Study provides insights on sources of environmental contamination following Fukushima Daiichi nuclear disaster

January 19 2016

Four years after Japan's Fukushima Daiichi Nuclear Power Plant disaster that led to major releases of radioactivity to environment, questions still remain regarding the original sources of radioactive contamination. Investigators have now used rice, soil, mushroom, and soybean samples taken 100 to 250 km from the plant and tested them with a method called cesium isotopic analysis to help discriminate between environmental contamination from different nuclear reactor cores at the plant.

Their results suggest that radiocesium to the southwest is derived from a mixture of reactor cores 1, 2, and 3. Conclusions from the cesium isotopic data are in agreement with those derived independently based upon the chronology of events and meteorological conditions at the time of the disaster.

"Determining which reactor or spent fuel cooling pond may have contributed to contamination at a given location in Japan is incredibly challenging," said Dr. Mathew Snow, lead author of the *Rapid Communications in Mass Spectrometry* study. "However, cesium isotopic analyses combined with known meteorological data provide a very promising approach to doing this. These types of techniques will likely be of great benefit to environmental remediation and contamination transport studies in Japan and the rest of the world during the coming decades."

More information: Mathew S. Snow et al. Fukushima Daiichi reactor source term attribution using cesium isotope ratios from contaminated environmental samples, *Rapid Communications in Mass Spectrometry* (2016). DOI: 10.1002/rcm.7468