

List of Detected Gamma-Ray Emitting Radionuclides Other than Cs-134 and Cs-137 (FY2021)

As for gamma-ray emitting radionuclides other than Cs-134 and Cs-137 (I-131, Ag-110m, Te-129, Te-129m, Nb-95, Sb-125, Ce-144, etc.) and major naturally occurring radionuclides (K-40, etc.), the analysis of them was conducted separately for each type of sample (water, sediments and soil collected in the surrounding environment).

Detection of a radionuclide peak by the analytical software attached to the Germanium Semiconductor Detector was treated as “Detect” when the activity is equal to or higher than the detection limit and as “Not Detected” when it is lower than the detection limit.

Because Zr-95, Cs-134, Co-60 and Fe-59 each emit some gamma rays of different energy levels, the detect/no-detect judgments and detection ratios vary, depending on the emitted energies level.

As a result of the analysis of 3,957 water samples, 3,117 sediment samples and 4,619 soil samples (collected in the surrounding environment), no artificial radionuclide other than Cs-134 and Cs-137 was detectable.

Naturally occurring radionuclides are shown as below.

In water samples, Pb-214(in approx. 1% of the total), Bi-214 (2% (id.)), K-40 (10% (id.)) were detected.

In sediment samples, Th-231 (3% (id.)), Th-228(1% (id.)), Th-234(4% (id.)), Ra-226 (6% (id.)), Pb-212 (73% (id.)), Ra-224 (1% (id.)), Pb-214 (44% (id.)), Be-7(1% (id.)), Tl-208(39% (id.)), Bi-214(37% (id.)), Bi-212(5% (id.)), Ac-228 (31% (id.)), and K-40 (95% (id.)) were detected.

In soil samples (collected in the surrounding environment), Th-234 (1% (id.)), Ra-226 (3% (id.)), Pb-212(64% (id.)), Pb-214 (23% (id.)), Tl-208 (29% (id.)), Bi-214 (18% (id.)), Bi-212 (1% (id.)), Ac-228 (24% (id.)), and K-40 (96% (id.)) were detected.