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Radionuclide data analysis in connection of DPRK event in May 2009

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The seismic event detected in DPRK on 25.5.2009 was triggering a series of actions within CTBTO/PTS to ensure its preparedness to detect any radionuclide emissions possibly linked with the event. Despite meticulous work to detect and verify, traces linked to the DPRK event were not found. After three weeks of high alert the PTS resumed back to normal operational routine. This case illuminates the importance of objectivity and procedural approach in the data evaluation.

All the data coming from particulate and noble gas stations were evaluated daily, some of the samples even outside of office hours and during the weekends. Standard procedures were used to determine the network detection thresholds of the key (CTBT relevant) radionuclides achieved across the DPRK event area and for the assessment of radionuclides typically occurring at IMS stations (background history). Noble gas system has sometimes detections that are typical for the sites due to legitimate non-nuclear test related activities. Therefore, set of hypothesis were used to see if the detection is consistent with event time and location through atmospheric transport modelling. Also the consistency of event timing and isotopic ratios was used in the evaluation work.

As a result it was concluded that if even 1/1000 of noble gasses from a nuclear detonation would had leaked, the IMS system would not had problems to detect it. This case also showed the importance of on-site inspections to verify the nuclear traces of possible tests.