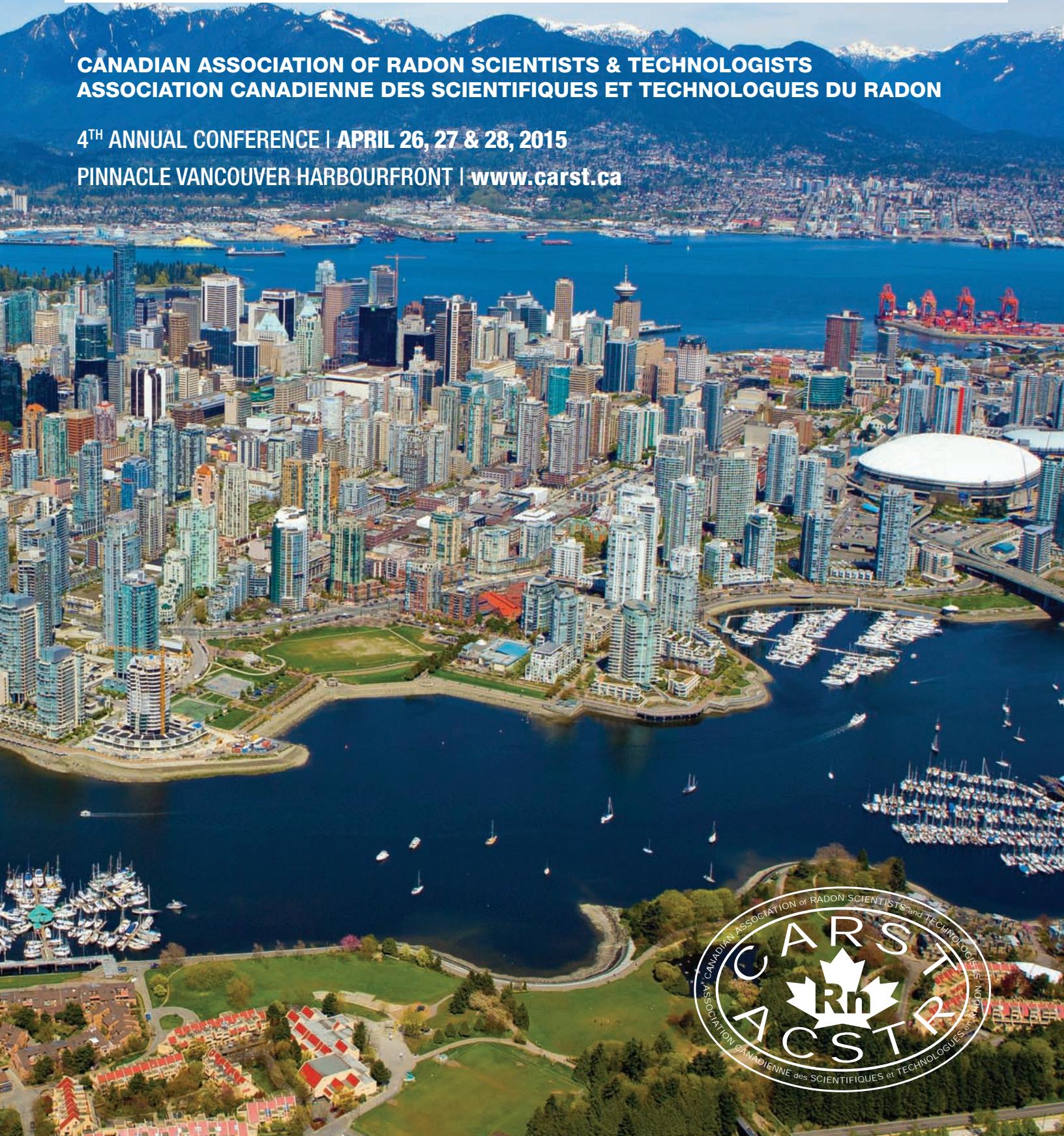


VANCOUVER CARST/ACSTR

CANADIAN ASSOCIATION OF RADON SCIENTISTS & TECHNOLOGISTS
ASSOCIATION CANADIENNE DES SCIENTIFIQUES ET TECHNOLOGUES DU RADON

4TH ANNUAL CONFERENCE | APRIL 26, 27 & 28, 2015

PINNACLE VANCOUVER HARBOURFRONT | www.carst.ca





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A leader in the research and development of innovative radon measurement and remediation technologies.

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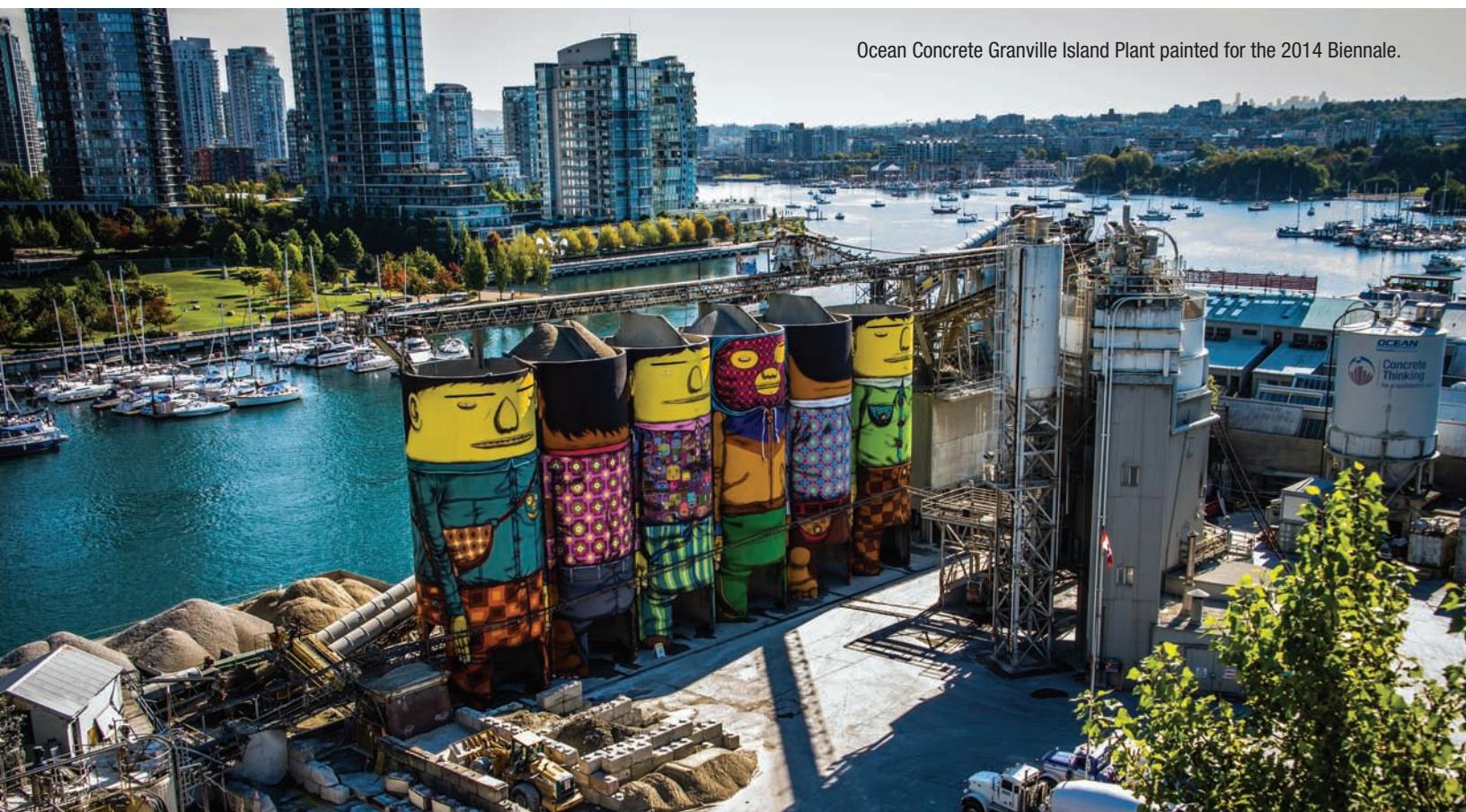
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CARST 2015 Goals



Dr. Sun-Yat Sen Classical Chinese Garden in Chinatown, Vancouver.



