



Microbial Oceanography • Deep Sea Hot Vents-Cold Seeps • Shallow Water Symbiosis • Benthic Ecology

Lecture by

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Impacts of the Fukushima nuclear power plants on marine radioactivity

The Tōhoku earthquake and tsunami of March 11, 2011, resulted in unprecedented radioactivity releases from the Fukushima Dai-ichi nuclear power plants to the Northwest Pacific Ocean. Information has been made public regarding the concentrations of radioactive isotopes of iodine and cesium in ocean water near the discharge point. These data allow us to draw some basic conclusions about the relative levels of radionuclides released which can be compared to prior ocean studies and be used to address dose consequences. The data show peak ocean discharges in early April, one month after the earthquake and a factor of 1000 decrease in the month following. Interestingly, the concentrations through the end of July remain higher than expected implying continued releases from the reactors or other contaminated sources, such as groundwater or coastal sediments. In June, we conducted the first international field study of radionuclides in the ocean and biota off Japan. Results from this cruise show significant dilution or Fukushima-derived cesium from the source and rapid transport in the Pacific, with the Kuroshio Current acting as a southern boundary. Fukushima-derived Cs isotopes were also detected in zooplankton and mesopelagic fish. While these radionuclides are highly elevated over prior activities, radiation risks are below those from naturally occurring radionuclides.

