



the 23rd Annual Short Course in:

CONTAMINATED SITE MANAGEMENT *Theory, Practice & Outdoor Field Demonstrations*

June 4 - 8, 2018 Toronto, Ontario, Canada

GOwen Environmental and the International Association of Hydrogeologists present Contaminated Site Management, a comprehensive course that provides a solid theoretical and practical foundation in contaminated site management. The course has been developed especially for individuals who manage, regulate, investigate, remediate, or are impacted by contaminated sites. Managing these sites is a multidisciplinary task, therefore, integrating several disciplines is necessary to efficiently and economically manage or make decisions regarding site issues.

THE ONLY CONTAMINATED SITES MANAGEMENT COURSE YOU WILL EVER NEED!

contaminatedsite.com



Registration Includes:

- 5 days of in-depth discussions by 15 leading environmental, soil, sediment and groundwater experts representing academia, consulting, and government from across North America. These experts will provide a comprehensive overview of hydrogeology and geochemical principles, site assessment procedures, risk assessment and risk management tools, remediation technologies, and management issues relating to contaminated and hazardous waste sites.
- Networking Lunch at Outdoor Demonstration Day
- 2 Evening optional computer based workshops on computer modelling and environmental management support software. The workshops will incorporate established and innovative computer modelling and support software used in groundwater characterization and remediation; risk assessment; environmental decision support; and contaminated site management.
- 1,200 page notebook and downloadable online resource folder.
- 1 half-day of hands-on technical demonstrations on Site Characterization and Remediation Technologies.
- 4.7 Continuing Education Units (CEUs)

COMPARE THE CONTENT to other Courses, COMPARE THE VALUE - No other Course of this kind gives a greater value for the registration fee.

INTRODUCTION

OVER THE LAST 35 YEARS, countries around the world have developed and implemented guidelines and standards for the investigation, mitigation, and remediation of contaminated properties. In all sectors of the economy, high profile contaminated sites, human health issues, litigation, and enormous cleanup costs have heightened the awareness of environmental issues relating to contaminated properties. Contaminated soil, sediment or groundwater in prime real estate and sensitive ecological locations has resulted in the loss of millions of dollars due to lack of development or ineffective management of these properties.



GOwen Environmental (www.contaminatedsite.com) was founded to provide specialized and leading-edge environmental training and networking through courses, conferences, and workshops. This course was developed to provide a medium for the transfer of unbiased information and technology to clean up contaminated properties. The course has evolved over the last eighteen years into an internationally recognized solution-based training program that brings together participants, regulators, consultants, and academics from across the globe.



International Association of Hydrogeologists (www.iah.org) is an international organisation for scientists, engineers and other professionals working in the fields of groundwater resource planning, management and protection. It was founded in 1956 and has grown, with the increasing social and environmental importance of groundwater, to a membership of more than 3,500 in more than 135 countries.

This week-long course allows for a half-day of outdoor seminars to demonstrate the various site characterization and remediation technologies currently being used on sites across North America today. Two optional evening seminars will provide the attendee with hands-on computer workshops to demonstrate the application of environmental decision support software, groundwater modeling and risk assessment modeling tools. The Course is firmly established as far as content and instruction. The course is sponsored by one of the largest groundwater resource protection associations in the world and has received support and sponsorship from major environmental associations world-wide over the last twenty-one years. The instructors represent academia, government, and the private sector; all leaders in their respective fields. This framework provides for an unbiased transfer of information that provides individuals who own, regulate, investigate, remediate or are impacted by contaminated properties with a solid theoretical and practical foundation in contaminated site management. The management of these sites is a multidisciplinary task. This course integrates all the disciplines necessary to successfully, efficiently and economically manage or make decisions regarding these sites.

Course participants will receive theoretical and practical foundations, as well as important information regarding regulatory compliance aspects of contaminated site management. This knowledge will be coupled with a hands-on approach to understanding the tools and techniques for managing contaminated sites. Some experience is helpful, but not necessary, as the Course teaches basic principles before addressing more advanced topics.