The Canadian Association of Radon Scientists and Technologists (CARST) is committed to:

- Promoting public awareness of radon measurement, radon mitigation and new construction radon reduction techniques.
- Ensuring quality standards are developed and adopted in radon measurement, radon mitigation and in construction of new radon reduction techniques.
- Providing a community for education, sharing of ideas, resources and research.
- Establishing an effective partnership between radon professionals in the field and other interested public and private organizations (such as Health Canada, Canada Mortgage and Housing Corporation, and others).

Members of CARST are individuals/companies who are involved or supportive of the radon industry in Canada. They have signed a Code of Ethics that states they will operate with a high standard of technical professionalism, will interact with others with a high standard of integrity and fairness and ethics.

Visit us online at www.carst.ca for a full listing of members and to find a radon professional.

CARST is a proud supporter of Cancer Survivors Against Radon (CanSAR). Visit their website www.cansar.org to find out how you can join in.





CARST/ACSTR CONFERENCE 2015

April 26, 27 & 28, 2015
Pinnacle Vancouver Harbourfront Hotel
1133 West Hastings Street
Vancouver, BC V6E 3T3



Canadian Association of Radon Scientists and Technologists (CARST)

Association Canadienne des Scientifiques et Technologues du Radon (ACSTR)

Membership levels available at basic and corporate rate. For more information on membership benefits and to join, visit www.carst.ca.

CARST/ACSTR is a nonprofit organization dedicated to encouraging, supporting and educating radon professionals in Canada. Direct inquiries may be sent to Pam Warkentin, CARST Executive Assistant, p_warkentin@carst.ca.

The CARST Board of Directors wishes to thank the generous contribution of many individuals in their efforts towards making CARST possible. In particular, the Board would like to acknowledge the support of Radon Environmental Management Corp. in the creation of this program.

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President Message

April 2015

I have never been as optimistic about the radon industry as I am right now. The CARST Board, administration and stakeholders have worked with such dedication and excitement over the past twelve months. Radon awareness and resulting activity is growing in leaps and bounds.

Some of the work we have been involved with in the past twelve months include; changes to the Provincial Building Code in New Brunswick, Alberta and British Columbia, the continued development of C-NRPP, the development of the new certification course 'Controlling Radon in New Homes in Canada' (CRNHC), the subsequent exam and the second year of Radon Action month (November) which included the combined efforts of CARST, Health Canada and the Lung Association on the Mike Holmes public service announcement and YouTube video. We now have deeper relationships with not for profit organizations such the Canadian Lung Association, provincial and national cancer associations, and with Health Canada and their provincial representatives.

We understand that the long awaited Ontario Bill 11 may not make it out of committee. In response to this, CARST, in partnership with other organizations, has hired a lobbyist and are focusing our efforts on making changes to the Landlord Tenant Act (to require certified testing) and the Ontario Building Code.

We have held or participated in numerous meetings with various levels of government and stakeholders, conducted TV and radio interviews, and worked on committees focused on improving building standards for new and existing construction.

CARST has provided C-NRPP with recommendations for the implementation of a listing for home radon alarms.

I would like to thank all our members who have donated their time and experience to creating the best year yet in the Canadian radon industry. On behalf of the CARST membership I would like to thank our Board of Directors and their families for their enormous contribution of volunteer hours, for their dedication and enthusiasm. The work they have done in the last year has been tremendous and the resulting increase in public awareness is contributing to our industry's growth.

I would also like to thank Pam Warkentin, our executive assistant, and her family, for the endless calls and emails that she so professionally manages all without ever getting angry with me.

ROBERT (BOB) WOOD
CARST 2015 President





Ready to become part of Canada's growing Radon Industry?

Why become C-NRPP Radon Certified?

- Receive training in the highest standard of excellence and ethical performance in the radon industry in Canada
- Belong to a list of nationally recognized professionals by Health Canada, national and provincial Lung Associations and the Canadian Cancer Society
- Access resources to maintain quality level of services

CERTIFICATIONS AVAILABLE



MEASUREMENT COURSE

This course is designed to teach you how to measure radon levels in a residential or commercial building.

MITIGATION COURSE

This course is designed to teach you the most effective way to manage radon concentrations within buildings, including diagnostic testing and the design and/or install of radon mitigation systems.

INSTALLER COURSE

This course is designed to teach you how to properly incorporate the new soil gas building code changes associated with new building construction.

CONTINUING EDUCATION

Keep up your certification with courses. All courses are C-NRPP approved and provide required credits.

Message du Président

Avril 2015

Je n'ai jamais été aussi optimiste au sujet de l'industrie du radon que je le suis maintenant. Le conseil de CARST/ACSTR, l'administration et les intervenants ont travaillé avec engagement et excitation dans les derniers douze mois.

La sensibilisation au radon et les activités en résultant ont augmenté par sauts et par bonds.

Une partie du travail effectué dans les douze derniers mois inclus; changements aux Codes du Bâtiment du Nouveau Brunswick, de l'Alberta et de la Colombie Britannique, le développement de C-NRPP/PNCR-C, le développement du nouveau cours de certification « Le contrôle du radon dans les maisons neuves » et de son examen ainsi que l'an deux du Mois d'action sur le radon et d'un effort combiné de CARST/ACSTR, Santé Canada et l'Association pulmonaire d'une annonce de Mike Holmes diffusée sur les services publics et sur Vidéo YouTube.

Nous avons maintenant des relations plus approfondies avec des entités à but non lucratif tel l'Association Pulmonaire Canadienne, les Associations provinciales et fédérale sur le Cancer et avec santé Canada et leurs représentants provinciaux.

Nous comprenons que le Projet 11 de règlement de l'Ontario ne passera pas l'étape du comité. En réponse à ceci, CARST/ACSTR en partenariat avec d'autres organisations ont engagé un lobbyiste pour recentrer les efforts pour modifier le Règlement sur la location immobilière (pour exiger une mesure certifiée) ainsi que le Code de Construction de l'Ontario.

Nous avons tenu ou participé à d'innombrable réunions de sensibilisation, réunions avec plusieurs départements différents, avec différents niveaux de gouvernement et intervenants, donnés plusieurs interviews radio et télé, et avons travaillé plusieurs mois sur des comités pour ajuster et améliorer les standards de construction pour les maisons neuves et existantes.

CARST/ACSTR ont fourni à C-NRPP/PNCR-C des recommandations pour l'inscription sur une liste d'alarmes radon dans les maisons. Nous avons aussi travaillé à mousser l'acceptabilité par C-NRPP/PNCR-C d'alarme radon dans les maisons.

J'aimerais remercier tous nos membres qui ont donné de leur temps et expérience pour avoir créé la meilleure année à date pour l'industrie canadienne du radon.

Au nom des membres de CARST/ACSTR, j'aimerais remercier les membres du Conseil et leurs familles pour leur énorme contribution en heures de bénévolat, pour leur implication et leur enthousiasme. Le travail qu'ils ont accompli durant la dernière année a été phénoménal et a résulté à augmenter la sensibilisation au radon et ainsi contribué à l'accroissement de l'industrie.

Je voudrais aussi remercier Pam Warkentin, notre directrice administrative, et sa famille, pour les innombrables appels et emails qu'elle gère de façon si professionnelle sans jamais se fâcher contre moi.

ROBERT (BOB) WOOD
CARST 2015 président





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Multi-Seal Technology

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RadonAway is pleased to introduce a new catalog created especially for Canadian radon professionals. Products shown in the RadonAway Canada catalog will be shipped from our Canada location for fast shipment and delivery. All other RadonAway products will be available for shipment from the U.S.



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CARST 2015

Code of Ethics

This is a guideline for professional conduct for members belonging to the Canadian Association of Radon Scientists and Technologists (CARST).

Any member found in breach of this Code is subject to disciplinary actions. This is a living document so it is subject to change and will be reviewed annually by members.

