

Use of Argon-37 Measurements as a Coincident Signature with Radioxenon and in High Background Environments in the International Monitoring System

Argon-37 is a nuclear explosion signature that is currently adopted for use in on-site inspections (OSI). Because of the OSI application, new automated equipment is now available to measure this isotope in a sensitive manner from subsurface samples. While use of the Argon-37 signature as a key indicator of a nuclear explosion is widely accepted for OSI applications, the use of this isotope for remote detection has not been explored in great detail. There are a few primary reasons for previous lack of interest in the use of Argon-37 for the International Monitoring System (IMS): 1) the background of the isotope is not well known globally, 2) the equipment that has existed in the past was complex and operator intensive, and 3) the detection sensitivity of previous systems was not high enough to enable detection distant from a source. In this work, the case for Argon-37 as a viable and robust signature for IMS applications is made, including figures-of-merit for the isotope and future work that would be needed.

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