

Fukushima Daiichi Nuclear Power Station: Americium and curium analyses result in the soil

1. Analysis result

(Unit: Bq/kg· Dry soil)

Sampling spot (): Distance from the stack of Units 1, 2	Date of sampling/ Analyses organization	Pu-238 ^{*1}	Pu-239 ^{*1} Pu-240 ^{*1}	U-234 ^{*2}	U-235 ^{*2}	U-238 ^{*2}	Am-241	Cm-242	Cm-243 Cm-244
Playground (west-northwest approx. 500m)	April 11/ JCAC	(1.2±0.12) ×10 ⁻¹	(5.9±0.78)×1 0 ⁻²	(8.0±0.45) ×10 ⁰	(3.5±0.75) ×10 ⁻¹	(7.4±0.42) ×10 ⁰	N.D.	(1.4±0.06) ×10 ⁰	(7.5±0.89) ×10 ⁻²
Forest of wild birds (west approx. 500m)		N.D.	(1.2±0.38)×1 0 ⁻²	(7.5±0.44) ×10 ⁰	(4.3±0.90) ×10 ⁻¹	(6.7±0.41) ×10 ⁰	N.D.	N.D.	N.D.
Adjacent to industrial waste disposal facility (south-southwest approx. 500m)		(8.3±0.94) ×10 ⁻²	(3.2±0.56)×1 0 ⁻²	(3.9±0.29) ×10 ⁰	N.D.	(3.9±0.29) ×10 ⁰	(2.1±0.57) ×10 ⁻²	(1.4±0.06) ×10 ⁰	(5.9±0.81) ×10 ⁻²
Playground (west-northwest approx. 500m)	April 25/JCAC	(1.1±0.12) ×10 ⁻¹	(4.6±0.74) ×10 ⁻²	(12±0.60) ×10 ⁰	(5.5±0.93) ×10 ⁻¹	(12±0.60) ×10 ⁰	(1.2±0.36) ×10 ⁻²	(1.0±0.04) ×10 ⁰	(5.3±0.76) ×10 ⁻²
Average nuclide density ratio of fuel in Units 1 to 3 (ratio in case the ratio of Pu-238 is considered as 1) [*]		1	-	-	-	-	0 . 1	1 0	1

*1: Released on April 22 and May 12, 2011

*2: Released on April 22 and May 21, 2011

*3: Values calculated by ORIGEN Code (round number)

2. Evaluation

Detected Am and Cm are considered to derive from the accident due to following reasons.

- Cm-242, Cm-243 and Cm-244 are nuclides that do not exist in the natural world. In particular, Cm-242 whose half-life is relatively short (approximately 160 days) was detected.

- The density ratios of each nuclides (Am-241/Cm-242/Cm-243,Cm-244) to Pu-238 in the sample , and are almost the same as the average nuclide density ratios of fuel in Units 1 to 3.

Pu-238 in the sample : (Am-241/Cm-242/Cm-243,Cm-244) 1 : (- /12/0.6)

Pu-238 in the sample : (Am-241/Cm-242/Cm-243,Cm-244) 1 : (0.3/17/0.7)

Pu-238 in the sample : (Am-241/Cm-242/Cm-243,Cm-244) 1 : (0.1/ 9/0.5)

End