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# of Radioxenon Signals from a Nuclear Explosion and Alternative Background Sources

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During the testing phase of the Xenon International radioxenon monitoring system in Knoxville, Tennessee, USA, there were observations of non-traditional xenon isotopes: Xenon-125, Xenon-127, Xenon-129m, and Xenon-122 (via the decay of Iodine-122). While the production mechanisms for non-traditional isotopes were hypothesized, it would be beneficial to perform a complete study on the production scenarios for the non-traditional xenon isotopes compared to the standard radioxenon isotopes of Xenon-135, Xenon-133, Xenon-133m, and Xenon-131m. One production mechanism that is of particular interest following the observations of Xenon International is a spallation neutron source. While there are several spallation neutron sources around the world, the production of non-traditional radioxenon isotopes depends on parameters like the target material, beam energies and gas abatement. We have investigated the production mechanisms of the non-traditional isotopes and developed a model for predicting the amount of non-traditional xenon isotopes compared to traditional xenon isotopes that are produced through methods like neutron spallation.

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Promotional text

Understanding the radioxenon signals that may come from background sources of radioxenon allows for a better identification of potential interferences that may be seen in the future.

Oral preference format

in-person

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