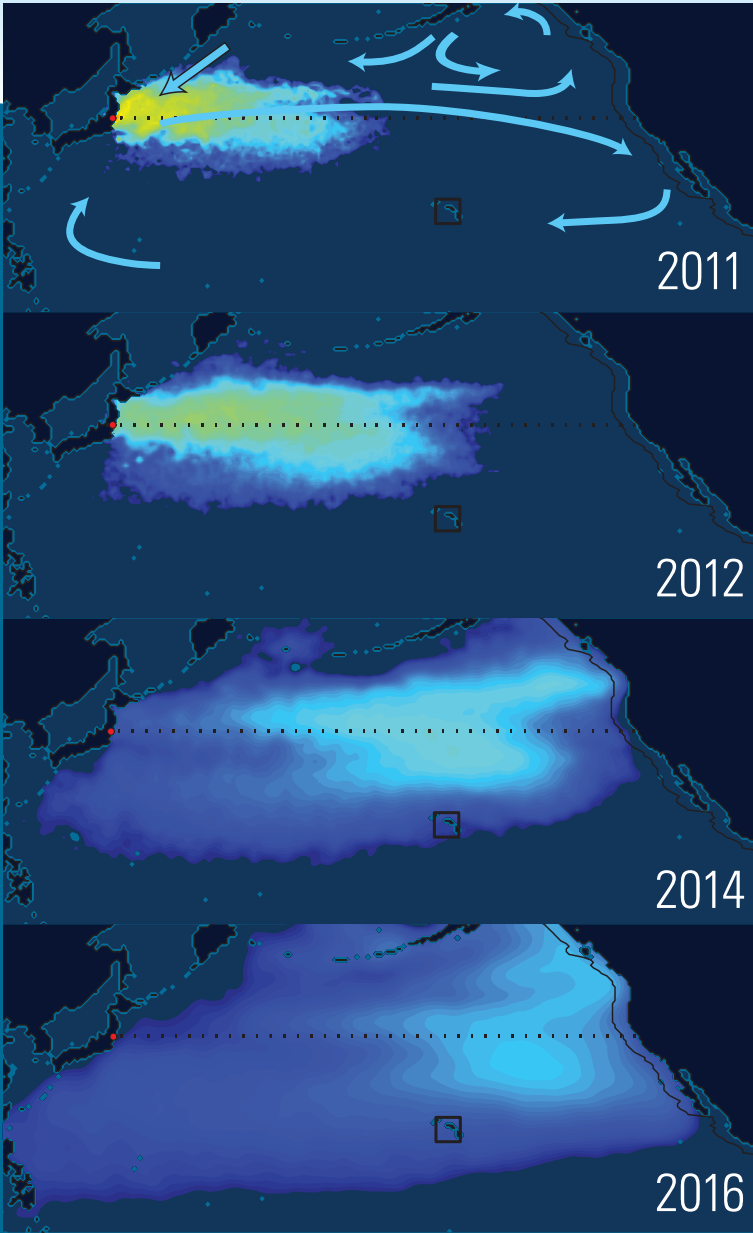


How fast will radioactivity spread?

Radioactive material released into the ocean from the Fukushima Dai-ichi nuclear power plants are spread by ocean currents and diluted by seawater along the way.



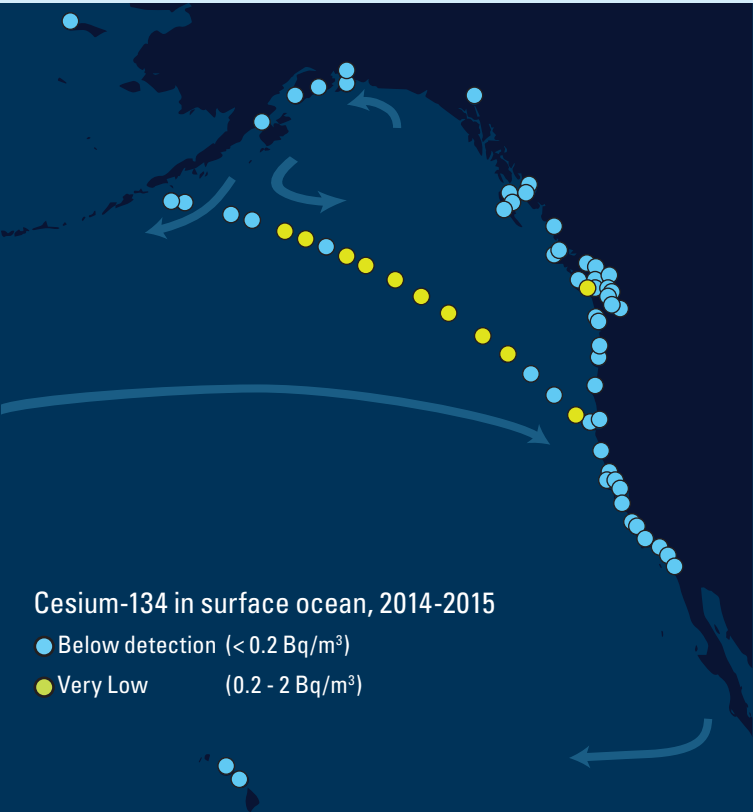
Cesium 137 (Bq/m³)

0.1 1 10 100 1,000 10,000

7,400: Maximum level allowed by US EPA for Cs-137 in drinking water

How can we be sure?

