

October 7, 2022

**2x PhD positions: (1) studying wildfire emissions; (2) tree mercury cycling and archiving.**

Assistant Professor Dr. David McLagan, PI of the Fire, Earth, Water, Air Contaminant Biogeochemistry Lab in the [School of Environmental Studies](#) (SES) and [Dept. of Geological Sciences & Geological Engineering](#) (GSGE) at Queen's University, offers doctoral research opportunities to study (1) atmospheric science and wildfire emission using mobile sampling platforms; and (2) the biogeochemical cycling of mercury within trees of different species as well determining their ability to archive and characterize historical emissions of mercury using mercury stable isotope analyses.

**Requirements:** Candidates should have a good academic standing and a strong interest in the development and application of novel strategies, methods, and technologies in multi-disciplinary environmental sciences. [PhD Project 1](#) will be based on the development and application of mobile monitoring platforms that will be used to study a range of contaminants emitted by fires using both established and more experimental atmospheric monitoring instrumentation. The student will be involved in the calibration and evaluation of novel monitoring systems and the study of emissions and plume chemistry in both human controlled burning practices and wildfires; such near-source study of fire emissions is limited due to the logistical challenges of active fire research. [PhD Project 2](#) will utilize a series of experiments both near-source and at remote (background) locations with analyses led by Hg [stable isotopes](#) (and carbon characterization methods) to: (i) assess and characterize the potential of trees to archive historical atmospheric mercury levels and how this differs by species; (ii) study in detail the chemical compounds and physiological processes that control the uptake, transport, transformation, and fate of mercury within trees. The uptake of mercury by vegetation is the major sink of atmospheric mercury to terrestrial systems. Hence, it is critical to understand the internal mercury cycling in trees across different species and biomes and how varies under climate change (involvement in the [SPRUCE Project](#) in Northern Minnesota).

**EDI matters:** Academic research and scientific advancement benefits from a breadth of perspectives. The FEWA Lab values Equity, Diversity, and inclusions and aspires to build a research group that provides opportunity to people of all backgrounds, experiences and identities, and supports group members through an adaptive mentoring approach to ensure their success.

**Submission details:** Applications should include a cover letter (<2 pages) that includes a summary of past research experiences, a transcript (unofficial is ok, official transcript will be assessed during formal admissions process) and CV. Please tailor your application to this position; generic applications will not be considered. Applications should be emailed to [david.mclagan@queensu.ca](mailto:david.mclagan@queensu.ca). Ideal starting time would be January or September 2023, but there is flexibility on this timeline. Applications will be evaluated on a rolling basis until the right candidates are found. Successful candidates must still be formally accepted into GSGE or SES (unit to fit candidate's experience).

Sincerely,



**Dr. David McLagan**

Assistant Professor in Environmental Geochemistry  
School of Environmental Studies; Dept. Geological Sciences & Geological Engineering.  
Queen's University (Ph: 613-533-6172)

[Queens University](#), Kingston Ontario, K7L 3N6

[fewalab.ca](http://fewalab.ca)