lab is not sensitive enough to detect the subtle increase in radiation that has occurred to date, which is why we've been sending seawater samples to WHOI.

Each seawater sample costs \$550.00 to process. With joint fundraising efforts, Peace Roots Alliance, Fukushima Response and generous donors have been paying for these samples to be tested. We'd like to continue to take these samples so we can establish a baseline record and we need the public's help in funding it. You can make a donation for this project here:

http://give.who.edu/site/TR/Events/General?px=1042015&pg=personal&fr_id=1110

When the Great East Japan Earthquake hit on March 11, 2011, nuclear power stations along the coast of Fukushima Prefecture experienced loss of coolant that resulted in three reactor meltdowns over the ensuing days. Since those events, great effort has been expended to keep the reactors cool and to lay the groundwork for decommissioning them in a process that will span decades. Although progress is being made, radioactive water from the nuclear sites continues to flow into the Pacific Ocean, and there are proposals in place to dump radioactive water that has been stored onsite into the ocean. This situation has raised concerns in Japan and Asia, and in distant coastal communities connected by ocean currents along the entire Pacific Rim, including Alaska, Canada, Washington, Oregon, California and Hawaii.

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You can learn more about Fukushima Response at: fukushimaresponse.org or facebook.com/FukushimaResponseCampaign

Peace Roots Alliance (peaceroots.org) works with a number of groups to promote peace. We have been collecting seawater samples from Bodega Head, CA for five years through WHOI.

Whalesong Project (whalesong.net) is dedicated to inspiring stewardship of the ocean and environment by providing meaningful connections to the world's undersea community.

