

# Fundamentals of Environmental Risk Assessment

April 9—11, 2014, Sudbury, Ontario



## A world-class course based on the Sudbury story

The Sudbury region has a long, rich history in mining and metal processing, with a parallel history of both environmental degradation and environmental rehabilitation and recovery. For almost a decade, it was the subject of one of the world's largest environmental risk assessments.

This three-day intensive course will teach participants the fundamentals of environmental risk assessment, using world-class expertise and examples borrowed from the Sudbury story and from elsewhere around the world. It will provide participants with a detailed introduction to the principles of both human health and ecological risk assessments. The course will cover the scientific background as well as the regulatory environment behind risk assessments, and will teach participants how to evaluate, communicate and manage these risks. Examples will focus on the mining industry in Ontario, but the course will be useful for small to large projects across resource-based industries and regulatory boundaries.

## Who should attend?

This course will be of interest to professionals responsible for managing or communicating environmental risks, or wish to understand the science behind their assessment. Participants may include:

- environment professionals from the mining sector, including environmental coordinators, technical staff, mine development teams, tailings facility supervisors, mine managers and plant supervisors;
- environmental professionals from other resource-based industry sectors including forestry, transportation and energy development;
- decision-makers from regulatory agencies, First Nations organizations and municipalities who must review and evaluate environmental risks.

## What will you get out of it?

By the end of the course, participants will:

- have a deeper understanding of concepts, terminology and approaches of environmental risk assessments, including both human health and ecological risk assessments.
- understand the scientific background behind environmental hazards and exposures, including the fundamentals of toxicology.
- be aware of the regulatory framework, within Canada and within Ontario.
- be able to develop the risk problem formulation which forms the blueprint for the detailed risk assessment,
- understand how to best communicate environmental risk and manage it.

## Educators

*Chris Wren, PhD,  
LRG Environmental*

*Daniel Campbell, PhD,  
Director—EMR, MIRARCO*



## About Your Educators:



### Christopher Wren, PhD

Christopher has been involved with environmental impact assessments and risk assessment for almost 25 years, with a focus on the mining sector. He directed the Sudbury Soils Study from 2003 to 2006, one of the largest human health and ecological risk assessments in Canada. In 2012, he edited a textbook *Risk Assessment and Environmental Management: A Case Study in Sudbury, Ontario*. He is a partner in LRG Environmental, a consulting firm in Grey County, Ontario.



### Daniel Campbell, PhD

Daniel is the director of the Environmental Monitoring and Rehabilitation group at MIRARCO, a not-for profit research company, and also an assistant professor in the Department of Environmental Studies at Laurentian University. He conducts applied environmental research, mostly in mine rehabilitation, in association with the Vale Living With Lakes Centre.

### Guest Speakers:

**Al Douglas**, Ontario Centre for Climate Impacts and Adaptation Resources.

**Stephen Monet**, City of Greater Sudbury.

## Course Outline

### Introduction to Environmental Risk Assessment

- *Risk assessment paradigm*
- *Basic Concepts*
- *Regulatory framework and key guidance documents*

### Case Study in Problem Formulation

- *Conceptual site model (HHRA and ERA)*
- *Selection of chemicals of concern*
- *Selection of valued ecosystem components*

### Fundamental Concepts in Toxicology

- *Mammalian and avian toxicology*
- *Aquatic toxicology*

### Human Health Risk Assessment

- *Threshold vs. non-threshold chemicals*
- *Exposure pathways, data collection and models*
- *Exposure models: probabilistic and deterministic*

### Ecological Risk Assessment

- *Receptors and valuable ecosystem components*
- *Exposure pathways*
- *Selecting toxicity reference values*

### Risk Communication

### Risk Management

### Environmental Rehabilitation

### Climate Adaptation for the mining sector

Course fee: \$1,921.00 (includes HST)

### Includes

- A comprehensive set of course materials, including a copy the book, *Risk Assessment and Environmental Management: A case Study in Sudbury, Ontario*.
- Lunch and refreshments served each day

### The course is being held at the

Willet Green Miller Centre  
Room #B4048 (4th floor)  
933 Ramsey Lake Road  
Sudbury, Ontario

Travel arrangements and accommodations are the participants responsibility. A list of hotels can be provided upon request.

Maximum of 25 participants. We are hoping to close registration by Friday September 13, 2013.

### FOR MORE INFORMATION, CONTACT:

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### TO REGISTER, CONTACT:

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