



UNIVERSITY OF
SASKATCHEWAN

Toxicology Centre

Two Graduate Student Positions Available:

- 1. Autonomous Sensor Technology for Aquatic Monitoring**
- 2. Novel Aquatic Toxicity Tests for Hazard Characterization**

Two new graduate students (ideally Ph.D. students or strong M.Sc. candidates) are needed to work on a new oil sands research project. One student project will involve the use of autonomous sensor technology to monitor water quality in an experimental end pit lake (exposure characterization). The other student project will focus on the development of novel toxicity tests for better tracking the change in toxicity of water and tailings in the end pit lake over time (hazard characterization). Detailed descriptions of the two projects are provided below.

1. Autonomous Sensor Technology for Aquatic Monitoring

This project will focus will be on calibration, validation and deployment of an autonomous sensor network in an oil sands Demonstration Pit Lake (DPL) that can track and relay information on key water quality characteristics in real-time, and on the incorporation of the gathered information into water management decisions and future water quality models. The Smart Water Extreme sensor hardware is manufactured by Libelium, Spain, and is equipped with multiple sensors that measure several water quality parameters in real time and relays information via 3G/4G networks for advanced water monitoring. The sensors will also be used to characterize contaminant release from DPL tailings over time.

2. Novel Aquatic Toxicity Tests for Hazard Characterization

This project will focus on the development of novel, site-relevant aquatic toxicity tests that will help the oil sands company track changes in the toxicity of DPL water to aquatic organisms over time. This will include development of water tests for high salinity/TDS and sediment tests suitable for unconsolidated substrate. It is important to develop tests that can track water toxicity irrespective of salinity and sediment tests that are appropriate for fine tailings. In addition, this project will develop and validate unique tests for native species and tests for potential polyacrylamide polymer toxicity.

QUALIFICATIONS:

Candidates must be eligible for admission to the U of S Toxicology Graduate Program (<http://www.usask.ca/toxicology/student/graduate-program/index.php>). Ph.D. candidates must have completed an M.Sc. degree in a field related to environmental toxicology from a recognized university; M.Sc. candidates must have completed an undergraduate program in toxicology, biology, environmental science, or another natural/environmental science program. M.Sc. candidates must have some level of laboratory or field research experience. Strong academic credentials and good English writing skills are required. C++ programming skills will be required for the sensor project (some training provided).

START TIME & STIPENDS:

Positions are available starting in April or May 2019. Full scholarships (min. Ph.D. \$21,600/year; M.Sc. \$19,200/year) will be provided for up to four years.

TO APPLY:

Applications must include: (1) an up-to-date CV; (2) a cover letter outlining specific qualifications for and interest in the desired project; (3) a list of three academic references who can provide an evaluation of the candidate for this position; (4) a copy of up-to-date or most recently available academic transcripts (unofficial copies are initially acceptable); and (5) copy of certified English language test scores, if native language is not English or prior academic degree(s) were not obtained from an English language program. An interview (in person or Skype) will be required for short-listed candidates. Only short-listed candidates will be contacted.

Please send applications and direct inquiries to:

Karsten Liber, U of S Toxicology Centre, at karsten.liber@usask.ca