Regardless of your level of expertise, the combination of information presented during this course will not be found elsewhere and will provide you with knowledge and confidence to effectively manage contaminated sites. This course will provide participants with the competitive edge required in this rapidly evolving field.

> This Course provides an unparalleled synthesis of technical information and applied knowledge in contaminated and hazardous waste site management.

INSTRUCTORS

Gareth Owen is the President of GOwen Environmental Limited and has spent the last 27 years training other environmental professionals in the discipline of contaminated and hazardous waste site management. Mr. Owen has managed more than 600 contaminated sites and worked on over 3,700 sites worldwide including site and risk assessments, remedial plan development and expedited site closures for sites contaminated with hydrocarbons, chlorinated solvents, heavy metals, and radioactive waste. Mr. Owen's principal responsibilities have included providing support to government agencies and multinational corporations in managing large and complex environmental programs and projects. His principal experience relates to contaminated site project management and closure as well as environmental program management. His decision in 2001 to no longer participate in the investigation or the remediation of contaminated sites as a consultant or contractor, ensures the provision of sound and unbiased technical and managerial support to all his clients. It also ensures no conflict of interest with any environmental consulting or contracting firm providing contaminated site management services.

Dr. Ken Howard, University of Toronto, is a hydrogeologist certified by the American Institute of Hydrology, chartered by the British Geological Society and registered as a Professional Geoscientist with the Association of Professional Geoscientists of Ontario, with broad experience in all aspects of groundwater resource evaluation, management and protection. As the Director of the Groundwater Research Group at the University of Toronto, he has worked on numerous applied projects in Canada, U.K., the West Indies, equatorial Africa and Australia. He has published over 50 articles on topics that range from numerical flow modeling and contaminant migration to environmental isotopes and borehole geophysics.

Elliot Sigal, B.Sc., QPRA is the President of Intrinsik Environmental Sciences Inc. and Intrinsik Health Sciences Inc. Mr. Sigal graduated with an Honours B.Sc. in Toxicology from the University of Toronto in 1988 and has over 25 years of experience in toxicology, human health and ecological risk assessment, and risk communication. Mr. Sigal has been responsible for leading risk assessment teams in determination of potential for exposure of and risk to receptors associated with complex contaminated sites, mining/smelting facilities, military base closures, underground storage tanks, incinerator/WTE emissions, landfill sites, consumer products and industrial processes. He has overseen and contributed to hundreds of risk assessments. including many successfully completed in compliance with federal and provincial regulations in Canada.

Dr. Paul Sibley is a Professor in the School of Environmental Sciences at the University of Guelph who specialises in the assessment of potentially contaminated environmental media (water, soils, and sediments). His current fields of research include sediment toxicology and risk assessment, invertebrate toxicology focusing on benthic invertebrate community assessments in streams and lakes, disturbance ecology and impacts of land use practices on aquaticterrestrial interactions. In the field of sediment characterization, his relevant research experience includes: collecting and processing site-specific water, sediment and soil samples for physical, chemical, and biological characterisation; analysis and interpretation of water, sediment, and soil quality data from field surveys and risk assessments; and development of provincial and federal water and soil quality guidelines and objectives. He has worked with metals, petroleum hydrocarbons, pesticides, polyfluorinated compounds, pharmaceuticals and personal care products, and other priority substances. Dr. Sibley has extensive knowledge of the fate and effects of contaminants in both aquatic and terrestrial environments.