Interactions with Colleagues, Clients, and Others

- Members shall never knowingly mislead anyone, and shall have due regard for the safety and health of those who may be affected by work for which members are responsible.
- Members shall promote interest in and understanding of radon by the public, and shall not make untrue, false, deceptive or exaggerated statements regarding radon. Statements regarding radon by members shall have a sound scientific basis. Inaccurate statements concerning radon and radiation, when discovered, shall be clarified as soon as possible.
- Members will not falsely or maliciously injure the professional reputation of anyone.

Technical Professionalism

- Members shall provide services and products in accordance with the Code and in accordance with recommendations from Health Canada and the EPA.
- Members shall not attempt to practice in any field in which they are not proficient. A member shall be appropriately trained, licensed and/or certified in the field in which they are practicing.

- Members shall strive to improve their knowledge and skills, and shall endeavor to extend the effectiveness of the radon profession by sharing information and experience with others, and by contributing to the work of professional associations and the scientific and academic community.

Business Ethics

- Members shall strive for the highest standard of integrity and fairness. Members shall take care that credit for work is given to those to whom credit is properly due.
- Members shall protect the sources of confidential communications, provided that such protection is not itself unethical or illegal. Members will operate in accordance with the Personal Information Protection and Electronic Documents Act in their collection and use of individual's personal information.
- Members shall not engage in unlawful activities. Members shall not accept compensation, financial or otherwise, from more than one interested party for the same service or for services pertaining to the same work, without the consent of all interested parties.

Disciplinary Actions

If members are found to be in violation of this Code then disciplinary action will be taken in accordance with the violation. These measures may include:

- Request for resolving mistakes;
- Suspension, which includes removal of name from membership list for a specified period;
- Expulsion from Membership List.



Conference Program

SUNDAY APRIL 26

8:30 – 4:30 pm	Continuing Education courses (details page 12)
6:00 – 8:30 pm	Evening Wine + Cheese and Welcome to Vancouver Doug Nelson (BC Cancer Foundation), the Canadian Association of Radon Scientists & Technologists and Health Canada

MONDAY APRIL 27

Morning Sessions

HEALTH + RADON

8:00 – 8:30 am	Registration
8:30 – 8:45 am	Welcome to the 4th Annual CARST Radon Conference & Overview of the BC Lung Association RadonAware Program Scott McDonald (BC Lung Association)
8:45 – 9:15 am	Genome Instability is Breathtaking: the Effects of Alpha Radiation Exposure on DNA at a Molecular Level and Consequences to Cell Health Aaron Goodarzi (Canada Research Chair in Genome Damage and Instability Disease)
9:15 – 9:35 am	Bronchoscopic Innovations for Diagnosis of Early Lung Cancer Pierre Lane (BC Cancer Agency)
9:35 – 9:55 am	Public Health Policy for Radon in Canada Tom Kosatsky (BC CDC)
9:55 – 10:15 am	Radon Exposure and Risk of Lung Cancer Sandra Krueckl (Canadian Cancer Society BC)
10:15 – 10:45 am	Networking Break
10:45 – 11:00 am	Panel Discussion
11:00 – 11:30 am	Update on Health Canada's Radon Program Kelley Bush, Deepti Bijlani (Health Canada)
11:30 – 12:00 pm	CARST Annual General Meeting
12:00 – 1:30 pm	Luncheon and Keynote Speaker Christopher Molineux

Afternoon Sessions

EMERGING ISSUES + TECHNOLOGIES

1:30 – 1:50 pm	Politics 101 – Queens Park Steve Mahoney (Radiation Safety Institute)
1:50 – 2:10 pm	Radon Risk Management in the Workplace Winnie Cheng (Health Canada)
2:10 – 2:40 pm	Dynamic Radon Detection Over Measurement Grégory Jean (AYKOW France)
2:40 – 3:10 pm	Alternative Approaches to Sub Slab Depressurization in Reducing Radon Levels in Residential Properties, Commercial and Institutional Buildings While Controlling Energy Costs Jim Bagley (Levelton Consultants)
3:10 – 3:40 pm	Networking Break
3:40 – 3:55 pm	C-NRPP Update Pam Warkentin (C-NRPP)
3:55 – 4:10 pm	Take Action on Radon Update
4:10 – 4:45 pm	Presentation of Provincial Strategy Development Pam Warkentin, Anne-Marie Nicol (CARST)



TUESDAY APRIL 28

Morning Sessions

RISK COMMUNICATION

8:30 – 9:00 am	Experiences with Different Approaches to Involve the Citizen and Building Professional in Radon Protection in Austria Angelika Kunte (National Radon Centre of Austria)
9:00 – 9:10 am	An Overview of the European Radon Association James McLaughlin (ERA)
9:10 – 9:40 am	Alert But Don't Alarm Rebecca Coates (propertECO)
9:40 – 9:50 am	The UK Radon Association: the Development of an Active and Valuable Industry Martin Freeman (UK Radon Association)
9:50 – 10:15 am	How Politics May Affect the Health Awareness and Behaviour of a Population, Reducing Radon Induced Cancer in Norway Gunn-Berit Neergård (GEM Radon Detectors)
10:15 – 10:45 am	Panel Discussion
10:45 – 11:15 am	Networking Break
11:15 – 11:30 am	Mitigation Surveys We Realized Through Our Québec Lung Association Mathieu Brossard (Health Canada)
11:30 – 11:45 am	The Interior Health Daycare Sampling Experience Greg Baytalan (Interior Health Authority, BC)
11:45 – 12:00 pm	Educating School Personnel and Testing Alaska's Schools for Radon Arthur Nash (University of Alaska Fairbanks), Jim Burkhardt (University of Colorado-Colorado Springs)

Afternoon Sessions

LEGISLATION + CODES

1:30 – 1:50 pm	A Review of Radon Law and Policy in Canada Kathleen Cooper (CELA)
1:50 – 2:10 pm	Revisiting Canada's Radon Guideline Lisa Gue (David Suzuki Foundation)
2:10 – 2:40 pm	NRC Helps Integrating Radon Technology into the National Building Code Liang Grace Zhou, Frank Lohmann (National Research Council Canada)
2:40 – 3:00 pm	Improving Radon Requirements in the BC Building Code Zachary May (Building & Safety Standards Branch, Government of BC)
3:00 – 3:30 pm	Panel Discussion
3:30 – 4:00 pm	Networking Break
4:00 – 4:45 pm	Regional Breakout Working Groups

Meet the CARST 2015 Board of Directors

The 2015 CARST Board diligently supports efforts to bring radon awareness to the Canadian public to prevent exposure and save lives. We are committed to building the sustainable radon industry necessary to achieve these goals.

BOB WOOD President

Bob holds a Bachelor of Education, BA in Adult Education and Associate's Degree in Industrial Training. He has spent 30 years in the commercial/industrial sector as a plumber, project manager and in other management roles. Bob holds certifications with both C-NRPP and the NEHA-NRPP as both a Radon Measurement Technician and a Radon Mitigation Specialist. He is a founding member of CARST, has been on the Board of Directors since its inception, and has served as the President for the last two years.

Over the last year, Bob has created the first on-line Radon Measurement Course approved by C-NRPP, written by a Canadian for Canadians. This course is now approved for C-NRPP continuing education credits as well. Bob has qualified to be on the National Speakers List on radon and is a popular speaker at conventions. His passion is to make a difference in the lives of Canadians by spreading the word about radon and helping create healthier homes. Bob is, and owns Mr. Radon®.

Bob holds a Bachelor of Education, a BA in Adult Education, and an Associate's Degree in Industrial Training. Bob is a NEHA-NRPP certified radon mitigator and residential measurement technician. He spent 30 years in the commercial/industrial sector as a plumber and in other management roles. Bob also teaches exam prep courses for both radon placement technicians and mitigators. He provides radon courses to real estate boards, has qualified for the National Speakers List on radon, and is a popular speaker at conventions. Bob owns Mr. Radon®.

ALAN WHITEHEAD

Vice President



Alan is President and CEO of Radon Environmental Management Corp., a private environmental health sciences company focused on reducing public exposure to radon gas. The company is a leader in raising radon awareness and education in Canada. Radon Environmental is the only integrated provider of branded radon mapping products and services, together with certified radon measurement services and devices. The company is also leading the development of unique and innovative radon mitigation solutions, incorporating building science to improve indoor air quality and save lives.

