

Original

Studies of Cs Decontamination Condition Using Vermiculite as Simulated Soil

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Summary

A large amount of radioactive Cs in soil and water from the accident of Fukushima No.1 nuclear power plant is a serious problem. The fixation of Cs⁺ by clays such as vermiculite in soil made difficult the decontamination of Cs. Suitable condition for the Cs decontamination in soil was studied using a vermiculite as a simulated soil. Cs⁺ adsorption rates in distilled water and seawater for the vermiculite were 99.4% and 31.6%, respectively. Higher concentration of (NH₄)₂C₂O₄ and (COOH)₂ was effective for Cs⁺ desorption from the vermiculite. Magnetic Na-P1 zeolite and magnetic mordenite were utilized as a Cs adsorbent materials after desorption of Cs⁺ from the vermiculite. The magnetic mordenite showed higher Cs adsorption ability than that of the magnetic Na-P1 zeolite. Magnetic collection rate using a neodymium magnet in solution trended to decrease with increase of (COOH)₂ concentration due to decomposition of the magnetic zeolite.

Key Words: Cesium, Vermiculite, Na-P1 zeolite, Mordenite, Magnetite
