

## Job Description

<b>JOB TITLE:</b>	Ecotoxicology Research Technician	<b>DATE:</b>	February 6, 2016
<b>REPORTS TO:</b>	Prof. Mark Servos		
<b>JOBS REPORTING:</b>	Professor		
<b>LOCATION:</b>	Biology 2		
<b>GRADE:</b>	USG 9		
<b>DEPARTMENT:</b>	Biology		

**PRIMARY PURPOSE:** The candidate will provide technical expertise for execution and management of research projects related to assessing the impacts and risk of emerging threats to aquatic ecosystems. The candidate will manage project deliverables and provide leadership and supervision for experimental and field experiments/collections, analytical instrument operations, and data analyses, including QA/QC and HQP training programs.

**KEY ACCOUNTABILITIES:**

*Include 3-4 key accountabilities of the role. These key accountabilities should reflect 80%-90% of "what the job does not the "how".*

1.	<p>The position will be responsible for planning and management of laboratory operations in the area of environmental toxicology and chemistry. The position will organize, conduct and support a variety of research projects on ecotoxicology at sites in canaa and internationally. The candidate will provide functional direction, including advice, coaching and leadership to graduate students, technicians, and visiting scientists on the use and operation of the field and laboratory equipment. The candidate will interact extensively with a variety of students, clients, vendors and researchers in the laboratory as well as inside and outside of the University (typically &gt;15 at any one point in time). They will aslo assist with implementation of training workshops and programs such as CREATE.</p> <ul style="list-style-type: none"> <li>• Assistance in planning, designing, set-up and monitoring of research projects.</li> <li>• Coordinate safety and compliance training and procedures for lab operations.</li> <li>• Hire and oversee the work of casual employees (e.g. contractors, term work students, work study students).</li> <li>• Support and participate in technical training (e.g. demonstrations) for graduate and undergraduate students and visiting fellows and researchers.</li> <li>• Coodination and maintance of data bases for the lab's generated data.</li> <li>• Contribution to the preparation of scientific reports and articles. Conduct literature searches, review and prepare manuscripts and make informal and formal presentations.</li> <li>• Make scientific and technical presentations at local, national and international meetings.</li> <li>• Take leadership in the coordination, administration and implementation of training programs,including CREATE.</li> </ul>
2.	<p>The candidate will independently resolve problems relating to the preparation and implementation of research projects including the sampling (laboratory and field) of biological and environmental samples, preparation and analyses of biochemical and trace contaminants in complex environmental matrices. The position will oversee and ensure the quality of data and the safe operation of the laboratory and field operations.</p> <p>Laboratory Operation: The position will lead the development and validation of methods for analysis for trace contaminants such as industrial contaminants, pesticides, pharmaceuticals and personal care products found in the environment as well as wastewater. They will ensure the operation and maintenance of an advanced trace analysis laboratory for extraction, clean-up and analysis of organic contaminants, including the maintenance, operation and troubleshooting of instruments, computers, nitrogen generators and related support equipment. The position requires a detailed knowledge of chromatography and mass spectrometer systems to develop and perform novel and innovative methodologies.</p>

## Job Description

	<ul style="list-style-type: none"> <li>• Application of advanced sample collection methods for environment matrices including water, wastewater, sediment and biota for trace organic contaminants.</li> <li>• Preservation of samples to ensure quality, e.g., surrogates spiking, blanks, prevention of biological activity, etc.).</li> <li>• Application of sample preparation, extraction and derivitization techniques for trace organic contaminants. Use of solvent, solid phase (SPE) and accelerated (ACE) extraction and Autotrace techniques.</li> <li>• Application of chromatographic separation techniques for separation and isolation of specific analysts (liquid chromatography, fraction collectors, gel permeation, etc.).</li> <li>• Quantification of trace organics using advance mass spectrometry including GC-MS and LS-MS/MS instrumentation. Specifically, the operation and maintenance of GC-MS (e.g. Agilent GC-MSD) and LC-MS/MS (e.g. MDS Sciex API 3200 Qtrap and Agilent 6460) instruments.</li> <li>• Use of data acquisition software (e.g. Analyst) and management of the research databases.</li> </ul> <p>Field Operation:</p> <p>The position will be responsible for the safe coordination of field sampling and operations supporting collection of environmental samples for bioassessments as well as setting up and execution of laboratory based experiments.</p> <ul style="list-style-type: none"> <li>• Collection of biota (e.g. algae, invertebrates, fish) from aquatic environments. Applying standardized techniques to sample biota for community, population and biochemical endpoints.</li> <li>• Coordination of projects to collect wild fish for selected endpoints using electrofishing and netting techniques. Maintain certification for fish collection, handling and electrofishing techniques</li> <li>• Coordination of lab based bioassay and field caging experiments with biota (e.g. fish), including set-up, sampling and monitoring.</li> <li>• Ensuring fish collection licencing/permit requirements and animal care protocols.</li> <li>• Ensures proficient basic field collections and operations, including safety, driving of vehicles (trucks) and trailers, water samplers, sediment cores and grabs, D-nets, fish collections such as nets and electrofishing.</li> <li>• Support, plan and lead biological field sampling using a working knowledge of sampling techniques for water, fish and invertebrates, as well an ability to support laboratory and field experimentation (e.g. caging studies) is necessary.</li> </ul>
<p><b>3.</b></p>	<p>The position will oversee and ensure the quality of data, compliance and the safe operation of the laboratory. With minimal supervision the incumbent will maintain the equipment and instrumentation and ensure QA/QC of laboratory and field operations. This will include the purchasing, maintenance, operation and installation of a wide variety of measurement devices associated specifically with trace chemical analysis or organic contaminants in water, wastewater, sediments and biological samples. The incumbent is responsible for the monitoring and maintaining of the proper functioning of the analytical and ecotoxicology laboratory including related field sampling equipment. They are responsible for sample planning, control and reporting of results along with QA/QC. The incumbent will also interact and manage research deliverables with numerous researchers and students within the research group, and collaborators within the University of Waterloo and outside (academia, industry, government) nationally and internationally.</p> <ul style="list-style-type: none"> <li>• Ensuring Quality Assurance and Quality Control (QA/QC) and Good Laboratory Practices (GLP) on all lab and field procedures. Ensure routine maintenance of equipment.</li> <li>• Write and maintain the technical procedures (SOPs) and records for all techniques including QA/QC procedure and Good Lab Practices (GLP).</li> <li>• Oversee purchasing and budgeting for lab operation and field research facilities (ranging from \$200K to &gt;\$500 M/year).</li> <li>• Ensure maintance of lab infrastructure (estimated value&gt;&gt;\$2M)</li> </ul>