Since 2011, scientists—with the help of interested citizens—have been sampling seawater across the Pacific to track the spread of radioactive isotopes released from Fukushima.



If you would like to join the growing group of interested citizen-scientists who are helping collect samples, or if you can help fund analysis of our growing collection of samples, please visit our website:

ourradioactiveocean.org

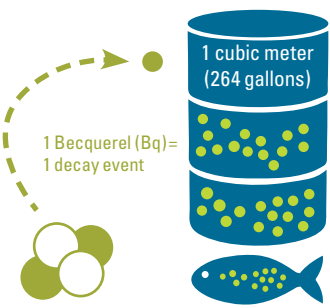
Find more information at: www.whoi.edu/cmer

How radioactive is our ocean?

A guide to natural and man-made sources of radiation in the environment post-Fukushima

What is radiation?

Radiation is caused by unstable atoms breaking down and emitting high energy particles. The number of these events per second is called a Becquerel (Bq). The total number of Bq is often reported per cubic meter of (264 gallons) of seawater or kilogram (2.2 pounds) of fish.



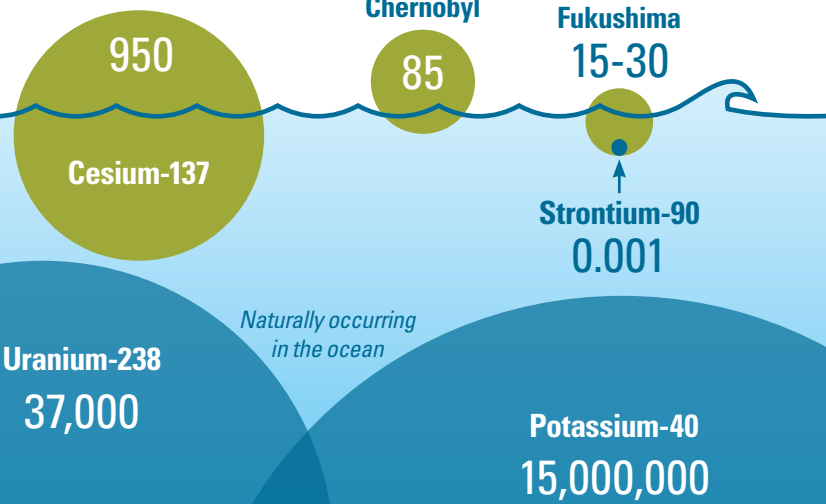
Fukushima contaminants of concern



Radioactivity in the ocean

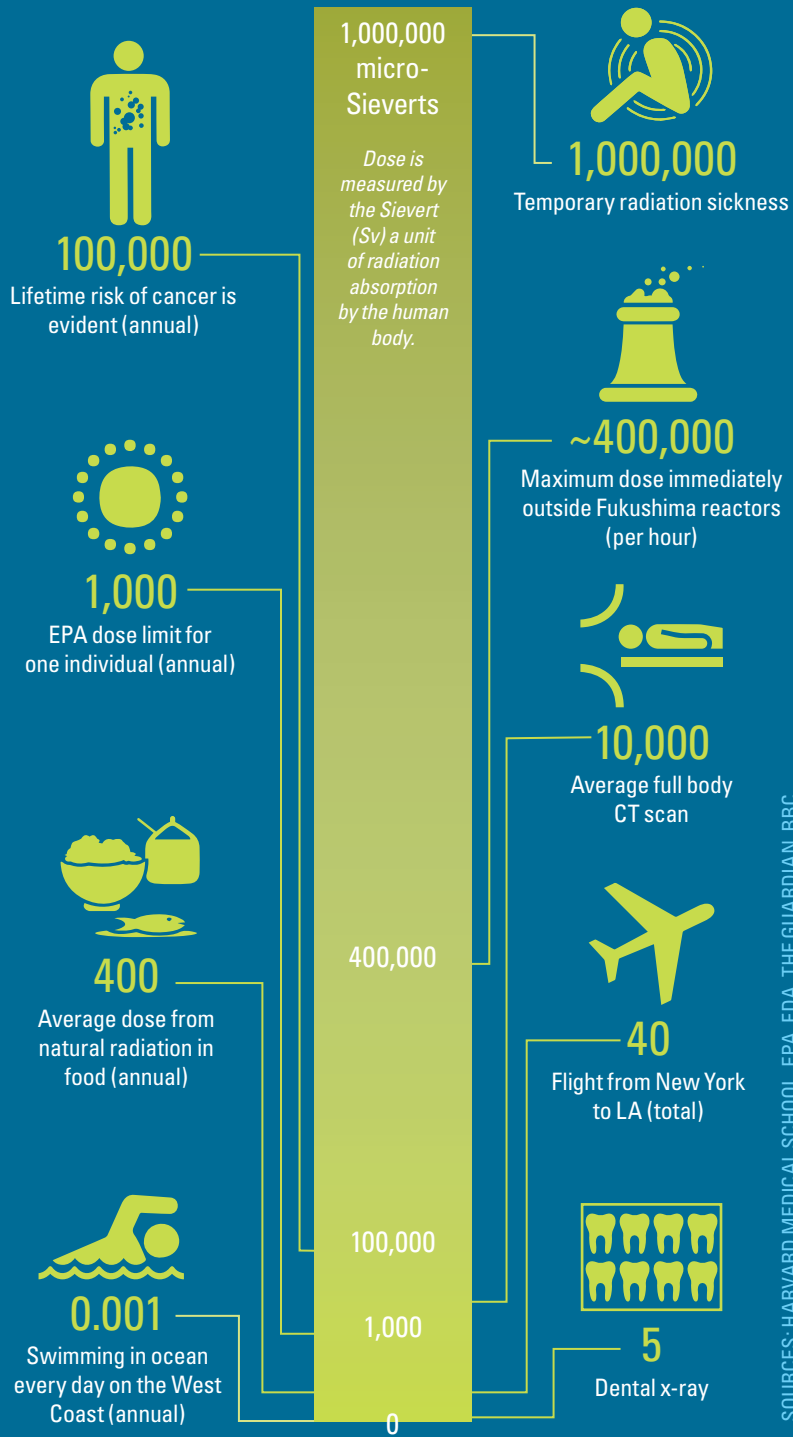
Proportion of total radioactivity released (in PBq) that ended up in the ocean (area of each circle below the waterline).

