

Original

The Fate of Strontium during Waste Incineration and Leachability from Incineration Residues

YUI Kazuko*, TAKEUCHI Yukio, YAMAMOTO Takashi,
KURAMOCHI Hidetoshi, and OSAKO Masahiro

● **Summary** ● Radioactively-contaminated waste incineration residues were collected from 6 municipal solid waste incineration plants and 3 disaster waste incineration plants in Fukushima Prefecture and nearby from July 2011 to January 2016 to examine the concentration of ^{90}Sr and the leachability of stable strontium from the residues. The wastes examined included municipal solid waste, disaster waste generated from the earthquake and tsunami that struck in March 2011, and decontamination waste consisting of soil and vegetation removed from radioactively-contaminated areas of northeastern Japan. The concentrations and leachabilities of radiocesium, stable strontium, and non-radioactive major-constituent elements were also determined for selected residues. The concentration ratios of ^{90}Sr to ^{137}Cs ($^{90}\text{Sr}/^{137}\text{Cs}$, Bq/Bq) were approximately 0.01 to 0.0001, close to the ratios in soil in contaminated areas. Unlike ^{137}Cs and ^{134}Cs , ^{90}Sr was not markedly concentrated in fly ash. Leachabilities of stable (i.e., non-radioactive) Sr from bottom ash was below 2.1%, whereas that from fly ash reached 36%. The leachability of stable Sr was correlated with those of other alkaline earth metals, suggesting that leachability of Sr can be high if the leachability of other alkaline earth metals from the same ash sample are high.

Key Words: radioactive strontium, waste, incineration, ash, leaching test

Received December 4, 2019; Accepted June 17, 2020

*Corresponding author: Address: National Institute for Environmental Studies, Center for Material Cycles and Waste Management,
16-2 Onogawa, Tsukuba, Ibaraki 305-8506, Japan
E-mail: yui.kazuko@nies.go.jp

