

Report

## Evaluation of the Efficacy of Decontamination Methods Examined at Chiba Prefectural Teganuma Aquatic Park

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### Summary

Decontamination of 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 methods with the measurement of air dose rate and concentration of radioactive cesium in the ground before and after decontamination at Chiba Prefectural Teganuma Aquatic Park. Among 101 measurement sites, lawn sites and road paved with urethane foam sites showed relatively high air dose rates that were above 0.23  $\mu\text{Sv/h}$  (the natural air dose rate of 0.04  $\mu\text{Sv/h}$  derived from the ground is included). From the quantitative analysis of lawn sample by germanium detector, we confirmed that thatch (surface layer of lawn with dense accumulation of death and living grass) showed higher activity of radioactive cesium compared to the soil under the thatch, implying thatch have capability to retain radioactive cesium. Examined decontamination methods were: 1) Mowing lawns at the depth of 2 cm from the ground level (removes thatch). 2) The urethane foam was stripped and removed to the depth of 10 mm. The observed range (average) of air dose reduction rate at the height of 50 cm and 1 m above the ground at lawn sites were 8 ~ 53 % (34 %), 27 ~ 63 % (46 %), respectively. Also for road paved with urethane foam sites were 53 ~ 63 % (57 %), 43 ~ 56 % (48 %), respectively. The measurement value of air dose rate after decontamination procedure showed a decrease below 0.23  $\mu\text{Sv/h}$  at all of the measurement sites. Removing thatch is an effective decontamination method, but it should be noted that mowing depth is a crucial part, and we suggest during the decontamination process of removing thatch, the efficacy should be confirmed by monitoring air dose rate at the same time.

**Key Words:** Chiba Prefecture, Park, Decontamination, Fukushima Daiichi Nuclear Power Plant accident, Radioactive cesium

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