Dr. Brewster Conant Jr., P. Geo. (Ontario) is an Adjunct Professor in the Department of Earth and Environmental Sciences at the University of Waterloo and has over 25 years of experience in hydrogeology and environmental consulting. He received a B.Sc. in Geology-Physics/Mathematics from Brown University in 1984, and received a M.Sc. and Ph.D. in Earth Sciences at the University of Waterloo in 1991 and 2001, respectively. He has designed, managed, and conducted hydrogeological investigations for contaminated site assessments; water supply protection; landfill assessments; evaluating agricultural best management practices; remediation; litigation; regulatory negotiation; and modeling studies. General areas of research interest are in physical and contaminant hydrogeology and in field methods and instrumentation. His main area of expertise and interest is in interactions at the groundwater/ surface water interface and the examination of flow, transport, and fate of contaminants passing through it. He has developed innovative field methods, instrumentation, and numerical techniques for assessing groundwater/surfacewater interactions including the use of temperature as a tracer techniques, infrared thermography, direct-push methods, and diffusion samplers. He has been an invited speaker at international scientific meetings and co-taught several training courses for USEPA.

Alek Hage, P. Eng. is the Vice President of EarthSoft Canada. EarthSoft's EQuIS software is the most widely used environmental data management software in the world. EarthSoft's large clients include SGS, Shell Oil, Dow Chemical, TransCanada, Teck, Barrick, CDM Smith, ERM, Arcadis, Golder Associates, 5 US EPA Regions, several US States, and thousands of other governments, industrials, and consultants/labs. Alek will be conducting the Environmental Data Management Workshop Jeff Daniel, P. Eng. is the Vice President of GHD Limited (formerly Conestoga-Rovers & Associates). Mr. Daniel manages GHD's surface water and environmental design groups and surface water/ sediment modeling group. Mr. Daniel has over 19 years of experience in the surface water and environmental fields. During his career, Mr. Daniel has focused on the investigation and cost-effective remediation of sediment projects of varying sizes, including a project in the central US where over 2 million tonnes of material has been removed: the Willow Run Creek Site in Michigan which involved the removal of approximately 370,000 cubic yards of contaminated sediments and surrounding impacted soil, and a sediment dredging design project on the Ottawa River which included dredging of over 225,000 CY of impacted sediment and dewatering using geotubes. Mr. Daniel is currently managing a major sediment assessment in West Virginia.

George (Bud) Ivey, B.Sc., CES, CESA,

P.Chem, EP is the President and Senior Remediation Specialist with Ivey International Inc.. He has over twenty five years of environmental assessment and remediation experience. travelled to over 40 countries, and has worked on more than 1,500 projects internationally. His background includes: Organic Chemistry, Geological Engineering, and a Master's Certificate in Project Management. His education and the school of hard knocks have provided him with a good foundation for assessing and remediating many of today's environmental challenges. Among some of his more notable accomplishments include; being one of the few ECO-CANADA Nationally Approved Instructors for delivery of professional development courses, holds several International Patents, and has won many environmental awards including: The Globe Award, North American Frost & Sullivan Award, Environmental Business Journal (EBJ) Awards (2), R.F Weston Award, and the MISTIC Award. He continues to conduct applied soil, solid waste, waste water, and groundwater research, and is currently working on several international remediation projects.

Logan Barrett manages Accuworx's Emergency Services division specializing in high hazard chemical releases and containment. Logan has extensive training in chemical fire-fighting, hazardous materials response, railway emergency response, clandestine lab mitigation, chemical security and crude oil releases. Logan has been contracted by various agencies across Canada to teach hazardous materials and emergency response techniques. With the ability to design structured curriculum and industry specific lesson plans, Logan's course content has proven to be extremely effective when applied to field scenarios. With over 2000 deployments, Logan has developed his reputation on an international scale for guick, efficient, and safe responses.

Kristian Doerken, B.A.Sc., M.A.Sc., PE (VA)

is is the Product Manager for Visual MODFLOW and AquiferTest at Waterloo Hydrogeologic. He has over a decade of experience providing practical water resource solutions to municipal, federal, and industrial clients across North America. He has managed and executed a wide variety of projects including subsurface investigations, groundwater site characterization and modeling, remediation, and restoration; flood evaluations; water supply planning; watershed management and modeling; and stormwater management. Kristian's mix of practical problem solving skills and water resources modeling expertise is driving our products forward and enables the delivery of cost-effective solutions to complex problems.

