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Radionuclide signatures from complex releases of vented fission products

Emily Gordon[1], Pranshu Adhikari[1], Justin Lowrey[2], Christine Johnson[2], James Ely[2], Derek Haas[1]
[1]Walker Department of Mechanical Engineering, The University of Texas at Austin
[2]Pacific Northwest National Laboratory

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Introduction

This project builds on previous work modeling the detection of noble gases at IMS stations, now incorporating a variable vent fraction for both prompt and delayed releases of fission products from a simulated underground nuclear explosion.

Method

Two modeling tools, SCALE and HSYPLIT, were combined with a data processing tool to handle complex radioactive decay chains of fission products.

Results and Next Steps

Venting fractions can be combined with dilution factors from HYSPLIT and decay fractions from SCALE to produce hypothetical activity concentrations at IMS stations. The study will be expanded using supercomputing resources at UT.