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## -37 Field Instrument for On-Site Inspection

This presentation describes the Argon-37 Field System in detail, a complex instrument, which was developed to measure  $^{37}\text{Ar}$  from soil gas samples. Argon-37 is an important signature for assessing if an event was nuclear, it is produced via neutron activation of calcium in the soil, is non-reactive so will migrate through the earth unimpeded, and will likely be available at the subsurface for collection and measurement. When detected with radioxenon from soil gas,  $^{37}\text{Ar}$  can help discriminate between anthropogenic sources and an underground nuclear explosion. This presentation will describe the details needed to collect a sample, process and measure a sample, and analyze and report the activity concentration of  $^{37}\text{Ar}$ . Measurement of  $^{37}\text{Ar}$  from soil gas requires a set of integrated chemical processes that separate and remove components of air, collect and purify the argon gas, then measure the radioactive  $^{37}\text{Ar}$  atoms. The information collected from the measurement must then be analyzed taking into consideration all sources of background and the quality of the measurement.

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