Harry Dahme is a partner in Gowling WLG's Toronto office and past leader of the firm's Environmental Law Group. He has practised exclusively in the area of environmental law since 1984, and has a solid reputation as one of the foremost environmental lawyers in Canada. He has acted for a wide variety of clients in dealing with such matters as contaminated lands, in developing corporate environmental due diligence programs, obtaining environmental approvals and providing expert opinion in respect of environmental matters.

Dr. David Jewett is the Director of the U.S. EPA's National Risk Management Research Laboratory, Ground Water and Ecosystems Restoration Division located in Ada, Oklahoma. Dr. Jewett leads a team of geochemists, environmental scientists, environmental engineers, hydrogeologists, microbiologists, and soil scientists conducting research and providing technical support related to site characterization and remedial technology development, evaluation, and implementation at hazardous waste sites in order to protect and restore ground water, surface water, and ecosystem resources. He is a hydrogeologist with over 30 years of site characterization and subsurface remediation experience in government, industry, and academia. His research interests include site characterization techniques, contaminant fate and transport, ground water flow and solute transport modeling, and ground water/surface water interactions. Dr. Jewett was a hydrologist specializing in applied research and technical support and the former Director of the U.S. EPA's Center for Subsurface Modeling Support before accepting the responsibilities as Chief of the Subsurface Remediation Branch.

INSTRUCTORS

Dr. David Reisman is currently a Senior Consultant and Technical Advisor and the previous Director, Engineering Technical Support Center, National Risk Management Research Laboratory, U. S. Environmental Protection Agency, Mr. Reisman worked for the U.S. Government from 1976-2012 with the National Park Service (Park Ranger). the National Institute for Occupational Safety and Health (Information Specialist), and in many positions with the Environmental Protection Agency (EPA). He served for several years as a Temporary Advisor to the World Health Organization (WHO) in Geneva, Switzerland, authored many environmental health criteria documents for both EPA and WHO, and published over 50 peer-reviewed journal articles, many in the area of remediation and mining influenced water treatment. David holds a Masters Degree in interdisciplinary environmental sciences from Miami University, and has completed additional graduate work in engineering at the University of Cincinnati. For over 15 years, David assisted in the development of risk assessment guidance for the EPA Office of Research & Development in the waste, ambient and drinking water and hazardous air pollutants areas. As Director of the EPA's Engineering Technical Support Center for almost 15 years, David worked on several hundred hazardous waste sites, conducted treatability and pilot technology studies, and assisted EPA regional personnel and contractors in site characterization, soil remediation, technology selection and treatability study design. David is the recipient of many Government awards and has received several medals for his outstanding work in supporting EPA's regional personnel.

COURSE TOPICS SESSION 1

The Course will meet daily from 8:30 a.m. to 5:30 p.m with two breaks in the morning of 15 minutes and two breaks in the afternoon for 15 minutes and a lunch break for 1 hour. Friday will begin at 8:30 a.m. and end at 3:30 p.m. Optional evening workshops will be on Monday, Tuesday from 7pm to 9pm.

Monday

June 4, 2018

Overview of Contaminated and Hazardous Waste Site Management | Gareth Owen

Principles of Contaminant Hydrogeology | **Dr. David Jewett**

Soil Chemistry of Hazardous Materials | **Dr. Derek Peak**

Practical Model Applications for Risk Assessment and Site Remediation | **Kristian Doerken**

Evening: Groundwater Modelling | **Kristian Doerken**

Tuesday

June 5, 2018

Site Characterization and Conceptual Model Development | Gareth Owen

Field Data Quality Control | Gareth Owen

Soil and Groundwater Characterization Tools and Techniques | **Dr. Brewster Conant Jr.**

Sediment Characterization Tools and Techniques | **Dr. Paul Sibley**

Environmental Data Management | Alek Hage

Evening:

Environmental Data Management - EDGE | **Alek Hage**

Wednesday

June 6, 2018

Overview of Human and Ecological Risk Assessment | **Elliot Sigal**

Health and Safety at Hazardous Waste Sites | Logan Barrett

Afternoon: Networking Lunch (Complimentary)

Outdoor Demonstrations of Contaminated Site Technology and Techniques

Outdoor demonstrations of site characterization and remediation technologies will be held at a location near the course from 12:30 p.m. to 4:30 p.m. Full-scale soil and groundwater remediation technologies, and drilling, geophysical, and sampling and analysis equipment will be demonstrated. The site is not contaminated and transportation will be provided. The temperature in early June in Toronto ranges from 10-25 C. Attendees should have appropriate apparel, such as rain gear, casual work clothes, and good walking shoes. Cameras and camcorders are permitted.





Thursday June 7, 2018

Soil Remediation Techniques and Technologies | **Dr. David Reisman**

Environmental Forensics | Dr. Terry Obal

Groundwater Remediation Techniques and Technologies | **Dr. David Jewett**

Sediment Remediation Techniques and Technologies | **Jim Moir**

Evening:

Surfactants Properties and Characteristics For Site Remediation | **George (Bud) Ivey**

Optional Evening Workshops and Lectures

Monday Evening

Groundwater modelling workshop will be held to demonstrate the application of environmental decision support software, and groundwater and risk assessment modelling tool. Participants in this workshop will become familiar with the input parameters required to build and calibrate groundwater flow models (Waterloo Hydrogeologic, Kitchener, Canada). Participants will be introduced to various graphical tools for evaluating well capture zones, determining preferred flow and contaminant migration pathways, and optimizing groundwater remediation systems.

Tuesday Evening

EarthSoft, Inc. will discuss the Data Management Multiplier for Environmental Consultants on how EQuIS Data Gathering Engine (EDGE) provides higher quality data for better decision support and data analysis, and increasing productivity and efficiency.

Course Materials

Students will receive over 1,200 pages of notes in an attractive binder and access to the online resource folder. In addition, they will receive a certificate of completion. It is recommended that course participants bring a knapsack or a carry-on bag to transport course materials.

Friday June 8, 2018

Contaminated Site Management

Environmental Law Applicable to Contaminated Sites | **Harry Dahme**

Continuing Education Units (CEUs)

The allocation is 3 CEUs for the first session, 2.7 CEUs for the second and 4.7 CEUs for the entire course. The CEUs are accredited by the International Association for Continuing Education and Training (IACET).



The course will be held in the **Yorkville Conference Centre**

150 Bloor Street West, Suite 201 Toronto, Ontario M5S 2X9

Conveniently located on the north east corner of Avenue Road and Bloor Street in the heart of downtown Toronto, the Yorkville Conference Centre features 8,000 square feet of premium meeting space. Enter the main doors to 150 Bloor Street West located behind the church on the corner. Proceed to the elevators. Exit on the 2nd Floor. Proceed to the Conference Center Signage and GOwen Environmental Limited.

The Center is surrounded by three (3) Toronto Transit Commission subway stops marked (M) on the map



REGISTRATION AND COURSE FEE

- Full Session Monday, June 4 to Friday, June 8
 - **Session 1** Monday, June 4 to Wednesday evening, June 6 after the Outdoor Demonstration Session.
 - Session 2 Wednesday morning, June 6 to Friday afternoon, June 8.

Registration

Monday, June 4 at 08:00 (Full session and Session 1)

Wednesday, June 6 at 08:00. (Session 2 only)

Advanced registration is strongly advised. Due to the hands-on nature of this Course (demonstrations, workshops, and lectures), enrolment is limited and applications will be accepted on a first come first served basis. The Course has been filled to capacity the past twenty two years.

Please register on-line through the Course Registration webpage or mail the downloaded application form with a cheque or training authorization by **May 31, 2018.**

For those requiring time to obtain authorization, we suggest submitting the same application form with payment to follow or registering online with a payment to follow option. Registered participants will receive confirmation of registration and information package.