Alan is committed to promoting the awareness of radon as a significant health risk in Canadian homes, schools and workplaces. In 2013 he initiated the formation of the Canadian Coalition on Radon Policy (C-CORP) to develop a coordinated strategy with key stakeholders and engage policy makers to develop model bylaws and legislation to mandate radon testing and mitigation. He has been an active member of AARST since 2007 and is a founding board member of CARST.

ANNE-MARIE NICOL Treasurer



Anne-Marie began her academic career in the social sciences at SFU (Communications BA) and then developed a strong interest in environmental and occupational health during her Master's degree at York University (MES). She completed her PhD in Epidemiology at UBC where she currently teaches Risk Assessment and Toxicology in the School of Population and Public Health.

Her areas of research span the diverse subjects of human health risk assessment, environmental health and knowledge translation. In particular, she investigates how to improve the communication methods that are used to describe population level exposures to cancer-causing substances, specifically using techniques such as geographic information systems (GIS) and data visualization.

MARCEL BRASCOUPE Secretary, Chair Membership Committee Chair Exam Committee



Marcel is the owner of MB Radon Solutions and is a certified general construction contractor with a background in electrical and building systems/HVAC, working in the province of Quebec and specializing in the installation of radon mitigation systems. He is certified with both NRPP (USA) and C-NRPP (Canada) for both radon measurement and radon mitigation. Marcel has been involved with radon testing and radon mitigation work since 2008.

Marcel has been providing "hands-on" training to work crews since 2009 and in a formal classroom environment. He is bilingual in both French and English and is a founding board member of the Canadian Association of Radon Scientists and Technologists (CARST). Marcel has also contributed to Health Canada's technical guidance document titled: Reducing Radon Levels in Existing Homes: A Canadian Guide for Professional Contractors along with several scientific papers on the subject of radon mitigation.

ROB MAHONEY

Director

Chair Technical Committee

C-NRPP Policy Advisory Board Representative



Rob is the sole proprietor of Radon Works, and has been doing radon remediation in the Ottawa-Gatineau region since 2007 when he was first asked to participate in a CMHC pilot project. The installation of that system has now become a Health Canada standard for radon remediation.

He has been in the commercial HVAC design and verification business for over 20 years, and is the Commercial Consultant and IAQ Manager for one of Ottawa's oldest HVAC companies. Rob graduated from the first Gold Seal Certification course held by the Mechanical Contractor's Association, Ottawa. Previous to design and project management, he was a tradesman, mechanic and commercial real estate agent.

Rob's initial foray into radon gas consisted of a sub slab depressurization system installed under direct supervision of Arthur Scott (author of Canadian Guide for Professional Contractors). This was a simple adaptation of the methane reduction systems that Rob had designed and implemented for years in developments built on old landfill sites.

SCOTT CRYER

Director, Chair Education Committee



Scott is an Operations Manager with the Hazardous Materials group at Pinchin Ltd.'s Mississauga, Ontario office. A Professional Geoscientist (PGeo) since 2004, Scott has over 25 years of experience dealing with environmental, health and safety issues. His experience includes the assessment and management of surface and sub-surface soil and groundwater contamination, asbestos, lead, mould and radon.

Scott is certified with the National Environmental Health Association – National Radon Proficiency Program (NEHA-NRPP) and the Canadian National Radon Proficiency Program (C-NRPP) as a radon measurement and mitigation provider. Scott is one of the Pinchin Group of Companies experts on Radon, and provides consulting services to clients nationally regarding radon issues.



MICHEL DESCHAMPS

Director

Michel is a Radiation Protection Physicist with a masters degree from Université de Montréal. He is C-NRPP certified for radon measurement and an advisor for Québec Radon Inc.

Québec Radon Inc. is a certified C-NRPP laboratory for the measurement of radon. Our services are offered in houses, residential buildings and schools. We also give information sessions to real estate personnel and others on request.

Radiation exposure can be lethal
Take action on radon



STEVEN MAHONEY

Director

Steve has been in public service for over 35 years. First elected as a City of Mississauga and Region of Peel Councillor in 1978, he chaired the City's influential Planning Committee during the community's high growth development years.

After holding a number of elected positions and appointments, he was elected Member of Parliament for Mississauga West in 1997, and was appointed to Cabinet by Prime Minister Jean Chretien in 2003. As Secretary of State he was responsible for several Crown corporations, including Canada Mortgage and Housing Corporation, Canada Post, Canada Lands, the Royal Canadian Mint and the Old Port of Montreal. From 2006 through 2012 Steve was appointed by the Premier of Ontario as Chair of the Workplace Safety and Insurance Board. He introduced several important initiatives to highlight the importance of workplace health and safety. He also worked to initiate policies and programs that worked to save the WSIB millions in health care, rehabilitation and drug benefit costs while maintaining a fair and accessible compensation and rehabilitation system for injured workers and their families.

In 2012, Steve accepted the position as President and CEO of Radiation Safety Institute of Canada. RSIC is a trusted and independent source of scientific information about radiation safety in the workplace, the home, medical community, mining, power plants and environment. RSIC is recognized as an authority on radiation safety in Canada and around the world and is licensed by the Canadian Nuclear Safety Commission.



GORDON MELVIN

Director

Gordon is the founder of Meltech Thermal Imaging Inc., a New Brunswick based company that specializes in a variety of construction and building maintenance services that assist people to not only build, but to also maintain their buildings and investments. Gordon is a Certified Engineering Technologist (CET), a member of the New Brunswick Society of Certified Engineering Technicians and Technologists (NBSCETT), and is a Gold Seal Certified Project Manager (GSC) with the Canadian Construction Association. Gordon is a proud member of CARST and certified with C-NRPP.

Also a member of the Canadian Home Builders Association, Gordon sits on the Board of Directors for the Moncton Home Builders Association. He has over 25 years of experience specializing in construction project management, design/drafting, estimating, supervision and inspections within a variety of engineering disciplines and residential, industrial and commercial building settings.

Pre-Conference Continuing Education Courses

We are excited to announce details of the pre-conference courses and have worked to provide Canadian radon professionals with courses that will support them in the work they are doing, help them increase their confidence and knowledge, and expand the scope of their services.

Trainers who are among the most experienced in the industry will share this knowledge with you. We are also offering a full day French language course for the first time this year (Controlling Radon in New Homes in Canada). The following provides a brief overview of the courses being offered.

CONTROLLING RADON IN NEW HOMES IN CANADA (CRNHC)

(8 Hours, 8 Continuing Education Credits)

French with Marcel Brascoupe, English with Bob Wood

This course is targeted to individuals who design, build or inspect new low-rise dwellings in Canada. It provides training on how to comply with National Building Code of Canada requirements and local building codes in each province to minimize the entry of radon and other soil gases plus methods on how to achieve even better performance of radon control. Individuals holding the Controlling Radon in New Home Construction (CRNHC) certification will be able to demonstrate an understanding of radon, its known health effects, how it enters the home, degree of risk and personal protection, the National Building Code, and methods of radon installation which will exceed requirements of the code. This course will cover the installation of two levels of radon systems in low-rise construction, Roughed In Systems, and complete Passive Radon Systems.

LARGE BUILDING MITIGATION

(8 Hours, 8 CE Credits)

John Mallon, Bill Brodhead

This will be a full day course presented by experienced mitigators John Mallon and Bill Brodhead. They will share with us information on conducting diagnostic testing in large buildings and troubleshooting challenging situations.

John Mallon is Chair of the AARST Consortium National Radon Standards Committee which developed the ANSI/AARST Radon Mitigation Standards for Multifamily Buildings. He has installed radon mitigation systems in homes and commercial buildings alike including schools.

Bill Brodhead was the chair of the ASTM group tasked with updating the ASTM E2121 Radon Mitigation Standard and is the primary instructor of Radon Technology for Mitigators at the Easter Regional Radon Training Center at Rutgers University. Bill has installed over 5,000 radon mitigation systems in homes and commercial buildings, and his experience includes designing mitigation systems and conducting pressure field extension measurements for large buildings, which include universities, day cares, office buildings, shopping centres, and a 250,000 ft² factory.

