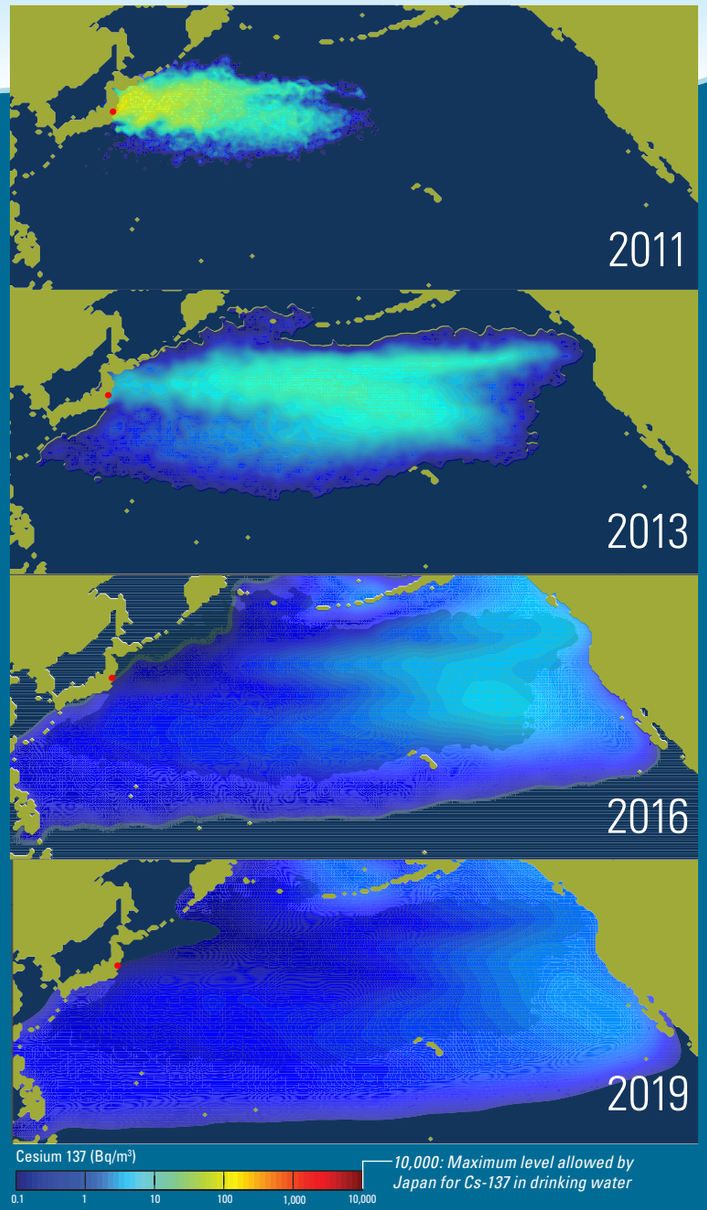
How fast will radioactivity spread?

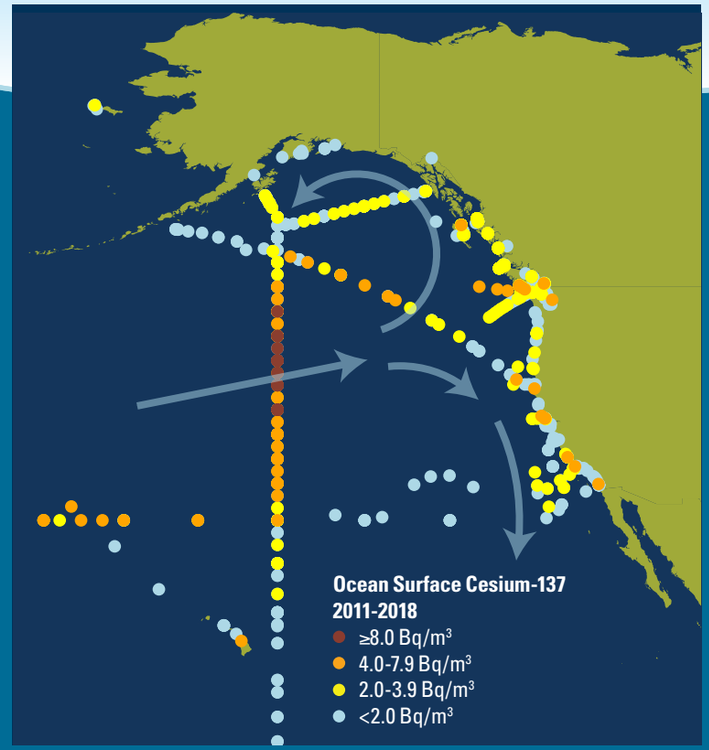
Radioactive materials released into the ocean from the Fukushima Dai-Ichi nuclear power plants are spread by ocean currents and diluted by seawater along the way.



ROSSI ET AL. 2013, 2014 DSR

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

How radioactive is our ocean?

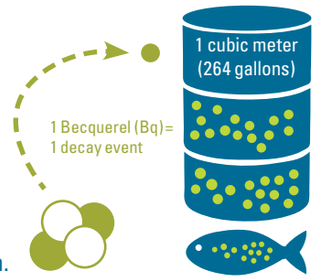
A guide to natural and human-caused sources of radiation in the environment after the 2011 accident at the Fukushima Dai-ichi nuclear power plant.

CMER Center for Marine & Environmental Radioactivity

Woods Hole Oceanographic Institution

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.