Early Registration (payment received by April 20, 2018)	\$1,695 + \$220.35 (HST)
Member of Affliated Organization or Association*	\$1,695 + \$220.35 (HST)
Environmental Regulatory Agency Rate	\$1,495 + \$194.35 (HST)
Previous Course Attendees (5 spaces available)	\$895 + \$116.35 (HST)
Group Rate (5 or more) / Remote Community	\$1,595 + \$207.35 (HST)
Non-member	\$1,895 + \$246.35 (HST)
Single Session Rate (1 or 2 only / 3 days)	\$1,395 + \$181.35 (HST)

* Please contact us to determine if your Organization is affiliated with the Course or if they want to become an affiliate of the Course.

All Prices in Canadian Dollars

The full fee is due **April 20, 2018** for early registration and **May 31, 2018** for all other registration.

Cancellation for fees received before May 1, 2018 will be fully refunded. Cancellation for fees received after May 1, 2018 will have 50% of the registration fee refunded. Substitutions of course participants or deferred course attendance may be arranged.

The registration fee covers all course materials, breaks, use of computers and software in evening workshops, one networking lunch and the outdoor demonstration day.

For more information, please visit contaminatedsite.com

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scan and email to gowen@contaminatedsite.com

The full fee is due April 20, 2018 for Early Registration and May 31, 2018 for all others, unless prior arrangements for invoicing have been made. Substitutions of course participant may be arranged.

Cleaning Up the Mess (Excerpt from ECO Canada - Newsletter)

The Canadian contaminated sites sector has grown quickly over the past few years, driven by a combination of regulatory and economic pressures. In 2008, ECO Canada's Contaminated Sites Report - When Supply Does Not Meet Demand - affirmed that between 2004 and 2019, the federal government would commit up to \$4 billion to clean up properties that it owns or that fall under federal responsibility. This includes more than 4,400 federal contaminated sites as well as 28,000 non-federal properties.

In conjunction with high profile cases such as the BP oil spill, these industry-wide changes have led to heightened awareness on issues relating to contaminated sites, encouraging countries around the world to develop and implement stricter guidelines and standards for the investigation, mitigation and remediation of contaminated sites. However, like most environmental work, the skills needed to clean up these sites are multidisciplinary and require a unique set of cross-sectoral competencies from employees.

There are a number of environmental training facilities currently operating in Canada, but GOwen ENVIRONMENTAL is the only facility in the world that offers a one week indooroutdoor course covering all issues related to managing subsurface contamination, from theory to practice. The fifteen instructors leading the course come from all across North America with backgrounds in academia, private industry and government, and are recognized as leading experts and educators in their respective fields.

The course is a joint project between GOwen ENVIRONMENTAL, the Association for Environmental Health and Sciences and the International Association of Hydrogeologists and was founded to provide leading-edge environmental training and networking through courses, conferences and workshops. This year will mark the 16th anniversary of its annual Contaminated and Hazardous Waste Site Management Course, a comprehensive course that provides a solid theoretical and practical foundation in contaminated site management. The course integrates several different disciplines and has been developed specifically for individuals who manage, regulate, investigate, remediate or are impacted by contaminated sites.

Below is one of the many comments we have received about the course.

Subject: Great Course in Toronto !!

Please go to **www.contaminatedsite.com** to check-out the course comingup in Toronto. This is truly a worldclass course and this year it is held right in Canada! Perry Sarvas and Kip Hawley both attended and it was the best training they have ever had. This year looks even better! Feel free to call Perry or Kip if you want a participants perspective. I strongly recommend this course, especially for those who want some in-depth contaminated or hazardous waste site management training, contaminated site program or project management or risk-assessment. If you having been waiting a long time for training, I think you will be very pleased with this course.... fill-out your 15-11 form today since there is relatively little time to process your request!

Jim Gehrels

Groundwater Group Leader Northern Region Ministry of Environment & Energy