CONDUCTING RADON MEASUREMENTS IN SCHOOLS AND LARGE BUILDINGS AND TRAIN THE SPEAKER

(Combined 8 Hours, 8 CE Credits)

Doug Kladder

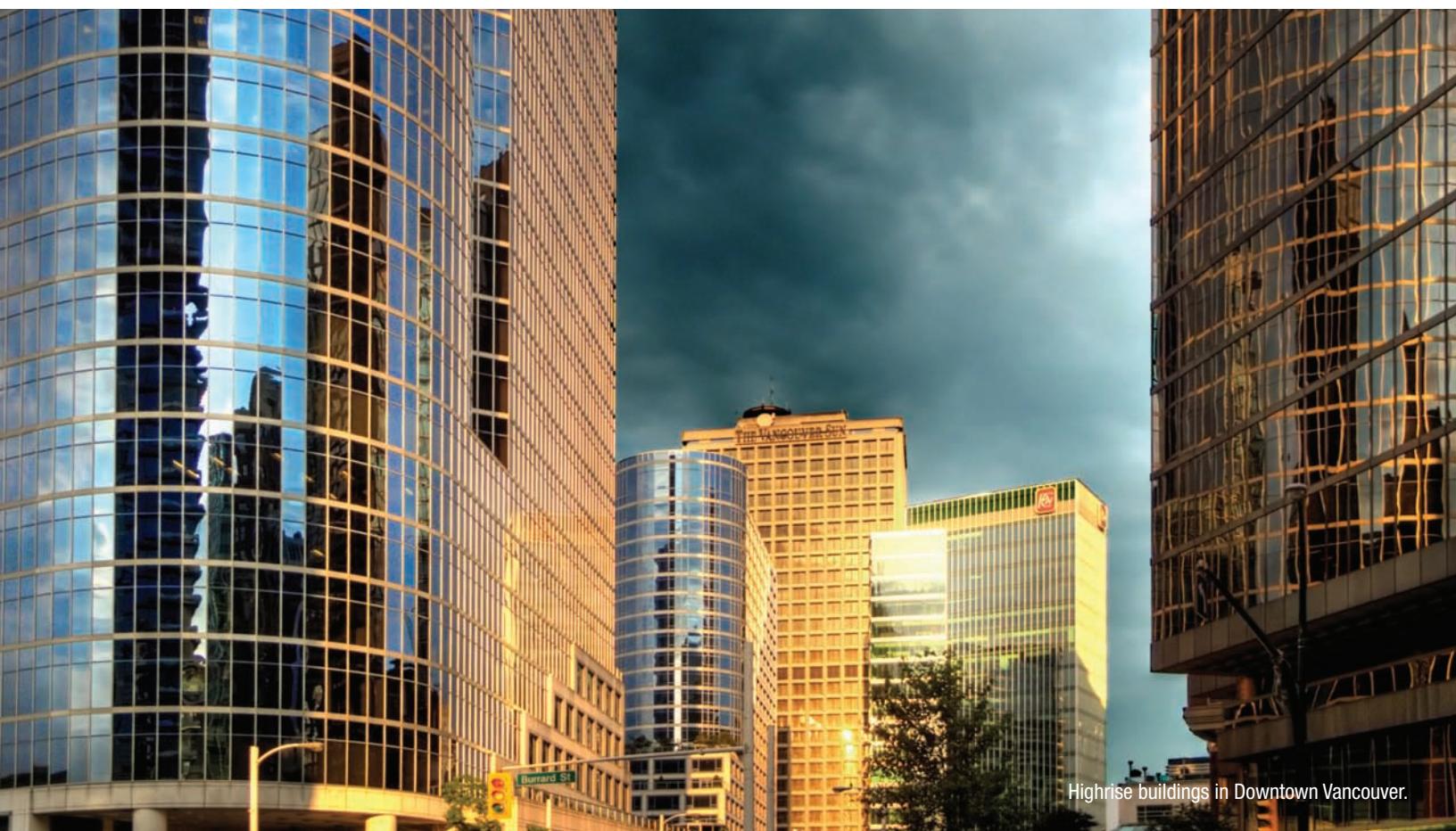
This course will include **Conducting Radon Measurements in Schools and Large Buildings** in the morning and a **Train the Speaker** course in the afternoon, both presented by Doug Kladder. These courses will provide valuable information for radon measurement professionals in Canada as they work to build their business to extend into commercial building testing.

CONDUCTING RADON MEASUREMENTS IN SCHOOLS AND LARGE BUILDINGS

Testing a single family structure is pretty straight forward. After all, it is one building, one test location, and one client to deal with. However, if you are tasked to survey a large building there are many other considerations that have to be made. This course will assist you in understanding successful approaches as well as provide several tools that can assist you in conducting large radon surveys. Large building surveys can provide large economic opportunities, but also equally large headaches if one over simplifies the entire process. This course offers insights regarding radon entry in large buildings and the relationship between radon levels and mechanical ventilation systems (HVAC) that operate within. Equally important, this course delves into the more rigorous communication plans, record keeping, quality assurance and result interpretation approaches you will need. This course will also address information and requirements associated with Health Canada's document, *Guide for Radon Measurements in Public Buildings (Schools, Hospitals, Care Facilities, Detention Centres)*.

TRAIN THE SPEAKER

One of the most powerful ways of marketing your business, whether it be for radon measurement or mitigation, is to hop on the public speaking circuit. It also fulfills the objectives of other agencies in "getting the word out" on radon. In addition to some basic speaking skills, there are some unique aspects of delivering radon presentations that aspiring radon speakers should be aware of. This course, adapted from the highly successful US based program *Train the Speaker* course developed by Doug Kladder, deals with how to avoid common radon mistakes, and will help you understand how to shift your emphasis based upon differing audiences, and how to deal with questions and hecklers. In addition to the instructional portion of the program, attendees will have access to an adaptable PowerPoint program they can modify for their own deliveries and current Canadian statistics to help them assemble their slides.



Highrise buildings in Downtown Vancouver.



Speaker Listing

Speakers at the 4th CARST Radon Conference are recognized specialists in their field. We welcome them both from home and abroad. Read more about them and their work in the in-depth biographies and abstracts.

Jim Bagley, Levelton Consultants

Deepti Bijlani, Health Canada

Mathieu Brossard, Québec Regional Radiation Specialist
Health Canada

Greg Baytalan, Interior Health Authority BC

Jim Burkhardt, University of Colorado-Colorado Springs

Kelley Bush, Health Canada

Winnie Cheng, Health Canada BC Region

Rebecca Coates, propertECO

Kathleen Cooper, Canadian Environmental Law Association

Martin Freeman, UK Radon Association

Aaron Goodarzi, Canada Research Chair in Genome

Damage & Instability Disease

Lisa Gue, David Suzuki Foundation

Grégory Jean, AYKOW France

Tom Kosatsky, BC Centre for Disease Control

Sandra Kruecki, Canadian Cancer Society BC

Angelika Kunte, National Radon Centre of Austria

Pierre Lane, BC Cancer Agency

Frank Lohmann, National Research Council Canada

Scott McDonald, BC Lung Association

James McLaughlin, European Radon Association

Steve Mahoney, Radiation Safety Institute

Zachary May, Building & Safety Standards Branch,
Government of BC

Christopher Molineux, Comedian

Arthur Nash, University of Alaska Fairbanks

Gunn-Berit Neergård, GEM Radon Detectors

Doug Nelson, BC Cancer Foundation

Liang Grace Zhou, National Research Council of Canada



JIM BAGLEY

Levelton Consultants

Jim is a Chartered Construction Manager and an Eco Canada Certified Environmental Professional. Jim spent many years in facility management before specializing in hazardous materials management and occupational health and safety. Jim is a CNRPP certified Radon Measurement and Radon Mitigation professional.



DEEPTI BIJLANI

Health Canada

Deepti Bijlani holds a Master's degree in Microbiology from University of Mumbai, India. She is the Senior Radon Project Manager for the National Radon Program at Health Canada since 2010 where she has been involved on various technical projects that are being undertaken in collaboration with stakeholders. Prior to joining Health Canada, she worked over nine years in the Biotechnology and Pharmaceutical industry as a quality control and research microbiologist in the nuclear medicine business conducting research studies on disinfectants at University of Ottawa and developing bacteriophage therapeutic products in the private sector.



