

# REGISTRATION

## I HEREBY REGISTER TO PARTICIPATE IN THE WORKSHOP "MINE WATER TRACER WORKSHOP"

Please check the appropriate fields

All Workshop fees are given in Canadian Dollars

	REGULAR	GOVERNMENT/ ACADEMIC	IMWA	STUDENTS
Symposium	\$150	\$150	\$140	\$130
Course*	\$1,500	\$1,000	\$1,000	\$600
Field	\$200	\$200	\$175	\$150
<b>TOTAL</b>	<b>\$1,850</b>	<b>\$1,350</b>	<b>\$1,315</b>	<b>\$880</b>

\* Early registration: Register for all three sections by December 15, 2011, and receive a **\$75 DISCOUNT**.

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Name, Given Name: \_\_\_\_\_

Institution/Company: \_\_\_\_\_

Street/PO Box: \_\_\_\_\_

City, Province: \_\_\_\_\_

Postal Code: \_\_\_\_\_

Telephone: \_\_\_\_\_

Fax: \_\_\_\_\_

Email: \_\_\_\_\_

IMWA Membership Number: \_\_\_\_\_

I want to give a 25 minute talk during the symposium.

Title: \_\_\_\_\_

I agree with the fact that my personal data will be used for the planning of this workshop by CBU, NSCC and IMWA. Your data will not be shared with third-parties.

# REGISTRATION

## SYMPOSIUM (JANUARY 24 ONLY)

Regular	\$150
IMWA members	\$140
Students	\$130

## TRACER COURSE (JANUARY 25-26)

Regular	\$1,500
Academic	\$1,000
Government Agencies	\$1,000
IMWA members	\$1,000
Students	\$600

## FIELD EXERCISE - TRACER DILUTION METHOD (JANUARY 27 ONLY)

Regular	\$200
IMWA members	\$175
Students	\$150

## GENERAL INFORMATION:

Email: [tracer@minewater.ca](mailto:tracer@minewater.ca)

Website: [www.minewater.ca/tracer](http://www.minewater.ca/tracer)

## REGISTRATION

Please register on the attached registration form or by email by January 4, 2012. With confirmation of your registration, you will receive an invoice and further information.

## PARTICIPANT CANCELLATION

In case of participant cancellation, a full refund will be provided with written notification prior to December 23, 2011. Cancellation between December 24, 2011 and January 18, 2012, will result in a 50% handling charge. There will be no refund after January 18, 2012.

## VENUE

The workshop will take place at the Verschuren Centre for Sustainability in Energy & the Environment at Cape Breton University, 1250 Grand Lake Road, Sydney, Nova Scotia. Room CS-104.

CAPE BRETON UNIVERSITY  
VERSCHUREN CENTRE FOR  
SUSTAINABILITY IN ENERGY & THE ENVIRONMENT

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## Mine Water Tracer Symposium and Tracer Technique Course

### JANUARY 24 - 27 2012

# PROGRAM

# COURSE DESCRIPTION

## JANUARY 24, 2012

Mine Water Tracer Symposium

If you want to give a 25 minute presentation, please send us your presentation title.

## JANUARY 25, 2012

Tracer Technique Course

- Introduction
- Tracer types
- Preparation of Tracer tests
- Legal Questions/Permission

## JANUARY 26, 2012

Tracer Technique Course

- Implementation
- Evaluation
- Examples

## JANUARY 27, 2012

Field Exercise (Tracer Dilution Method)

Please bring your own safety equipment

## RECOMMENDED LITERATURE

Field M S. 2003. Tracer-Test Planning Using the Efficient Hydrologic Tracer-Test Design (EHTD) Program, vol. EPA/600/R-03/034. Washington: U.S. Environmental Protection Agency - Office of Research and Development; National Center for Environmental Assessment: 175.

Käfl W. 1998. Tracing Technique in Geohydrology. Rotterdam: Balkema: 581.

Leibundgut C, Maloszewski P, Külls C. 2009. Tracers in Hydrology. Oxford: Wiley-Blackwell: 432.

Wolkersdorfer Ch. 2008. Water Management at Abandoned Flooded Underground Mines - Fundamentals, Tracer Tests, Modelling, Water Treatment. Heidelberg: Springer: 466.

Tracer tests are a means to investigate the flow and the hydrodynamic characteristics of ground or surface water. They are an established technique in hydrological and hydrogeological investigations used for over a century and are an important tool in water related investigations. There are two general types of tracer investigations commonly used today: natural or artificial tracer tests. In the first case, substances that are already contained in the water are analysed and the results interpreted. In the second case, a substance is injected into the water and its time-concentration development is used to characterize the flow of the water. This course will focus on both, general aspects of tracer tests as well as the specific requirements for mine water tracer tests.

Initially, the course will focus on an introduction to tracer tests. This introduction provides an overview of the use of tracers and which questions can be answered by means of tracer tests. Furthermore, the introduction covers the differences between natural and artificial tracer investigations and which substances can be used in each of those two cases. Most of the tracers used as natural or artificial tracers will be introduced and their advantages and disadvantages as well as prerequisites for their use discussed. In addition, the course will outline which analytical techniques for identifying those tracer substances should be employed.

Key for a successful tracer investigation is a thorough planning and preparation of the test. Consequently, the course will introduce the necessities for a successful tracer test, such as selection of the appropriate tracer, calculation of the tracer amount to be used, accurate selection of sampling sites, and general requirements. Furthermore, a short introduction to the legal requirements for conducting a tracer test will be given. After a successful tracer test, the evaluation of the data is imperative; therefore, the course will examine different techniques to evaluate tracer test results and breakthrough curves. The different techniques will be discussed and the advantages and disadvantages of those methods will be outlined.

At the end of the course several case studies will be presented. The case studies are the three typical situations for tracer tests: surface water, flow, and mine water tracer tests. Finally, a field exercise rounds out the course. During the field exercise, a flow measurement is conducted by means of a tracer dilution method.



SENDER:

TITLE, NAME, GIVEN NAME

INSTITUTION/COMPANY

STREET ADDRESS/PO. BOX

CITY, PROVINCE

COUNTRY, POSTAL CODE

**CAPE BRETON UNIVERSITY  
MINE WATER REMEDIATION & MANAGEMENT  
PROF. DR. CHRISTIAN WOLKERSDORFER  
PO BOX 5300  
SYDNEY, NS, B1P 6L2  
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