

1-21 Toward the Treatment and Subsequent Disposal of the Accident Waste

— An Analysis of Rubble and Trees Collected from the Site of the TEPCO's Fukushima Daiichi NPS —

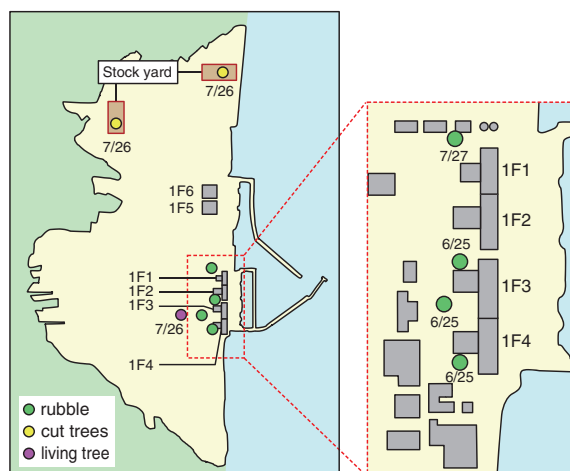


Fig.1-44 Sampling locations of rubble and trees

(Tanaka, K. et al., JNST, vol.51, issues 7-8, 2014, p.1032-1043.)

Rubble around 1F1, 1F3, and 1F4 was collected on June 25 and July 27, 2012. Tree samples were collected on July 26, 2012.

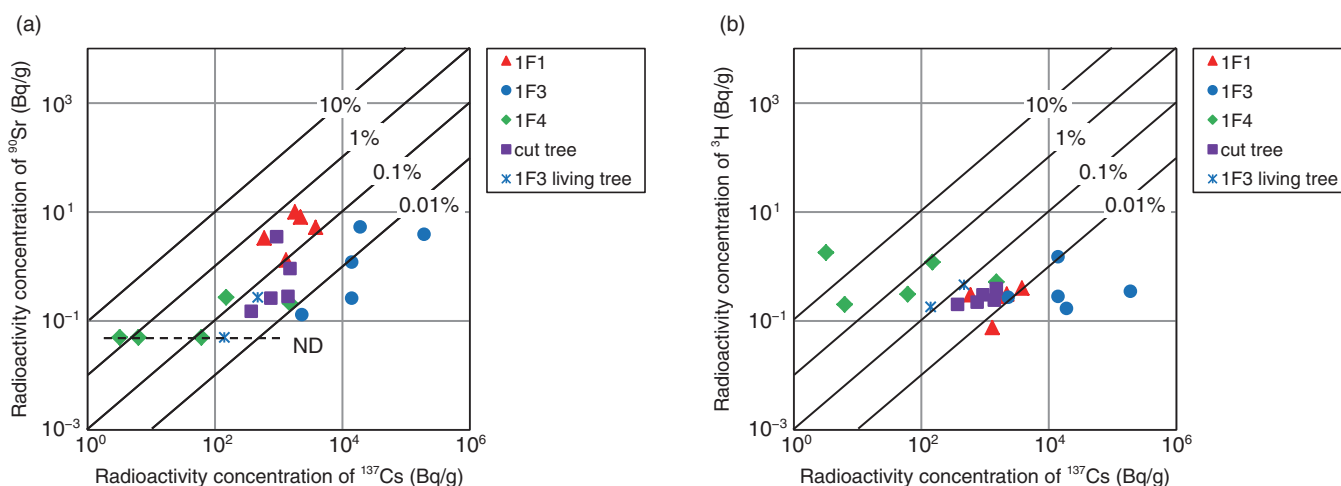


Fig.1-45 Concentrations of ^3H and ^{90}Sr as functions of those of ^{137}Cs

(Tanaka, K. et al., JNST, vol.51, issues 7-8, 2014, p.1032-1043.)

These figures show the radioactivity concentrations of (a) ^{90}Sr and (b) ^3H as functions of the concentration of ^{137}Cs . It is clarified that the concentrations of ^{90}Sr did depend on those of ^{137}Cs , but those of ^3H did not.

After the accident at the TEPCO's Fukushima Daiichi NPS (1F, The "Unit 1-6 at 1F" is abbreviated to "1F1-1F6"), huge quantities of rubble and many trees were contaminated by radionuclides, including ^{137}Cs and ^{131}I , which were generated at the site of 1F. To determine a strategy for the treatment and subsequent disposal of the rubble and trees, it was essential to clarify their radionuclide and radioactivity concentrations. To determine the radionuclides in and on the rubble and trees, samples were collected at the location shown Fig.1-44.

Important radionuclides (including α -ray and β -ray emitting radionuclides, which need chemical analysis) were selected based on a safety assessment of the waste disposal. Analytical methods for the important radionuclides have already been developed by JAEA, and applied to various types of radioactive waste generated by research and industrial and

medical facilities. We modified the existing analytical methods and analyzed the rubble and trees.

The ratios of the radioactivity concentrations ^3H and ^{90}Sr to those of ^{137}Cs determined in this study are plotted in Fig.1-45. As shown in Fig.1-45, the concentration of ^3H did not depend on the sampling location. In contrast, the radioactivity ratios of ^{90}Sr to ^{137}Cs clearly depended on the sampling location. The observed results for ^{90}Sr also implied that the $^{90}\text{Sr}/^{137}\text{Cs}$ ratio was different for each Unit of 1F. We are establishing methods for the treatment and disposal of radioactive waste on the basis of this data.

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Reference

Tanaka, K. et al., Radiochemical Analysis of Rubble and Trees Collected from Fukushima Daiichi Nuclear Power Station, Journal of Nuclear Science and Technology, vol.51, issues 7-8, 2014, p.1032-1043.