

Analysis of contaminated sludge deposited on the land attacked by great tsunami following Tohoku great earthquake disaster

K. Sera¹, F. Baba¹, S. Goto², C. Takahashi² and Y. Saitoh²

¹Cyclotron Research Center, Iwate Medical University
Tomegamori, Takizawa, Iwate 020-0173, Japan

²Nishina Memorial Cyclotron Center, Japan Radioisotope Association
348-58 Tomegamori, Takizawa, Iwate 020-0173, Japan

Abstract

A massive tsunami following Tohoku-Earthquake Disaster brought a large amount of sludge, which originated from the sediments pilling upon the bottom of the sea to the residential areas. As it is anticipated that the sludge contains a large amount of heavy toxic elements, its influence on the health of the suffered people will become a problem. In the present study, 72 sludge samples were taken from the stricken areas by the tsunami over the wide area; (Aomori, Iwate and Miyagi prefectures). These samples were treated on the basis of a powdered-internal-standard method and analyzed by means of PIXE with a specially-designed absorber. It was found that the sludge contains much amount of heavy elements such as arsenic, lead, zirconium, barium etc. in comparison with those in soils collected in the inland district of Iwate prefecture. Furthermore, 16 plant samples were gathered in the estuary area, on which the sludge deposited, and analyzed in order to evaluate the effect of the sludge on the ecosystem. These results were compared with those for 45 plant samples collected in the inland district of Iwate, Miyagi and Fukushima prefectures. It was found that these plants contain lager amount of heavy elements in comparison with those in the inland plants.