

Radioxenon Monitoring after the Announced Nuclear Tests of the DPRK on 6 January and 9 September 2016

For the purpose of monitoring for compliance with the Comprehensive Nuclear-Test-Ban Treaty (CTBT), the International Monitoring System (IMS) is being established that includes 40 sensor systems for atmospheric xenon radioactivity, 28 respectively 27 of which were in operation at least for part of the first two months following the two nuclear tests in 2016. Five underground nuclear tests were announced by the Democratic People's Republic of Korea (DPRK) at the Punggye-ri Nuclear Test Site. In the aftermath of the first test in 2006 and the third one in 2013, radioxenon observations were made that were consistent to be associated with the time and location of the relevant seismic events. The fourth and fifth tests were announced on 6 January and 9 September 2016. This paper describes analytical methods and results of the relevant data from neighbouring IMS stations with emphasis on episodes of elevated levels of radioxenon that could be consistent with a late release from the location of the seismic event. Several standard and additional exploratory methods were applied to test the hypothesis whether the observed radioxenon can be correlated to the seismic event. The final judgement is the responsibility of the State Signatories.

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