

ENVIRONMENT SECTOR

Biotechnology Research Institute

INFORMATION

www.irb-bri.cnrc-nrc.gc.ca



ENVIRONMENTAL AND ANALYTICAL CHEMISTRY

BRI's Environmental and Analytical Chemistry Group is a multidisciplinary team of chemists, biochemists, and chemical engineers. We specialize in developing tools to understand chemical and biochemical processes in the environment.

Our Research Activities

- ▶ Biochemical mechanisms by which microorganisms break down or immobilize recalcitrant pollutants (e.g. chlorinated solvents (TCE, PCBs), petroleum products (PAHs), energetic chemicals (HMX, RDX), heavy metals, organometallics, and new emerging chemicals (NDMA)).
- ▶ Studies of the ultimate fate of pollutants, their impact on the environment, and the risks they pose to the biosphere.
- ▶ Chemical investigations of 'green' chemistry for developing sustainable industrial processes and renewable energy from biomass (esp. clean fuels such as hydrogen).

Our Services

We offer solutions to environmental problems, which include:

- ▶ Identification, quantification, and monitoring of pollutants and compounds.
- ▶ Determination of pollutant degradation pathways by microorganisms.
- ▶ Fate, impact and risk associated with environmental contaminants and new substances or products.


We carry out both *in vivo* and *in vitro* assays suitable for on-site assessment. Our toolkit includes LC/MS-MS, SPME/GC-MS, SPME/HPLC, CE/MS, SFE, AA, and several other biochemical techniques.

Research Examples

- ▶ Study of the microbial degradation pathways of the explosives RDX and HMX in the environment, in collaboration with the Canadian Department of National Defence and the U.S. Air Force, and funded by the U.S. Strategic Environmental Research and Development Program (SERDP). Selected as project of the year (2003) in environmental cleanup by SERDP, making the NRC the first non-U.S. institution to win this award.
- ▶ Provide understanding of the environmental fate and effects on climate change of new emerging chemicals such as N-nitrosodimethylamine (a by-product of tobacco and food industry, water chlorination and rocket fuels). In collaboration with the Canadian Department of National Defence.
- ▶ Analysis of metals and organometallic compounds in soil/wastes, water, and biological matrices (useful for pharmaceutical, food, mining, and electrochemical industries). Collaborators include: McGill University, Biosciences, and Technorem Inc.
- ▶ Analysis of PAHs, C₁₀-C₅₀, MTBE, fatty acids, and their degradation products in terrestrial and marine environments, with government (ministère de l'Environnement du Québec, Environment Canada) and private partners (Golder Associates, MDS Consultants, Total Fina-France, Technical University of Berlin and Prometic).

Our Business Approach

We are flexible, tailoring our collaborations to address the needs of our partners. We engage in service contracts and license out our technologies. With the BRI, you have access to advanced technologies and a broad diversity of researchers who publish regularly in leading scientific journals.



"Our analytical chemists have the skills, equipment, and experience to provide assistance in solving your environmental problems. This includes identification and quantification of pollutants, determination of biotransformation pathways, their fate, and the impact of these toxic substances."

Environmental and Analytical Chemistry Jalal Hawari, Ph. D.

Group Leader

Tel.: (514) 496-6267

Fax: (514) 496-6265

jalal.hawari@cnrc-nrc.gc.ca

Biotechnology Research Institute - NRC

6100 Royalmount Avenue

Montréal, Québec

H4P 2R2 Canada

Tel.: (514) 496-6250

Fax: (514) 496-5007

www.irb-bri.cnrc-nrc.gc.ca

irb-bri@cnrc-nrc.gc.ca



Contact us for more details.



National Research
Council Canada

Conseil national
de recherches Canada

Canada