

Studies on plutonium in terrigenous air-dust

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1999 Fiscal Year Final Research Report Summary

Studies on plutonium in terrigenous air-dust

Research Project

Project/Area Number

09640581

Research Category

Grant-in-Aid for Scientific Research (C)

Allocation Type

Single-year Grants

Section

一般

Research Field

地球化学

Research Institution

Kanazawa University

Principal Investigator

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Project Period (FY)

1997 – 1999

Keywords

air-dust / terrigenous air-dust / Pu-239, 240 / Fe / Po-210 / Pb-210 / ocean flux

Research Abstract

For a study to estimate terrigenous air-dust fluxes to oceanic region by using environmental plutonium as a tracer, Pu-239, 240 and Fe were determined in air-dust samples collected in Kanazawa, Japan through the years from 1993 to 1998. The air-dust samples were collected using a five-stages (particle size : <1.1 μm , 1.1~2.0 μm , 2.0~3.3 μm , 3.3~7.0 μm , 7.0 μm <) Andersen-type high-volume air sampler, and catcher plates and backup filter were replaced monthly ; air-dust collected every 1-8 months was analyzed as one batch.

Throughout the above mentioned sampling years and particle sizes, the concentrations of Pu-239, 240 and Fe in the air-dust samples were in a range from 0.1 to 10 $\mu\text{Bq-Pu/mg-dust}$ and from 2 to 30 $\mu\text{g-Fe/mg-dust}$. The Pu/Fe concentration ratios tend to be high in finer air-dust, suggesting that Pu is adsorbed on the surface of terrigenous air-dust. Through the analyses of Po-210/Pb-210 activity ratios in air-dust samples collected occasionally for a few days using Andersen-type low-volume air sampler, from 9 to 140 days were estimated as the apparent floating time of air-dust (particle size : 0.06~0.13

μm, 0.13~0.22 μm, 0.22~0.33 μm, 0.33~0.52 μm, 0.52~0.76 μm, 0.76~1.3 μm, 1.3~2.5 μm, 2.5~3.9 μm, 3.9~5.7 μm, 5.7~8.5 μm, 8.5~12.1 μm).

Research Products (6 results)

		All	Other
		All	Publications (6 results)
[Publications]	Y. Miyamoto: "Interferences in neutron and photon activation analysis"J. Radioanal. Nucl. Chem.. 239(1). 165-175 (1999)		▼
[Publications]	M. A. Haque: "Host phase of $^{239,240}\text{Pu}$ and ^{241}Am in deep-sea sediment"J. Radioanal. Nucl. Chem.. 239(3). 565-569 (1999)		▼
[Publications]	M. A. Haque: "Chemical dissolution of total content of fallout plutonium in deep-sea sediment"J. Radioanal. Nucl. Chem.. 241(3). 575-579 (1999)		▼
[Publications]	Y. Miyamoto, H. Haba, A. Kajikawa, K. Masumoto, T. Nakanishi, K. Sakamoto: "Interferences in neutron and photon activation analysis"J. Radioanal. Nucl. Chem.. 239(1). 165-175 (1999)		▼
[Publications]	M. A. Haque, T. Nakanishi: "Host phase of $^{239,240}\text{Pu}$ and ^{241}Am in deep-sea sediment"J. Radioanal. Nucl. Chem.. 239(3). 565-569 (1999)		▼
[Publications]	M. A. Haque, T. Nakanishi: "Chemical dissolution of total content of fallout plutonium in deep-sea sediment"J. Radioanal. Nucl. Chem.. 241(3). 575-579 (1999)		▼

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