

Analysis of heavy metal concentration in hair collected from people who lived quake-hit area after earthquake

Ruriko Kumagai¹, Kiyomi Sakata², Kohichiro Sera³ and Nobuo Nishi⁴

¹Department of Orthopaedic Surgery, School of Medicine, Iwate Medical University
19-1 Uchimaru, Morioka, Iwate 020-8505, Japan

²Department of Hygienics public health, School of Medicine, Iwate Medical University
2-1-1 Nishitokuta, Yahaba, Iwate 028-3694, Japan

³Cyclotron Research Center, Iwate Medical University
348-58 Tomegamori, Takizawa, Iwate 020-0173, Japan

⁴ National Institute of Health and Nutrition
1-23-1 Toyama, Shinjuku, Tokyo 162-8636, Japan

Abstract

We tested the hypothesis that environmental changes caused by an earthquake affect the chemical element composition in a human body by analyzing the amount of heavy metals in hair of people who lived in the quake-hit area. The participants were divided into two groups, one was consists of 80 residents of the great east Japan earthquake, another was consists of 53 people who was not affected by the quake. The method of analysis used were the PIXE (particle induced X-ray emission). Comparing two groups, there were no statistical differences of Cr, Ag, Hg concentrations in the hairs between two groups, though there was a statistical difference of Pb ($p=0.01$) between two groups. Statistical analyze of 28 samples of the residents group showed that there was no correlation between the debris removal work and concentrations of Cr, As, Hg, Pb, Zn, Ba in the hairs. Zr was not detected from any samples.