



PhD Opportunity at University of Waterloo

We invite applications for **one PhD position** to participate in a collaborative research project on [Mitigation of methane emission hot-spots from municipal landfills](#). The main goal of the project is to improve methane emission monitoring at landfills by combining state-of-the-art soil measurements. The team will develop methods to reduce emissions using methane-consuming microbes from landfill cover soils and develop a toolkit for mitigating hot-spot emissions and maximizing methane oxidation rates at landfills.

The **PhD student** will conduct methane-amended enrichment culture experiments to quantify methane oxidation capacity for landfill cover soils by applying seasonal simulations to assess the resilience of methane oxidation activity under differing temperatures representative of Canadian climate extremes. The PhD student will also develop the reactive transport model of hot-spot methane emission dynamics from active and closed municipal landfills that will include gas transport dynamics, microbial community response, and seasonal effects. The model will also include variably saturated soil conditions, subsurface heat, and gas transport, as well as thermodynamically-based models that predict reaction trajectories of multi-functional soil microbial communities under variable physical-chemical conditions.

Applicants must have (or expect to soon complete) a degree in biogeochemistry, hydrology, soil science or a related field. Preference will be given to candidates with strong quantitative skills and demonstrated experience in one or more of the following areas: terrestrial biogeochemistry, environmental engineering, reactive transport modeling, and environmental climate change impact analysis. An MSc student position can be created in lieu of PhD position for candidates who prefer to undertake a Master's degree.

If you have any questions regarding the application process and/or eligibility, or a request for accommodation during the application process, please contact Dr. Fereidoun Rezanezhad (frezanez@uwaterloo.ca). Please submit your application package electronically as a single pdf file to Dr. Fereidoun Rezanezhad (frezanez@uwaterloo.ca). In your application email, please include "Landfills-PhD#_yourname" in the subject line and attach a single PDF file that contains:

- Your motivation for applying to the position and your research interests
- Curriculum vitae
- Copy of transcript(s) (unofficial transcripts will be accepted at the application stage)
- Contact information for up to 3 references

Closing date: Applications will be reviewed as they are received. The positions will remain open until filled. **We thank all applicants for their interest, however, only those individuals selected for an interview will be contacted.**

The University is committed to implementing the Calls to Action framed by the Truth and Reconciliation Commission. We acknowledge that we live and work on the traditional territory of the Neutral, Anishinaabeg and Haudenosaunee peoples. The University of Waterloo is situated on the Haldimand Tract, the land granted to the Six Nations that includes ten kilometers on each side of the Grand River.

The University of Waterloo regards equity and diversity as an integral part of academic excellence and is committed to accessibility for all employees. As such, we encourage applications from women, persons with disabilities, Indigenous peoples (First Nations, Metis and Inuit), Black and members of racialized groups, individuals in the LGBTQ2+ communities, and others who may contribute to the further diversification of ideas.