

FNPP1 accident derived radiocaesium and tritium in Fukushima coast through the end of 2018

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The temporal variation of ¹³⁷Cs activity concentration are similar and ¹³⁷Cs activity concentration was low in winter (January - February) and high in summer-fall (July - October) both at the inside the port and 56N canal of Fukushima Dai-ichi nuclear power plant (FNPP1). ¹³⁷Cs at both stations might be originated from the same source. The concentration in the port drops about one order of magnitude lower when the installation of the sea side barrier wall in 2015, while ¹³⁷Cs activity concentration at 56 N canal did not follow a trend in the port, so the leakage route to the port and 56N canal may be different. After 2016, ¹³⁷Cs activity concentration at 56N canal did not change very much and annual average of ¹³⁷Cs activity concentration was 100-140 Bq m⁻³ in 2016, 2017 and 2018. At Tomioka (10 km to the south from FNPP1), ¹³⁷Cs activity concentration was about 1/10 of the ¹³⁷Cs activity concentration at 56N canal and showed the same tendency. At Soma (48 km to the north from FNPP1), ¹³⁷Cs activity concentration was about half of those at Tomioka in general. ¹³⁷Cs activity concentration was 34 Bq m⁻³ at Tomioka River in June 2018 while ¹³⁷Cs activity concentration in seawater was 11 Bq m⁻³ in June 2018.

³H activity concentration in Tomioka River decreased from ca. 1000 Bq m⁻³ in 2013 to ca. 400 Bq m⁻³ in 2018. ³H activity concentration in seawater collected at Tomioka did not change and ranged from 90 to 160 Bq m⁻³ during the period from 2014 to 2018. Good linear relationship between ¹³⁷Cs and ³H in 2014 indicates that the source of both radionuclides should be liquid form and originated from same place.

キーワード：放射性セシウム、トリチウム、福島原発事故、福島沿岸

Keywords: radiocaesium, tritium, Fukushima accident, Fukushima coast