

## **of Nuclear-Energy Excursion Possibility at Fukushima-1 NPP Accident**

Radionuclide station of CTBTO IMS network RN38 located in Takasaka, at closest distance from Fukushima. The highest values of radioactivity were measured on March, 15-16. Thus, the specific activity of short-lived Iodine-135 (half-life period = 6,6 hour) reached value of 370 Bq/m<sup>3</sup>, and the ration of Iodine-135/Iodine-131 activities reached value of 23 that pointed to arrival of "fresh" fission products from the damaged reactors, and also testified to uncontrollable nuclear-energy excursion possibility. The radioactive xenon isotopic rations could confirm or disprove essentially a hypothesis of this possibility.

The necessary data was obtained by the North Western Pacific National Laboratory (PNNL). About 30 measurement results of Xenon-131m, Xenon-133 and Xenon-133m concentration in atmospheric air near Richland during the period from March, 1 to March, 30, 2011 were obtained.

For the check of a hypothesis of emerged uncontrollable nuclear reaction at NPP Fukushima-1 accident, obtained data was compared with the calculated data characterizing decreasing of activity of fission products after the reactors shutdown taking into account possibility of "fresher" products additional emission which could be formed at emerged uncontrollable criticality. Results of comparison rather confirm a hypothesis of emerged uncontrollable nuclear reaction than reject it.

**Primary author:** PAKHOMOV, Sergei (Khlopin Radium Institute of the "Rosatom" State Corp.)

**Presenter:** PAKHOMOV, Sergei (Khlopin Radium Institute of the "Rosatom" State Corp.)

**Track Classification:** Theme 2: Events and Their Characterization