

## **Romanian Information Report**

### **regarding the measurements of Ruthenium-106 in the air, in Romania, between 29.09.2017 and 03.10.2017**

Environmental radioactivity monitoring has been performed in Romania since 1962 in a structured and comprehensive manner which aims to detect any increase of the radiation levels in the environment due to radioactive releases irrespective of the cause. The network of stations performing the measurements is the National Environmental Radioactivity Surveillance Network (RNSRM) under the Ministry for the Environment. The central lab of the network, the National Reference Radioactivity Laboratory from Environmental Protection Agency (ANPM), is licensed by the National Commission for Nuclear Activities Control (CNCAN) and accredited by the National Accreditation Body (RENAR) according to SR EN ISO/CEI 17025:2005.

ANPM and CNCAN, together with technical support organizations, are integrated in the Romanian national response activities for nuclear or radiological emergencies managed by Ministry of Internal Affairs (MAI).

For atmospheric aerosols RNSRM performs daily air monitoring through 5 hours aspiration on air filters, in 37 locations with the following schedule: 4 aspirations per day in 9 locations (Iasi, Toaca, Cernavoda, Constanta, Babele, Pitesti, Bechet, Craiova and Cluj) and 2 aspirations per day in another 28 locations. Each of the aspirated filters are measured 3 times (at 3 min, 20 hours and 5 days) in the interval of 5 days after the end of the aspiration. This series of repeated measurements on the same filter allow detection of the natural occurring radionuclides (radionuclides belonging to the Uranium and Thorium families) and also allow detection of the artificial radionuclides, such as the radionuclides which could be released in an event occurring at a nuclear facility. The method described above (gross beta counting) is quite sensitive and can detect any increasing level of radioactivity above the usual background. Further on, according to the procedures of RNSRM, all the filters which are subjected to gross beta counting are subjected to spectral analysis (gamma spectrometry) which can identify without doubt the specific radioisotopes and the amount of the specific radioisotopes which could be present in the sampled air. One of the radionuclides monitored as current activity is Ruthenium-106 (Ru-106).

Between 29.09.2017 and 03.10.2017 Ru-106 activity was determined at the RNSRM stations in various locations. The detections were first made through the gross beta measurements after 5 days which indicated values above the regular gross beta background, for this type of samples. The presence of Ru-106 was then confirmed through the gamma spectrometry measurements performed on the same filters.

Overall, both gross beta counting after 5 day and gamma spectrometry measurements indicated that an air mass containing Ru-106 circulated over the territory of Romania from 29.09.2017 to 03.10.2017. The air mass entered the territory of Romania on 29.09.2017, in the East and exited the territory of Romania on 03.10.2017, in the West. First detections were at the following stations: Constanta, Galati, Tulcea, Sf. Gheorghe (Tulcea county), Focsani, Vaslui, Iasi, Cernavoda, Calarasi, Slobozia, Bechet and Craiova, on 29.09.2017 (fig. 1) and last detections were at the following stations: Alba Iulia, Arad, Baia Mare, on

03.10.2017 (fig. 2). To note that this conclusion is factual and is based on sampling and measurements performed at the stations of the national network. Due to the methodology used in RNSRM and due to the high frequency of sampling/measurements and the number of measurement laboratories, Romania is without doubt able to state as a fact that an air contamination occurring elsewhere circulated over the territory of the country in a specific time interval.

Regarding the measured levels of Ru-106, between 29.09.2017 and 03.10.2017 these levels do not pose any health threat for the population in Romania, and actually nowhere in the European region where such levels were detected. In reference to the IAEA standards (GSR part 7) and the Romanian Fundamental Norms regarding Radiological Safety (CNCAN Order no. 14/2000), the air concentrations of Ru-106 are less than 0.001% compared to the levels which would justify the taking of any protective action for the population.

The results of the Ru-106 measurements in Romania were shared with the IAEA and all the IAEA Member States in October this year following a request to share such measurements and a request to state if any activities on the territory of the country could be related to a possible release of Ru-106 in the atmosphere. As stated at that time in October, Romania is restating that there were no and there are no activities on the territory of Romania which could be the cause or which could be associated with an atmospheric release of Ru-106. Furthermore, numerous Ru-106 measurements were performed in Romania and the conclusion is that the levels measured couldn't justify the taking of any protective action for the population.

**Fig. 1 Locations where Ru-106 was detected by RNSRM on 29.09.2017, through gamma spectrometry**



Note: Wind direction was from E to W, detections were made in the East of the country and there were no detections in the West of the country.

**Fig. 2 Locations where Ru-106 was detected by RNSRM on 03.10.2017, through gamma spectrometry**



Note: Wind direction was from E to W, detections were made in the West of the country and there were no detections in the East of the country.

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