## Job Description

	<ul style="list-style-type: none"> <li>• Preparation of invoices for analytical services (typically ranging from \$1K-\$50K/project).</li> <li>• Demonstration of proficient basic laboratory chemical and biochemical skills, including safety, reagent handling, pipetting, mixing of solutions, operation of balances, fume hoods, gas cylinders.</li> <li>• Ensure and oversee safe operation of laboratory and field based research and training in areas of responsibility.</li> </ul>
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### POSITION REQUIREMENTS:

*If hiring today, what would be the minimum requirements?*

**Education:** MSc in environmental chemistry or environmental toxicology

**Experience:** 5 years of experience doing trace organic contaminant analysis and toxicology in an environmental laboratory

**Technical:** Experience and expertise in environmental trace organic contaminants analysis including the operation and maintenance of extraction/clean-up equipment and instrumentation such as a GC-MSD and LC-MS/MS. Method development, QA/QC and GLP for trace analysis and ability to present and prepare reports of data. Understanding and experience in project planning, budgeting and management. Ability to operate a laboratory and field sampling/collection programs safely and efficiently for environmental matrices including wastewater, water, sediment, benthos and fish. Ability to administer, organize, and lead training workshops and programs.

MS Word	Excel	PowerPoint	Other
Proficient	Proficient	Proficient	Analysist, SPSS, Sigma Plot

### NATURE AND SCOPE:

- **Interpersonal Skills:** The position will require strong interpersonal skills in order to manage laboratory and field operations that will include interactions with numerous clients, vendors, graduate students and researchers. These interactions require professionalism, patience and considerable judgement. Examples include the discussion of research plans and technical requirements with researchers, the negotiation with vendors for instruments and equipment (often with hundreds of thousands of dollars), the training of students and scientific collaborators, discussions with research partners in government and industry, setting work schedules, etc. Internally the person will mainly obtain action, reach agreement and negotiate solutions with other key personnel. Externally they deal with and influence clients, suppliers and collaborators (researchers).
- **Level of Responsibility:** The job has specialized work with some supervision of others (casual hires/contractors) but provides considerable guidance and authority to support others (e.g. clients, students). The position will require the safe operation of the laboratory and field operations, management of work load, training of staff, students and collaborating researchers, maintenance of over \$2M worth of advanced instrumentation. The incumbent will be required to develop new and novel analytical methodologies using advanced techniques and instrumentation (e.g. LC-MS/MS); ensure quality (QA/QC) and manage the reporting. They will review and manage budgets and prepare invoices for lab services. They will participate in the administration of major training initiatives and programs.
- **Decision-Making Authority:** Although the person will answer to the senior researcher for overall scientific direction, they will have considerable leadership for operation of the lab, budgeting, invoicing and purchasing. They will have signing authority on selected operational accounts related to lab and field management (in the range of \$100K/year) and manage research accounts (in the range of \$100K->\$1M/year). They will schedule use of instrument and equipment in the lab. They will direct and hire junior staff (short-term contracts) and temporary help (such as summer students). They will oversee safety and lab/field operations (set priorities and direct work). The incumbent will be required to do considerable problem solving and work independently with minimal supervision. They will be expected to address problems and seek solutions on their own and come to the supervisor with options. The position has responsibility for ensuring the operation of several instruments worth several millions of dollars that are very sensitive and require constant care and maintenance. The QA/QC requires considerable problem solving and technical knowledge as well as judgement. Poor performance would jeopardize these expensive instruments requiring extensive cost and lab down time (operational costs).
- **Physical and Sensory Demands:** Although normal days would require slight fatigue etc, some periods of time (field operations) would require moderate effort (fatigue and risk). The position requires the person to balance many conflicting demands and priorities. There will be a significant amount of personal interaction with a wide variety of different infrastructure users and there

## Job Description

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will be numerous deadlines related to operation of the equipment and reporting. The person will work in the laboratory with loud continuous noise where hearing protection may be required. Lab work requires the use of solvents and chemicals. Field work may require long hours and adverse weather conditions and use of boats, electrofishing gear, driving of small trucks and trailers. The work will require the handling of live animals, wastewaters and environmental samples.

- **Working Environment:** The position will be located primarily in the ecotoxicology laboratories of the Department of Biology and will include working in the Department of Biology Wet Lab as well as frequent field trips often under adverse weather conditions. The position requires work around water (rivers, lakes and in the laboratory) and remote areas. The maintenance and operation of the field infrastructure will require a significant amount of time in the field occasionally requiring irregular and extended work hours during field or laboratory experimentation. There will be some travel required to field locations, workshops and conferences. The majority of the work is in the advanced analytical contaminants lab and part of the time will be associated with office management and report writing, etc. There is potential exposure to hazardous chemicals and situations in the laboratory, Wet Lab and field situations.