



Contribution ID: 85

Type: oral presentation

## Traces of Fukushima accident in Southern Poland.

Wednesday 21 September 2011 12:50 (15 minutes)

As a result of strong earthquake near Japan Islands followed by tsunami wave on 11 of March 2011 a serious damage caused by overheating occurred to reactors of the Fukushima Daiichi Nuclear Power Plant. Uncontrolled radioactive emission to the atmosphere started on 12 of March and was lasting for more than 2 weeks. Radioactive cloud migrated across Pacific, Northern America and came to Europe from northern-western direction. The Institute of Nuclear Physics in Krakow operates high volume aerosol sampler MASS-500. The original flow rate of 500 m<sup>3</sup>/h is reduced to 250 m<sup>3</sup>/h when the charcoal gas double cartridge is added below the Petryanov filter. Collection of samples started on 21 of March and after detection of <sup>131</sup>I on 24 of March the cartridges and filters were changed every day till 11 of April, later the measurements were continued in larger periods. Filters and charcoal were analyzed on low background gamma spectrometer with HPGe detectors. The fallout was collected in two weeks intervals using 2.2 m<sup>2</sup> area collector and few persons (Polish citizens) who come back from Japan were analyzed using whole body spectrometer equipped with two HPGe detectors.

The presence of <sup>131</sup>I, <sup>132</sup>I, <sup>129m</sup>Te, <sup>132</sup>Te, <sup>134</sup>Cs, <sup>136</sup>Cs and <sup>137</sup>Cs was established in air filters. Measurable concentrations of cesium appeared three days later than those from iodine. The maximum activity in Krakow for <sup>131</sup>I, <sup>134</sup>Cs and <sup>137</sup>Cs was observed on 28 and 29 March and it was 6 mBq/m<sup>3</sup>, 0.6 mBq/m<sup>3</sup> and 0.4 mBq/m<sup>3</sup> for <sup>131</sup>I, <sup>134</sup>Cs and <sup>137</sup>Cs, respectively. Average activity ratio for <sup>134</sup>Cs to <sup>137</sup>Cs was 1.11. The ratio between activity in aerosol fraction <sup>131</sup>I to gas fraction was changing with time, being almost equal to 1 in the maximum activity it was then increasing to less than 5 in mid-April.

In thyroids of Polish citizens who came back from Japan up to 280 ± 12 Bq of <sup>131</sup>I were found. The estimation of effective dose equivalent (including not well known details of inhalation scenario) yields in about 10 ± 5 Sv. A search for Pu, Am and Cm isotopes was performed to two sets of filters and to fallout samples. Since the analyses are not finished at the time of writing the abstract all results will be presented during the conference.

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**Session Classification:** Session 9

**Track Classification:** Radioecology and Geochemistry