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Plutonium 241 –importance and ways of determination

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Plutonium 241 is the only beta emitting plutonium isotope formed by a nuclear reactor operation. In contrast to the other ones, its half life is relatively short (about 14 years). Emitting beta radiation, it decays to another important radionuclide, Am-241. Hence the activity of americium 241 is still increasing in the area of Chernobyl, Ukraine.
Nuclear fission leads to higher-order activities of the Pu-241 than of the other plutonium isotopes. On the other hand, the beta energy of this radionuclide is only 20 keV, which, in addition with no gamma radiation, falsely decreases its importance. For example, determination of isotopes activity ratio between Pu-241 and other isotopes can lead to the recognition of the isotope mixture source.

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