



Department Colloquium Series Spring 2022

Monday, April 11 @ 12pm (noon time) & Zoom*
Geo Mus 102 (Haller Hall) – A boxed lunch will be served

Sarah Janssen
USGS, Research Chemist



“From Microbial to Global: What Mercury Stable Isotopes Can Tell us about Mercury Bioaccumulation”

Abstract: Mercury (Hg) stable isotopes have become a standard approach to study Hg sources and processes in the environment. Despite the power of these tools, applying Hg isotopes to understand source to receptor relationships can be difficult due to the myriad of processes occurring before and during bioaccumulation. This presentation will highlight the application of Hg stable isotopes to food webs and demonstrate gaps in our mechanistic understanding of fractionation processes. Two key processes, photochemical degradation of methylmercury (MeHg) during planktonic uptake and detoxification of MeHg within internal organs, will be discussed in context of how these transformations alter Hg isotope ratios and what that means for the application to environmental matrices. Lastly, future research directions and outstanding challenges will be discussed for applying these tools to regional and global initiatives to understand Hg bioaccumulation.

Short Bio: Sarah Janssen is a research chemist at the U.S. Geological Survey in Madison, WI and the team lead for the USGS Mercury Research Lab. She has her PhD in environmental chemistry from Rutgers University, where she focused on developing methods for the measurement of mercury and methylmercury stable isotopes in natural matrices. Directly after her graduate work she took a position within the USGS under the guidance of Dr. David Krabbenhoft where she was able to expand Hg isotope capabilities for the lab. Her current research focuses on applying Hg stable isotopes to understand bioaccumulation pathways, which spans from contaminated sites to the Great Lakes to global oceans.

*Zoom link: <https://harvard.zoom.us/j/98884783575?pwd=ais5ek9MaGRQYy9ScEh3Zm5YdTRwQT09>