The investigation of 137 cs contamination in soils of Aceh after the tsunami / Syarbaini, Gatot Suhariyono

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Abstrak

Cs-137 is one of the most common radionuclides used for analysing man-made radioactive contamination in the environment beside Sr-90. Nangro Aceh Darussalam Province suffered the greatest mortality, with widespread destruction extending along more than 1000 km of coastline on 26 December 2004 due to tsunami. The disaster were affected areas about 220 km long and around 5 km wide along the coastlines of Aceh and North Sumatra. The purpose of this study is to investigate the artificial radioactivity 137Cs in soil samples which have been collected from various locations along the areas affected by tsunami in Aceh. The surface soil samples were collected from 20 sites in this region. The soil samples from the middle area of Aceh which was not exposed to the tsunami have also been investigated for comparison. The activity concentration of137Cs in the samples was measured using a ORTEC P-type coaxial high purity Germanium (HPGe) detector system. The artificial radioactivity level of 137Cs measured from these samples was found in the range of not detected to 2.09 Bq.kg-1 for the affected soil samples and 0.56 to 1.44 Bq.kg-1 for unaffected soil respectively. The radioactivity concentrations of 137Cs within the coastline areas are comparable to that of the middle area, which was not exposed to the tsunami. The results indicate that there are no new inputs of man-made radionuclides into the area at that time and the data obtained could serve as baseline levels of 137Cs in Aceh Region.