

Report

# Evaluation of the Efficacy of Decontamination Method Examined by High-pressure Water Jet Washer at Paved Road in Chiba Prefectural Kashiwa-no-ha Park

Yujiro ICHIKAWA\*, Tomohiro INOUE, Suekazu NAITO, Yoshihiko TAKAHASHI

Chiba Prefectural Environmental Research Center (1-8-8 Iwasakinishi, Ichihara, Chiba 290-0046 Japan)

## Summary

To decontaminate radioactive materials (especially cesium-134 and 137) derived from Fukushima Daiichi Nuclear Power Plant accident has been fulfilled at contaminated regions. This study evaluates the efficacy of decontamination method of high-pressure water jet washer (water pressure of 15 MPa, the rate of water usage was approximately 20 L/m<sup>2</sup>) that was conducted at paved road in Kashiwa-no-ha Park. The total decontamination area of paved road was 112,996 m<sup>2</sup>. To investigate concentrations of cesium-134 and 137 in deposits (mainly soil and dust) on the paved road, they were collected at 15 sites by scoop and brush tools before the decontamination was performed. The sum of cesium-134 and 137 concentration of deposits in the studied area fluctuates within 8,200 ~ 88,600 Bq/kg, with mean value of 43,600 Bq/kg. A distribution map of 1 cm dose equivalent rate ( $\mu\text{Sv/h}$ ) at the height of 1 m above the paved road surface was observed before and after the decontamination procedure was carried out by portable gamma ray measuring instrument connected to monitoring software "Radiprobe" equipped with GPS unit. By means of decontamination procedure, observation of mean 1 cm dose equivalent rate decreased from 0.17  $\mu\text{Sv/h}$  to 0.13  $\mu\text{Sv/h}$ , which translates into the 1 cm dose equivalent reduction rate of 33% (the natural dose rate derived from the ground is subtracted). Also as a part of management, aiming at screening safety, decontamination wastewaters were collected at 8 sites of water gathering basin to quantify the concentration of cesium-134 and 137. The concentration of cesium-134 and 137 were below the concentration limit of public water defined by the government notice (60 Bq/L for cesium-134, 90 Bq/L for cesium-137), which were compared as a reference.

**Key Words:** Chiba prefecture, Paved road, Decontamination, High-pressure water jet washer, 1 cm dose equivalent reduction rate

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