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# of a Radionuclide Expert Technical Analysis Software Based on Isotopic Ratios for Characterization of CTBT-Relevant Nuclear Events

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The purpose of a radionuclide expert technical analysis (ETA-RN) is to assist States Parties to identify the source of a specific event. The output of an ETA-RN is a State Requested Methods Report (SRMR), which builds on routinely generated results from standard International Data Centre products like the radionuclide reviewed report and radionuclide laboratory report. The various functionalities in this ETA-RN software suite are all based on isotopic ratios detected in samples collected at International Monitoring System (IMS) network. The analysis modules include the event definition based on radioxenon detections at IMS radionuclide stations, calculations of isotopic ratios using different methods, sample association based on consistency analysis of isotopic ratio evolution, simulations of release scenarios using Bateman equations, event discrimination based on relationship plots of four/three radioxenon detections, event timing using a function of isotopic ratios over time and SRMR generation. These functionalities are demonstrated via typical case studies, such as announced DPRK2013 events, consecutive Level C samples, and observations during the Fukushima nuclear disaster. In this presentation, we outline the status of the software development as well as analysis methods related to isotopic ratios.

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Promotional text

Characterization of CTBT-relevant nuclear events based on isotopic ratios detected at IMS stations is one of the main aspects to support States Parties to identify the source of a specific event.

Oral preference format

in-person

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