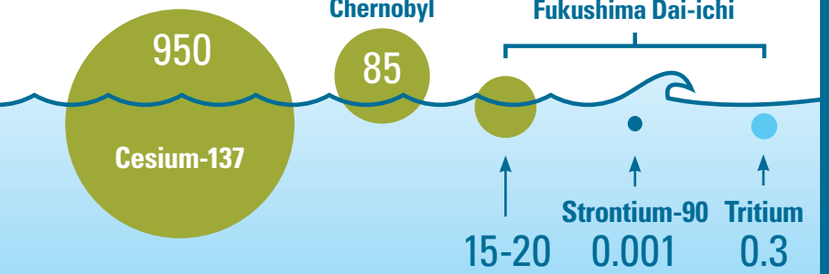
Fukushima contaminants of concern

Half-life:

Cesium-134	Tritium	Cesium-137	Strontium-90
2 years	12 years	30 years	29 years

Radioactivity in the ocean

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



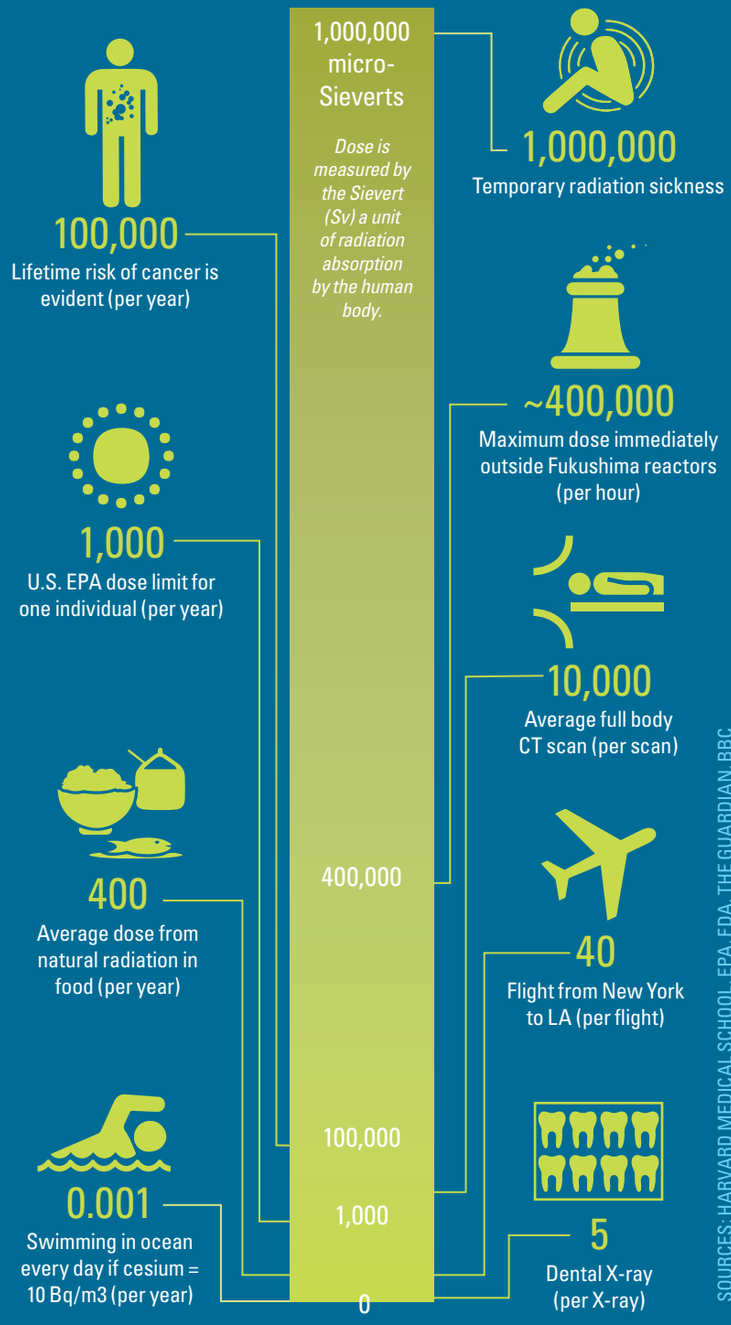
Naturally occurring in the ocean

Uranium-238
37,000

Potassium-40
15,000,000

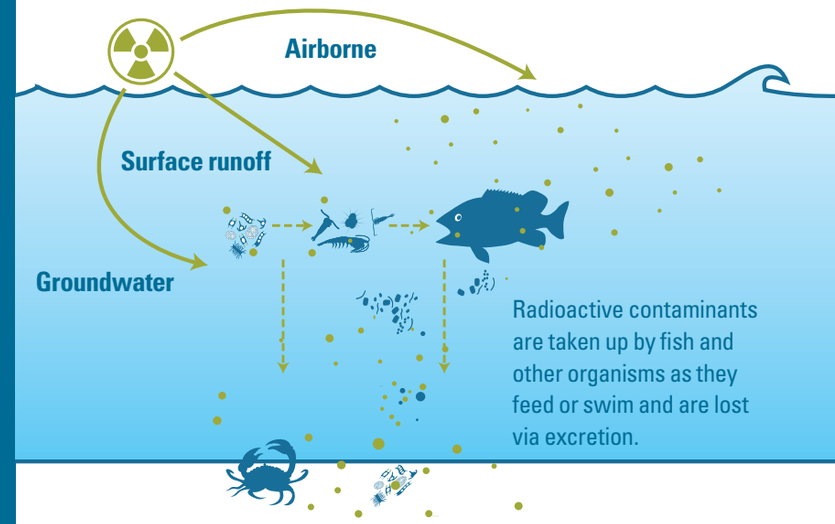
One PBq = 10^{15}Bq = 1,000,000,000,000,000 Bq

Radiation dose and exposure



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

Pathways to marine life



Radioactivity in fish

Time it takes to flush out radioactive contaminants

Seafood caught above radiation limits

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