☐ **Talk** ☒ **Poster**

Assessing Arsenic Speciation and Contaminant Risks in Great Salt Lake Dust

Lindy Miller[1], Joshua J. LeMonte[1], Greg Carling[1], Kevin Perry[2], Ruth Kerry[1], Ryan Tappero[3]

[1]Brigham Young University
[2]University of Utah
[3]National Synchrotron Light Source II

...

Author Email: Lindyvm@byu.edu

Widespread environmental pollution has raised concerns about the long-term health effects of toxic contaminants in air, water, and soil. Arsenic contamination, from both geogenic and anthropogenic sources, poses a significant global health risk, affecting millions of people worldwide. Terminal water bodies – water bodies without an outlet – are natural accumulation points for contaminants such as arsenic. Dust emissions from dried lakebeds can serve as a gateway for these contaminants to impact surrounding populations. The Great Salt Lake, the largest saline lake in the Western hemisphere, has seen record low water levels due to poor water management and climate change. With more than 800 square miles of exposed lakebed and potentially problematic concentrations of arsenic in the sediment, the surrounding valley's 2.5 million residents are at risk of arsenic-related disease. To understand the potential human health impact of arsenic dust from the Great Salt Lake's exposed lakebed, an in-depth analysis of arsenic occurrence and speciation is essential. This research combines geospatial analysis of As concentrations in the exposed lakebed with synchrotron-based As speciation in the sediment and dust via X-ray absorption near-edge spectroscopy. Arsenic speciation in the dust is compared with As speciation in sediments of the Great Salt Lake as well as urban and industrial potential sources of As. Higher As concentrations are found closer to the lake, with high salinity making arsenite, the more toxic of the oxidation states, common at a wide range of redox potentials. These findings are critical in accurately gauging public health risks due to arsenic-laden dust emissions.