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THE DETERMINATION OF AMERICIUM AND PLUTONIUM ISOTOPES IN ENVIRONMENTAL SAMPLES AND AIR FILTERS IN AUSTRIA

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The radiochemical environmental monitoring program in Austria includes the measurement of radiostrontium and of the alpha emitting Plutonium isotopes in soil and vegetation. However, in an emergency situation other radionuclides like Pu-241 or Am-241 may be of interest as well. Moreover, for the evaluation of the exposure situation it is also important to analyze these radionuclides in other samples like aerosols or air filters.

This project belongs to a series of measurement campaigns in which for specific locations a reference value is determined. The focal point of this project is the determination of the reference values in air filters of different locations. Besides this, the within-year variance of these locations should be determined. Additionally soil, vegetation and raw milk was analyzed. Within these samples, we determined the following radionuclides: Pu-238, Pu-239/240, Am-241 and Cm-244 all via alpha spectroscopy and Pu-241 via LSC. In addition, we measured Pu-239 via ICP-MS in soil samples as well. As we focused in this project on air filters, we also measured Sr-90 via LSC for that kind of sample. The radiochemical separation included the combination of SR-Resin® for Pu and Sr and DGA®- and TEVA®-Resin for Am and Cm. Before the measurement we coprecipitated the purified element fractions of Am and Pu with Nd as carrier.

In conclusion, we assume our measured values as reference values for that kind of samples. The details of the method and the results will be presented. This project was funded by the Federal Ministry of Climate Action, Environment, Energy, Mobility, Innovation and Technology.

Primary author: KADAN, Rainer

Co-authors: Mrs DAMBERGER, Viktoria (Austrian Agency for Health and Food Safety); Mrs ELBERS, Krystle (Austrian Agency for Health and Food Safety); Dr LANDSTETTER, Claudia (Austrian Agency for Health and Food Safety)

Presenter: KADAN, Rainer

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