Global nuclear weapons testing, 1950s-60s

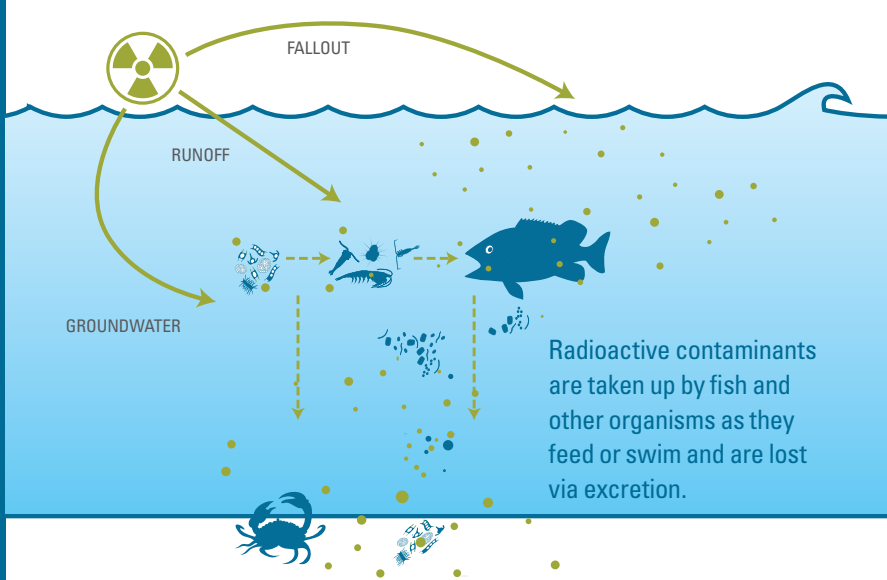


One PBq = 10¹⁵Bq = 1,000,000,000,000,000 Bq

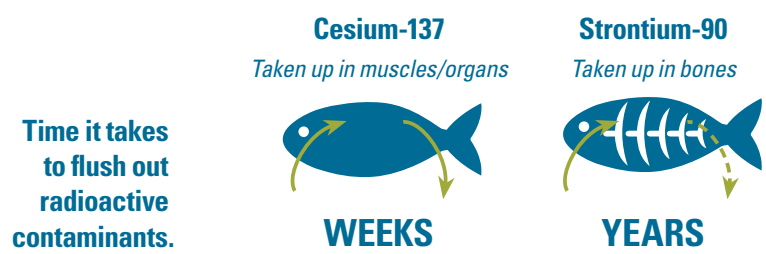
Radiation dose and exposure



Radioactivity in marine life

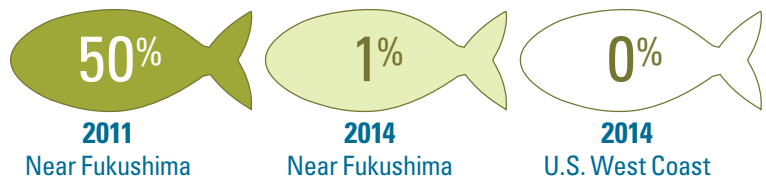


Radioactivity in fish



Seafood caught above radiation limits*

*Limits set by Japan (100 Bq/kg) and US (1000 Bq/kg) for fish sold in those countries.



All fish contain trace levels of cesium-137 from nuclear weapons testing. Additional cesium from Fukushima closed fisheries in some areas of coastal Japan in 2011.

SOURCES: HARVARD MEDICAL SCHOOL, EPA, FDA, THE GUARDIAN, BBC