MATHIEU BROSSARD

Health Canada

Mathieu Brossard has worked as a Québec Regional Radiation Specialist at Health Canada in the Environmental Health Program since 2008. He holds baccalaureate and master degrees in biochemistry. During his studies he was author or co-author of scientific articles on the effects of the nutraceuticals on chemotherapy resistance mechanisms of cancer to and on tumor invasion mechanisms. At Health Canada he became involved in the measurement of radon in federal buildings, the development of the Health Canada mitigation guide for professional contractors, mitigation research with two published papers, standards development under Canadian General Standards Board, and he also provides advice, lectures and interviews on radon.



GREG BAYTALAN

Interior Health Authority BC

Greg has been involved in Environmental Health since the mid 1980s and has been working as the Air Quality Specialist at Interior Health for nearly 6 years. His present duties involve indoor and outdoor air, noise and radiation. He holds a BSc in Environmental Science, an Environmental Health Technology diploma from BCIT, and is certified with the Canadian Institute of Public Health Inspectors. In 2010 Greg completed the US EPA Radon Measurement and Mitigation Proficiency courses and in 2012 the Canadian transfer exams for the C-NRPP certification.



KELLEY BUSH

Health Canada

Kelley Bush has been the Section Head responsible for Radon Education and Awareness (E&A) since 2008 at the Radiation Protection Bureau in Health Canada. Prior to joining Health Canada Kelley worked in the private sector



as a marketing and sales management professional. With over 15 years of progressively more senior management and leadership roles, she has a strong acumen for converting ideas into practical proposals and ensuring their successful execution. Kelley holds a Bachelor of Commerce with honours in Marketing from Concordia University.

WINNIE CHENG

Health Canada BC Region

Winnie Cheng is the Regional Radiation Specialist of Health Canada in the BC region and a Canadian National Radon Proficiency Program (C-NRPP) certified measurement and mitigation professional. She holds a Master degree in environmental toxicology. Prior joining the Environmental Health Program, Winnie had served in various federal departments in the environmental and health programs. She is passionate to educate and raise awareness in environmental health related issues.



REBECCA COATES

propertECO

Rebecca Coates is commercial director of UK radon testing & mitigation specialist propertECO. In addition to managing national radon testing & mitigation programmes for major clients, Rebecca is also responsible for the company's marketing and communication strategies. She is regularly invited to speak at professional bodies' conferences and was co-opted to the Executive Committee of the European Radon Association to assist with its marketing and social media campaigns. Rebecca also sits on the Board of the UK Radon Association.



KATHLEEN COOPER

Canadian Environmental Law Association

Kathleen Cooper has worked in environmental research positions for 30 years. As Senior Researcher at CELA, and a paralegal, she provides casework support to environmental litigation files, conducts law reform and public legal education. She has conducted extensive research into the effects of environmental contaminants on fetal and child health and authored or co-authored numerous publications in this area working with colleagues in the Canadian Partnership for Children's Health and Environment. Recent projects have included research into links between early life exposures and later life chronic disease, the integration of environmental health protection into energy efficiency programs, a new project to address indoor environmental health issues for tenants in Ontario, and a review of law and policy across Canada concerning radon.



MARTIN FREEMAN

UK Radon Association

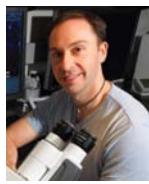
Martin Freeman has been engaged in the mitigation of radon for over 25 years and is currently Chairman of the UK Radon Association (UKRA) and a member of the Executive Committee of the European Radon Association (ERA). He is managing director of radon testing and mitigation specialist propertECO Ltd, which he co-founded in 2011. Among several innovations, Martin has developed a system to solve the difficult problem of combining radon control with waterproofing to British Standard for use in cellar and basement conversion with their unique, patented system of safe waterproofing.



AARON GOODARZI

Canada Research Chair in Genome Damage and Instability Disease

Dr. Goodarzi is an Assistant Professor at the Southern Alberta Cancer Research Institute at the University of Calgary. His current research concerns DNA damaging ionizing radiation (IR), in the form of atmosphere-penetrating cosmic rays, environmentally prevalent radioisotopes such as radon gas and radiation-based military, medical and energy technologies. There is no biological mechanism to prevent the damage caused to cells by IR; instead, life has evolved exquisite mechanisms to resolve it once it has formed. The most deleterious lesion caused by IR is a break in both strands of our DNA, a DNA double-strand break (DSB). Unless accurately repaired by the molecular machinery of our cells, DSBs can lead to genome instability – a fundamental driver of cancer and ageing. We now know that DSBs occurring within regions of complex DNA arrangement are much more difficult to repair and require substantially more multifaceted (but as yet unclear) processes to resolve. His research endeavors to understand the molecular pathways underlying DSB repair in these regions and, in doing so, improve our knowledge of cancer formation, human ageing and radiation protection.



LISA GUE

David Suzuki Foundation

Lisa Gue is a senior researcher and analyst in the David Suzuki Foundation's Science and Policy Unit. The David Suzuki Foundation works to protect the diversity of nature and our quality of life, now and for the future through educational activities that promote science-based solutions and encourage Canadians to act on the understanding that we are all interconnected and interdependent with nature. Lisa leads the Foundation's policy work on environmental health issues and the author of a new report examining Canada's radon guideline (released April 2015). Since joining the Foundation in 2007, Lisa has lead projects related to pesticides, air quality, toxics in consumer products and environmental rights. She holds an MA in Public Policy and Administration from Carleton University and is based in Ottawa.



GRÉGORY JEAN

AYKOW France

AYKOW is led by Grégory Jean, a nuclear engineer specializing in nuclear instrumentation and radioprotection for the past 15 years. The company was founded on the single understanding that prioritizing radon measurement is not the correct approach but real time detection to radon prevention. Grégory has a degree in Radioactive Protection and general engineering. He is a category B Nuclear Technician and 2010 winner of the French national award for an innovative technology start-up sponsored by the French Ministry for research and higher education.



TOM KOSATSKY

BC Centre for Disease Control

Tom Kosatsky is the Medical Director of Environmental Health Services at BCCDC and Clinical Professor at the UBC School of Population and Public Health. His current research involves the health effects of air pollution and weather. He has particular expertise in the development of innovative environmental health surveillance tools. As Scientific Director of the

Public Health Agency of Canada-funded National Collaborating Centre for Environmental Health, he is active in capacity building and development of professional expertise across Canada in environmental health (see www.NCCEH.CA).

SANDRA KRUECKL

Canadian Cancer Society BC

Sandra Krueckl, PhD is the Vice President of Cancer Control with the Canadian Cancer Society, BC and Yukon, overseeing health promotion, advocacy, information and support programs. Sandra joined the Society in 2005 as a Cancer Information Specialist, transitioning to Manager of Cancer Information Service and subsequently becoming the Director of Information and Support. Since 2008 Sandra has been a member of the national leadership team for the Society's Information and Support Services and is currently serving as an advisor in the development of the Society's National Cancer Information Strategy. Prior to joining the Society, Sandra's training and work experience was in the cancer research field, having completed a doctoral degree in molecular endocrinology at the University of Victoria and post-doctoral training at the Prostate Centre in Vancouver.



ANGELIKA KUNTE

National Radon Centre of Austria

Graduate of University for Applied Life Sciences, Vienna, degree in landscape architecture. Since June 2014, project manager for radon education and risk communication at the National Radon Centre of Austria in Linz. Prior, scientific employee at the Bavarian Environment Agency. Six years of experience in radiation protection. Was responsible for the establishment, organization and coordination of the Bavarian Radon Network and for developing and conducting radon courses for building experts in Bavaria.



