Fish Off Japan's Coast Said to Contain Elevated Levels of Cesium

By HIROKO TABUCHI Published: October 25, 2012, New York Times

TOKYO — Elevated levels of cesium still detected in fish off the Fukushima coast of Japan suggest that radioactive particles from last year's nuclear disaster have accumulated on the seafloor and could contaminate sea life for decades, according to new research.

The findings published in Friday's issue of the journal Science highlight the challenges facing Japan as it seeks to protect its food supply and rebuild the local fisheries industry.

More than 18 months after the nuclear disaster, Japan still has bans on the sale of 36 species of fish caught off Fukushima, rendering the bulk of its fishing boats idle and denying the region one of its mainstay industries.

Still, some local fishermen are trying to return to work. Since July, a handful of them have resumed small-scale commercial fishing for species, like octopus, that have cleared government radiation tests. Radiation readings in waters off Fukushima and beyond have returned to near-normal levels.

But about 40 percent of fish caught off Fukushima and tested by the government still have too much cesium to be safe to eat under regulatory limits set by the Japanese government last year, said the article's author, Ken O. Buesseler, a leading marine chemistry expert at the Woods Hole Oceanographic Institution, who analyzed test results from the 12 months following the March 2011 disaster.

Because cesium tends not to stay in the tissues of saltwater fish very long, and because high radiation levels have been detected — particularly in bottom-feeding fish — it is likely that fish are being newly contaminated by cesium on the seabed, Mr. Buesseler wrote in the Science article.

"The fact that many fish are just as contaminated today with cesium 134 and cesium 137 as they were more than one year ago implies that cesium is still being released into the food chain," Mr. Buesseler wrote. This kind of cesium has a half-life of 30 years, meaning that it falls off by half in radioactive intensity every 30 years. Given that, he said, "sediments would remain contaminated for decades to come."

Officials at Japan's Fisheries Agency, which conducted the tests, said Mr. Buesseler's analysis made sense.

"In the early days, as the fallout hit the ocean, we saw high levels of radiation from fish near the surface," said Koichi Tahara, assistant director of the agency's resources and research division. "But now it would be reasonable to assume that radioactive substances are settling on the seafloor."

But that was less of a concern than Mr. Buesseler's research might suggest, Mr. Tahara said, because the cesium was expected to eventually settle down into the seabed.

Mr. Tahara also stressed that the government would continue its vigorous testing and that fishing bans would remain in place until radiation readings returned to acceptable levels.

Naohiro Yoshida, an environmental chemistry expert at the Tokyo Institute of Technology, said that while he agreed with much of Mr. Buesseler's analysis, it was too early to reach a conclusion on how extensive radioactive contamination of Japan's oceans would be, and how long it would have an impact on marine life in the area.

Further research was needed on ocean currents, sediments and how different species of fish are affected by radioactive contamination, he said.

As much as four-fifths of the radioactive substances released from the Fukushima Daiichi nuclear power plant are thought to have entered the sea, either blown offshore or released directly into the ocean from water used to cool the site's reactors in the wake of the accident.

Sea currents quickly dispersed that radioactivity, and seawater readings off the Fukushima shore returned to near-normal levels. But fish caught in the area continue to show elevated readings for radioactive cesium, which is associated with an increased risk of cancer in humans.

Just two months ago, two greenling caught close to the Fukushima shore were found to contain more than 25,000 becquerels a kilogram of cesium, the highest cesium levels found in fish since the disaster and almost 250 times the government's safety limit.

The operator of the Fukushima plant, the Tokyo Electric Power Company, said that the site no longer released contaminated water into the ocean, and that radiation levels in waters around the plant had stabilized.

But Yoshikazu Nagai, a spokesman for the company, said he could not rule out continued leaks into the ocean from its reactors, the basements of which remain flooded with cooling water.

To stop water from seeping out of the plant, Tokyo Electric is building a 2,400-foot-long wall between the site's reactors and the ocean. But Mr. Nagai said the steel-and-concrete wall, which will reach 100 feet underground, would take until mid-2014 to build.