Relationship between radioactive isotopes and stable elements contained in the aerosol

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Abstract

We investigated relationships between the amounts of a natural radioactive isotope ^{210}Pb and the stable elements containing in the aerosol collected in Nagasaki Prefectural Forest Park and considered conceivable behavior of the aerosol comparing with that collected in the Nagasaki City urban district.

Amounts of ^{210}Pb in the park was about half of the urban district. Amounts of almost elements were very much higher at the urban district. Strong correlations were not observed at the forest between ^{210}Pb and stable elements contrary to the urban district. The situations suggest that the fallen aerosol refloat more easily at the urban district than the forest.

Amount of ^{210}Pb per unit mass of the aerosol was largely increased at the season of "Yellow dust". It suggests small aerosol particles floating the atmosphere for long distance and long time contain large amount of ^{210}Pb particles.

Ratio of stable lead isotopes was investigated in the aerosol and correlation between other elements was investigated. ^{208}Pb/^{206}Pb ratio and nss-Br/^{210}Pb ratio showed inverse correlation. It suggests Br emission from coal combustion has measurable environmental impact.