PIERRE LANE

BC Cancer Agency

Pierre M. Lane received a B Eng Mgt degree in Engineering Physics from McMaster University in 1993, a MSc from the Technical University of Nova Scotia in 1996 and a PhD degree in Electrical Engineering from Dalhousie University in 1999. He was a Post-Doctoral Fellow at the BC Cancer Research Center (BCCRC) from 1999 to 2001 and has been involved with the commercialization of several optical technologies developed during that time. From 2001 to 2002 he was a Research Scientist at Digital Optical Imaging Corp. where he led the design effort for a confocal microendoscope for early cancer detection. More recently he co-founded and worked with LED Medical to develop an instrument (VELscope) for the early detection of oral cancer. The device is approved for sale in the United States, Canada, and Europe. It has changed clinical practice for oral cancer screening and the surgical resection of oral cancers. He is currently a Senior Scientist at the BCCRC, an Associate Professor of Professional Practice at Simon Fraser University (School of Engineering Science), and an Adjunct Professor at the University of British Columbia (Electrical and Computer Engineering), and a consultant in the fields of optics and biophotonics. His research interests include fluorescence and reflectance imaging for early detection of cancer, optical signal and image processing, fiber optics, biophotonics, confocal microscopy, spectroscopy, optical coherence tomography (OCT), and spatial light modulation. He is a member of the IEEE, OSA, SPIE, and is a professional engineer registered in the Province of British Columbia.



Keynote Speaker

CHRISTOPHER MOLINEUX

Comedian

Christopher Molineux has spent the last 28 years bringing together the worlds of comedy and communication. In the comedy realm he has shared the stage with the biggest names in the business including Robin Williams, Jim Carrey, Ellen De Generes, Seth Rogan, Jerry Seinfeld, Sarah Silverman and Russell Peters and performed at the prestigious Montreal "Just For Laughs" Comedy Festival. On screen he appeared on the documentary "Mars and Venus Today" and as a voice actor on the 2010 Winter Olympics Opening Ceremonies, "Inspector Gadget", "Madeline", and the current Lego animated series "Legends of Chima". Christopher's style of comedy is animated, positive, and intelligent, and is filled his own little colourful universe of voices, ideas, and insights.

Monday, April 27, 2015
CARST Luncheon, 12 – 1:30pm

EAT, LAUGH AND LEARN

Christopher will entertain us at the Monday luncheon following the CARST Annual General Meeting. Don't miss it!



FRANK LOHMAN

National Research Council Canada

Frank Lohmann is the Senior Technical Advisor, Housing and Small Buildings at the National Research Council's Canadian Codes Centre. He advises the Standing Committee on Housing and Small Buildings, which is responsible for changes to Part 9 of the National Building Code of Canada (NBC). He has been with NRC for 18 years and has worked in building envelope and indoor air quality research labs before he joined the Canadian Codes Centre. His background is building science engineering and he holds a Bachelor of Building Physics from the University of Applied Sciences in Stuttgart, Germany (HTF).



SCOTT MCDONALD

BC Lung Association

Scott McDonald is President and CEO of the British Columbia Lung Association, one of Canada's most highly-respected non-governmental health organizations.

Scott graduated from the journalism program at Ryerson University in Toronto and worked in the Canadian publishing industry and in media relations with Canada Post Corporation before joining the Lung Association in Vancouver. In his four decade career with the Lung Association, Scott has served on numerous committees, panels and working groups with many health organizations including both the Canadian and American Lung Associations and with numerous international health organizations. Scott has an interest in many areas of public health, health policy development and in particular in the fields of air quality and tobacco control, two areas in which the Lung Association is a recognized leader. He is currently the Chair of the BC Healthy Living Alliance, an association of British Columbia's leading voluntary health agencies.



JAMES MC LAUGHLIN

European Radon Association

James McLaughlin is the President of the European Radon Association (www.radoneurope.org). He is an Emeritus Academic Member of the School of Physics, University College Dublin where he was leader of the Radon Research Group. He is the author of circa 140 scientific publications mostly in the radon field. He is a PhD in physics, a Fellow of the Institute of Physics (London) and has also been Visiting Professor at the Faculty of Medicine, University of Belgrade. In the mid 1980s he designed and carried out the first national survey of indoor radon in Ireland which identified for the first time high radon areas in the country. He has been a participant in a number of European Commission and World Health Organization activities in the field of Indoor Air Quality. Over the years he has participated in several research projects funded by the European Commission most recently as leader of the Radon Risk Communication Work Package in the RADPAR (Radon Prevention and Remediation) Project (2005-2009). He was also Leader of the Radon Risk Communication Working Group of the World Health Organization International Radon Project (2005-2009) and on a number of occasions has served as a consultant/technical expert to the IAEA (International Atomic Energy Agency) on radon topics. Recently (2011-2014) he has been a member of the ICRU (International Commission on Radiation Units) Report Committee on Measurement and Reporting of Radon Exposures. His current interest is in the area of risk communication in the context of strategies to reduce the public health impact of radon exposure in Europe.



STEVE MAHONEY

Radiation Safety Institute

See CARST Board of Directors for detailed information on Steve Mahoney.



ZACHARY MAY

Building & Safety Standards Branch,
Government of BC

Zachary May is a Senior Codes Administrator with the Building and Safety Standards Branch as well as the Compliance Advisor for Energy Efficiency. He is a member of the national standing committee for housing and small buildings (Part 9) with the National Research Council and participates in a number of provincial construction-related committees. In his role with the Building and Safety Standards Branch he provides technical support to Building Code users as well as delivering training and seminars throughout the province on a wide range of topics.



ARTHUR NASH

University of Alaska Fairbanks

Art is the statewide Energy Specialist out of the University of Alaska, Fairbanks School of Natural Resources & Extension and Alaska's SIRG radon outreach coordinator. Art has previously worked with housing/energy construction while providing educational services in Fairbanks, Interior tribal villages, Southcentral and Valdez since moving to Alaska in the early '90s looking to teach secondary school Social Studies. He has a graduate degree in resource economics from UAF, and his teaching interests include radon, home energy/cost efficiency, Universal Home Design for disabled and aging residents, remote camp energy, and biomass rocket stoves.



GUNN-BERIT NEERGÅRD

GEM Radon Detectors

Gunn-Berit Neergård is the founder of GEM Radon Detectors, using technology from the European Organization for Nuclear Research (CERN) to develop new radon instruments. She is also a general nurse, practicing in a cancer ward at the university hospital in Trondheim, Norway. Neergård is very passionate about public health care and health promotion, and see radon awareness as an important step to improve public health.



DOUG NELSON

BC Cancer Foundation

Doug Nelson is the President & CEO of the BC Cancer Foundation. Doug is a highly successful leader in the health research development sector. He has an outstanding track record of health care philanthropy and a reputation for building sustainable revenue generating programs. Prior to joining the BC Cancer Foundation, Doug was the Chief Development Officer for the University of Alberta where he led the successful conclusion of the second largest fundraising campaign of its kind in Canadian history. Doug is passionate about the importance and relevance of cancer to all British Columbians and about the BC Cancer Foundation's ability to make a substantial difference



in the lives of people affected by cancer. By 2014 the Foundation's goal is to increase the funding of cancer research and care in BC to over \$50 million. Last year the BC Cancer Foundation raised nearly \$33 million for cancer research and enhancements to patient care at the BC Cancer Agency.

LIANG GRACE ZHOU

National Research Council of Canada

Dr. Liang Grace Zhou is a researcher in the Construction Portfolio of the National Research Council, Canada. Grace's main research activities are on the assessment of the impact of building mechanical system on occupants' comfort, public health, building energy performance, and green building design and operation, with a current focus on radon mitigation and prevention, pollutant transfer from garage, and back drafting from combustion appliance due to depressurization in dwellings. In addition to experimental work, she has over ten years of experience using many building simulation tools (principally Fluent and TRNSYS). Grace is a member of technical committee of the national standards of radon mitigation in residential buildings, and she is a member of the scientific review committee for several conferences (e.g. IAQVEC, Building Simulation) and journals (e.g. Building and Environment, Energy and Buildings, Building Simulation, Applied Thermal Engineering).

JIM BURKHART

University of Colorado-Colorado Springs

Co-presenting on the school testing in Alaska is Dr. James F. Burkhart, a physics professor at the University of Colorado-Colorado Springs, the director of a working radon measurement lab and an internationally recognized scholar in research in radon-related topics, including thyroid cancer/radon correlations and radon released in well fracking. Dr. Burkhart holds many teaching honors from the University and has been awarded the President's Award and the Nexus Award from the American Association of Radon Scientists and Technologists for his research and public service work in radon.



