

Atomic bomb (233-240)

233 Residual ^{152}Eu and ^{60}Co activities in Nagasaki

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PURPOSE: It has been revealed that there is a large discrepancy between the measured activities and calculation based on DS86 neutrons in Hiroshima. The purpose of this work is to make it clear whether such discrepancy exist in Nagasaki.

MATERIALS AND METHODS: Four mineral and five steel samples were collected for the ^{152}Eu and ^{60}Co measurements within 1.5 km from the hypocenter. Eu and Co were chemically enriched and measured with a low-background Ge detector.

RESULTS AND DISCUSSION: Present ^{60}Co results agreed well with previous measurements by Hashizume et al. Preliminary ^{152}Eu results seems to be systematically deviate from the calculation. Further data acquisition is necessary in Nagasaki.

234 Depth-profile Calculation of ^{152}Eu Activity Induced by the Atomic Bomb Neutron in Hiroshima

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Depth profiles of ^{152}Eu activity induced in structural materials exposed to the atomic bomb in Hiroshima were calculated by using two techniques to couple neutron fluence above the ground with local neutron transport within materials: forward(DOT3.5)-adjoint(MORSE) coupling and forward(DS86 output)-forward(MCNP) coupling. Depth profiles up to 40 cm from the surface were calculated for the following measured profiles: Motoyasu Bridge pillar#1 (GR= 132 m), #2 (GR= 101 m), Shirakami Shrine granite (GR= 478 m) and Gokoku Shrine concrete (GR= 398 m). ^{152}Eu activities in calculated profiles show a tendency becoming greater than measured ones with the depth from the surface. This tendency is opposite to the discrepancy between measurements and calculations observed in surface samples at long distance in Hiroshima.