

Half a century of krypton-85 measurements in the atmosphere of Central Europe

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Large quantities of the radioactive noble gas krypton-85 (^{85}Kr) are released into the atmosphere as a result of reprocessing of used nuclear fuel rods. Reprocessing started in the 1940s mainly to separate plutonium for military purposes. Emissions from civil reprocessing activities have steadily been increasing since and impede on the use of ^{85}Kr as an indicator for clandestine plutonium production. For almost half a century weekly samples of surface air have been collected by the Bundesamt für Strahlenschutz (BfS), Germany, for the measurement of ^{85}Kr . Sampling at Freiburg started in 1973, Mt Schauinsland in 1976 and Jungfraujoch in the Swiss Alps in 1990. The complete time series will be presented and discussed, as well as results from particular weeks. Weekly baseline and average ^{85}Kr activity concentrations in the atmosphere of Central Europe were modelled from almost 12,000 individual measurements at 11 stations and will be presented. The baseline and average have continuously increased, interrupted by a relatively stable period from 2009 to 2013. Since then ^{85}Kr activity concentrations have increased and are currently at a baseline level of approximately 1.45 Bq/m³.

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