

Monitoring Radioactivity in the Philippine Environment Immediately After the Fukushima Daiichi Nuclear Power Plant Accident

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IEM on Radiation Protection after the Fukushima Daiichi Accident
IAEA Headquarters, Vienna, Austria 17-21 February 2014

Objectives

- **The Philippine Nuclear Research Institute (PNRI) has been undertaking environmental radioactivity measurements since the Fukushima Daiichi Nuclear Power Plant accident. The study aims to assess the environmental impact of the radioactive discharges of the accident and their possible effects on human health.**



Methods

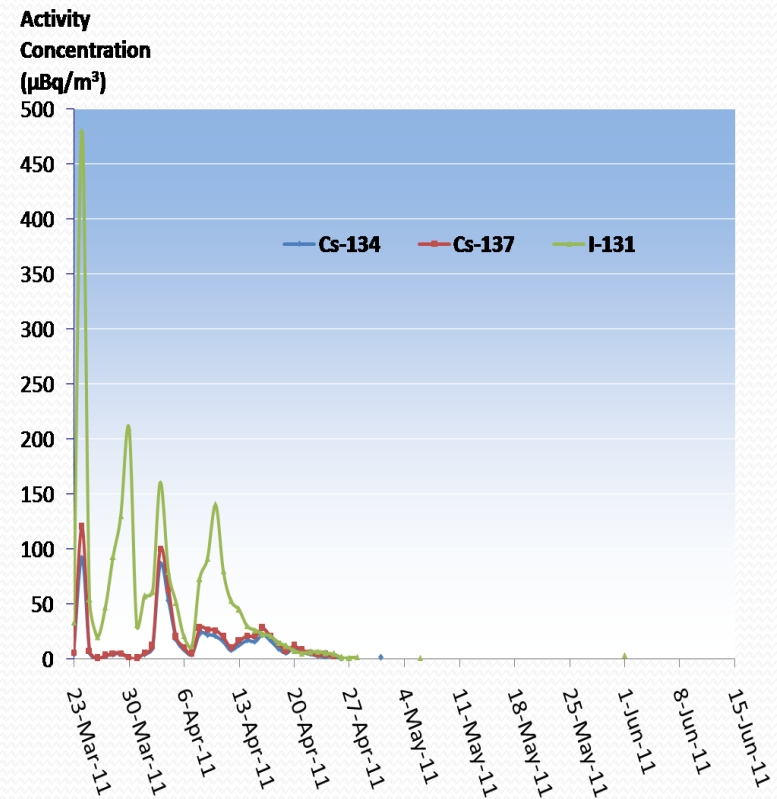
- Collection of soil samples from different parts of the Philippines
- Analysis for gamma emitting radionuclide ^{134}Cs and ^{137}Cs , which are indicators of radioactive contamination from the nuclear accident
- Gamma spectrometry using high purity germanium (HPGe) detector
- Air radioactivity monitoring through the CTBTO air particulate monitoring station PHP52 located in Tanay, Philippines



Results

- The results indicate that the radioactive plume released by the Fukushima Daiichi nuclear power plant reached the Philippines
- The anthropogenic radionuclides ^{134}Cs , ^{137}Cs , and ^{131}I were detected on 24 March 2011, with the following maximum activity concentrations: $^{134}\text{Cs} = 92 \mu\text{Bq}/\text{m}^3$, $^{137}\text{Cs} = \mu\text{Bq}/\text{m}^3$, and $^{131}\text{I} = 480 \mu\text{Bq}/\text{m}^3$
- The gamma spectrometry analysis measured ^{137}Cs in 29 soil samples out of 78 total soil samples collected
- The values of ^{137}Cs activity concentration measured in soil ranged from 0.0066 to 4.55 Bq/Kg
- ^{134}Cs activity concentrations in soil samples were less than the lower limits of detection

Activity Concentration of Key Radionuclides



Conclusion

- **The monitoring of air particulate radioactivity detected the presence of anthropogenic radionuclide ^{134}Cs , ^{137}Cs , and ^{131}I for a period of 5 weeks starting 23 March 2011**
- **The radioactive plume that reached the country did not cause significant contribution to the radioactivity in Philippine terrestrial environment**
- **The ^{137}Cs measured in soil samples can be attributed from radioactive releases to the environment that occurred before the Fukushima nuclear accident.**