

# Impact of Molten Salt Reactors on Radionuclide Stations of the International Monitoring System

*Tuesday, 20 June 2023 16:55 (15 minutes)*

Molten Salt Reactors (MSRs) are a Generation IV nuclear reactor design that is currently under development and testing in various countries around the world. The molten fuel provides an opportunity for continuous processing of gaseous fission products which may impact the International Monitoring System (IMS). Simulations were performed for four MSR designs to predict the production of IMS-relevant radionuclides during batch and continuous reprocessing schemes. Radioxenon and radioiodine signatures were drawn from these simulations and compared to current reactor designs (BRW, PWR, RBMK). For the case of continuous reprocessing of the fuel salt, the radioxenon and radioiodine signatures were found to be indistinguishable from a nuclear explosion.

## E-mail

johnathan.slack@pnnl.gov

## Promotional text

Predicting the impact of novel nuclear reactors on the background of the IMS is critical to system objectives and collaborative mitigation work with industry partners.

## Oral preference format

pre-recorded video

**Primary author:** SLACK, Johnathan (Pacific Northwest National Laboratory (PNNL))

**Co-authors:** Dr SIMPSON, Cheslan (Pacific Northwest National Laboratory (PNNL)); Ms JOHNSON, Christine (Pacific Northwest National Laboratory (PNNL)); Mr BURNETT, Jonathan (Pacific Northwest National Laboratory (PNNL)); Mr SHARMA, Manish (Pacific Northwest National Laboratory (PNNL))

**Presenter:** SLACK, Johnathan (Pacific Northwest National Laboratory (PNNL))

**Session Classification:** O2.4 Atmospheric and Subsurface Radionuclide Background and Dispersion

**Track Classification:** Theme 2. Events and Nuclear Test Sites: T2.4 Atmospheric and Subsurface Radionuclide Background and Dispersion