

Tracing back the elevated Ru-106 measurements in Europe end of September/beginning of October 2017

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At the end of September/beginning of October exceptional Ruthenium-106 levels were measured all across Europe with a maximum of 145 mBq/m³ as found in a Rumanian daily sample. Due to the specific isotope encountered in samples from the International Monitoring System (IMS) stations of the Comprehensive Nuclear Test-Ban Treaty Organization (CTBTO) as well as in samples from national European stations reported to the International Atomic Energy Agency (IAEA) it became immediately clear that neither an accident in a nuclear power plant nor a test of a nuclear weapon could have caused the increased levels of radioactivity. Indeed, the Ruthenium-106 plume could be traced back to the Southern Ural, where the medical isotope processing facility Dimitrowgrad as well as the nuclear waste reprocessing plant of Majak are known to be located. This was achieved by combining backward fields of the Lagrangian particle dispersion model FLEXPART and corresponding samples in a so called “Probable Source Region” (PSR) approach. In accordance with other European institutes (like the Federal German and French radiation protection agencies BfS and IRSN) ZAMG also assessed in addition the probable release time as around 25th of September and the source strength as 1E15 Bq (i.e. 1 Petabequerel), thus indicating a major nuclear accident. In the frame of the presentation more detailed evaluations based on Atmospheric Transport Modelling (ATM) will be shown. Finally, the ATM results will be amended and underpinned by further evidence collected in the weeks after the Ru-measurements, of which the most relevant is a report of an Austrian pilot sent to ZAMG flying from Novosibirsk back to Europe at the suspected release time.