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[Sources, behavior and risks of micro-pollutants in waters]

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Water Environment Engineering

Long-term variation and source analysis of radioactive cesium in the Ohorigawa River

Radioactive materials, released from the Tokyo Electric Power Company's Fukushima nuclear power plant, have been detected in waters and fishery products. Hence, we evaluate long-term variation and sources of radioactive cesium in the Ohorigawa River.

Concentrations of radioactive cesium in suspended solids showed decrease trends in long term and increase during wet weather. It was also suggested that radioactive cesium came from surface deposits in urban areas.

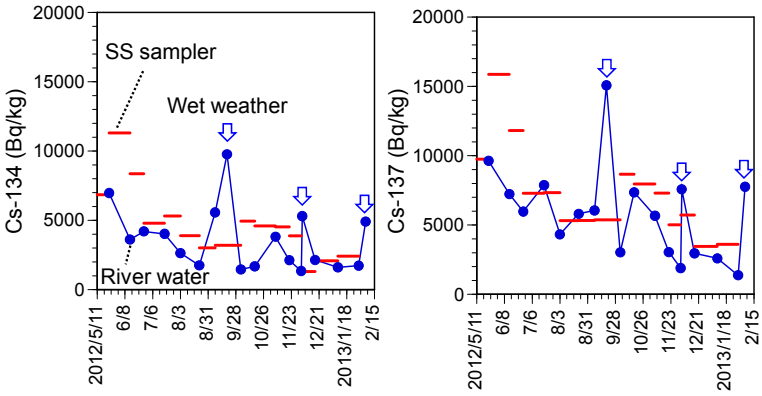

Fig.1. Long-term trends of radioactive cesium concentrations in suspended solids in the Ohorigawa River.

Estimation of exposed doses resulting from intake of radioactive materials in foods and drinking water

We estimated intake of radioactive iodine and cesium in foods and drinking water by citizens of Tokyo in the 1st year after the accident. The restriction on food distribution and the distribution of bottled water for infants were also evaluated.

The average effective doses with countermeasures were 48 μSv in infants, 42 μSv in children, and 18 μSv in adults. They were lower than annual effective dose of K-40 in total diet (130-217μSv).The countermeasures reduced exposure by 44% for infants (8% by the distribution of bottled water), 34% for children, and 29% for adults.

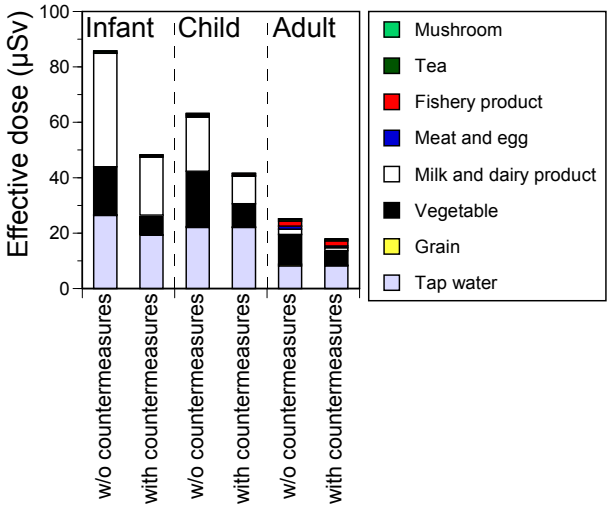

Fig.2. Effective doses resulting from intake of radioactive iodine and cesium from foods and drinking water by citizens of Tokyo.

<Related reference>
Michio Murakami, Taikan Oki , Chemosphere, 87(11), pp.1355-1360, 2012.