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## Method for calculating radon activity and radon rejection

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Radioxenon detection systems chemically separate and purify xenon from the collected atmospheric sample. These systems reject radon to a high degree during this processing step. On occasion, radon will make it to the nuclear detectors and its progeny will interfere with the radioxenon measurement. The minimum-detectable-concentration values of an atmospheric monitoring system will also be negatively impacted by the presence of this radon. To minimize these consequences, it is important to understand how much radon made it to the nuclear detectors and its effect. We have developed a way to calculate the activity of radon in the nuclear detectors using the coincidence beta-gamma spectrum and to determine the impact to the minimum-detectable-concentrations. This presentation will discuss the method to calculate the radon rejection levels needed to maintain optimal radioxenon detection sensitivity and the impact of radon on radioxenon uncertainties.

### Promotional text

This presentation provides new opportunities and methods for improving nuclear test monitoring and verification by allowing radon activity and rejection levels of a system to be determined.

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