Presentation Abstracts

ALTERNATIVE APPROACHES TO SUB SLAB DEPRESSURIZATION IN REDUCING RADON LEVELS IN RESIDENTIAL PROPERTIES, COMMERCIAL AND INSTITUTIONAL BUILDINGS WHILE CONTROLLING ENERGY COSTS

Jim Bagley, Levelton Consultants

The presentation will examine the advantages and disadvantages of sub slab depressurization, and situations where this approach may not be a viable option for radon reduction. The presentation will include a case study in the use of Radostat controls to maintain radon levels within Health Canada criteria in a large commercial building in northern BC, while optimizing energy consumption.

MITIGATION SURVEYS WE REALIZED THROUGH OUR QUÉBEC LUNG ASSOCIATION

Mathieu Brossard, Québec Regional Radiation Specialist
Health Canada

A first volunteer register on mitigation was realized with the collaboration of the Québec Lung Association and with the participation of several measurement and mitigation services providers. To gather qualitative information on radon measurement and mitigation, more than 500 invitations were sent to participate to a first study in 2012 to people who encountered radon above the guideline of 200 Bq/m³. Approximately 50 participants filled the questionnaire. Result shows that a large majority of the participants had mitigated or were planning to mitigate. The presentation analyses socioeconomic profiles, reasons to mitigate or not to mitigate and information sources. A second study with a different methodology was also realized through Québec Lung Association in 2013 and 2014. It tried to approach an under-represented group of the first study, lower income and education parts of the population. Approximately 80 participants tested their dwellings. Out of them, 7 tested above the guideline and filled a questionnaire. Most expressed the intention to mitigate. Although not probabilistic and quantitative, results of 2 different studies using very different approaches were encouraging. They also documented some important miss perceptions about radon. Last part of the presentation summarizes the Québec realtors Organisme d'Autoréglementation en Courtage Immobilier du Québec position on radon in a real-estate transaction, position being promoted in a credited online continuous education training actually provided to their members.

THE INTERIOR HEALTH DAYCARE SAMPLING EXPERIENCE

Greg Baytalan, Interior Health Authority BC

In 2010 Interior Health Authority (IHA) encouraged daycares to test for radon through the educational approach. Two years later IHA embarked on sampling the 800+ daycare facilities. This brief presentation will reflect upon the logistical challenges encountered while rolling out a sampling program of this scale. The development of clear communication material and the highlights of lessons learned will be discussed. Quickly, the sample results to date will be covered.

RADON RISK MANAGEMENT IN THE WORKPLACE

Winnie Cheng, Health Canada BC Region

Occupational exposure to radon and its progeny are common for workers in mines, oil refineries, fish hatcheries, etc. The Canada Labour Code regulates radon exposure in general workplaces under federal jurisdiction. However, jurisdiction over the workplace exposure to radon, a "Naturally Occurring Radioactive Material (NORM)" rests with each province and territory with referencing to the Canadian NORM Guidelines for NORM industries. Workers whose occupation do not involve with handling NORM yet working in dwellings with high radon, may be comparable to the NORM "occupationally/incidentally exposed workers". Most provinces/territories in Canada do not have jurisdiction on workplace exposure to radon. Employers in such regions should exercise judgment in referencing to the NORM guidelines for managing radon risk. This presentation discusses the challenges experienced and strategies involved with mitigating a non-residential building. Radon exposure at workplace may contribute to additional lung cancer risk, thus underscores the importance of measurement, mitigation and risk management at workplace.

ALERT BUT DON'T ALARM

Rebecca Coates, propertECO

Rebecca's presentation, Alert But Don't Alarm details the radon risk communication strategies used by a UK mitigation company. Communication from official sources has failed to impact significantly upon awareness levels in the past, therefore it has fallen to commercial organizations to take action to raise awareness and understanding of radon issues in a proactive manner. This presentation details a number of approaches that have been tailored to target specific audience sectors to spread the radon awareness message as effectively and widely as possible.

A REVIEW OF RADON LAW AND POLICY IN CANADA

Kathleen Cooper, Canadian Environmental Law Association

The presentation will summarize a comprehensive review conducted during 2014 of law and policy across Canada that found divided and overlapping jurisdiction, multiple levels of government, policy and law potentially applicable to radon, some important momentum towards updating Building and Labour Codes, and very limited case law. The findings generated fourteen recommendations concerning radon messaging; research, testing and data sharing; the federal Radon Guideline; necessary links to energy retrofit programs; a federal tax credit to offset mitigation costs; the need to complete planned updates to Building and Labour codes; and amendments to other provincial statutes expanding legal tools to help reduce radon exposure.

THE UK RADON ASSOCIATION - THE DEVELOPMENT OF AN ACTIVE AND VALUABLE INDUSTRY

Martin Freeman, UK Radon Association

Martin will give a snapshot overview of the current and historic radon activity in the UK and the new challenges that the UK Radon Association are tackling, including the synchronisation of an established regulatory framework now needing to meet the new EC Directive criteria. He will also discuss UKRA's plans to enhance existing radon awareness initiatives by collaboration with health professional groups and promotion of an annual awareness campaign.

GENOME INSTABILITY IS BREATHTAKING: EFFECTS OF ALPHA RADIATION EXPOSURE ON DNA AT A MOLECULAR LEVEL AND CONSEQUENCES TO CELL HEALTH

Aaron Goodarzi, Canada Research Chair in Genome Damage and Instability Disease

We are all born with a specific genetic code – a genome – that is a combination of the DNA of our mothers and fathers, and defines every cell in our body. From the moment of our conception, our DNA is subject to damage. Some of this damage comes from within as a natural consequence of life, while the rest comes from environmental factors, such as radiation exposure. Dr. Aaron Goodarzi is uncovering the molecular means by which our cells resolve damage in order to keep us alive, cancer-free, and as youthful as possible. The most serious form of damage occurs when there is a break in both strands of the double helix of our DNA. Unless these breaks are resealed correctly, whole segments of our genome can be lost, or irrevocably mutated. Failed DNA break repairs can fuel a self-propagating process of volatility within our genetic code that can lead to cancer, aging, and the toxic effects of radiation exposure. Without the pathways that repair DNA and maintain genomic stability, our species would fail. Every cell of our body incurs DNA double strand breaks on a daily basis, and there are no natural, biological mechanisms to prevent such breakdowns. Humans born unable to respond properly to DNA damage face elevated cancer risks, premature aging and radiation hypersensitivity. Goodarzi's research will improve understanding of the processes that keep our genome stable. By doing so, it will also help explain how cancer arises, how it progresses and how it can be treated.

REVISITING CANADA'S RADON GUIDELINE

Lisa Gue, David Suzuki Foundation

Coinciding with the 2015 CARST conference, the David Suzuki Foundation is realizing a new report examining Canada's radon guideline. The report surveys current international guidance on radon and compares Canada's radon guideline to parallel standards and guidelines in leading jurisdictions. It concludes that international guidance on radon has evolved significantly in recent years, and this necessitates a re-evaluation of Canada's guideline for radon in indoor air. It is once again time for Canada to update its guideline to match leading international standards. At the same time, implementation measures must be reinforced to reduce indoor radon concentrations across the country and minimize (eventually, to zero) the number of homes and public buildings with indoor concentrations of radon that exceed the guideline. Report author Lisa Gue will present key findings and discuss the David Suzuki Foundation's work on radon issues.

DYNAMIC RADON DETECTION OVER MEASUREMENT

Grégory Jean, AYKOW France

Many residents owning a radon dosimeter are helpless when faced with the radon level value, and look for solutions that are logical and practical. AYKOW proposes a new solution: detecting radon based on a real time alert and providing the responsive technology to drive ventilation and mitigation devices. AYKOW's efforts were first to focus on dynamic detection to identify in real time the radon concern. Thanks to our VICTORIA™ technology, designed for homeowners and alerting of any radon concentration, we provide a new approach to helping municipalities, institutions – any building – by having a dynamic, in situ mapping of radon to enable an understanding of the location and level. Next AYKOW developed a smart solution to elevated radon levels with the RADOSTAT™, an instrument that automatically and instantly drives ventilation and mitigation devices when needed. Our presentation will introduce the concept of dynamic detection and its significance in guarding against radon exposure.

PUBLIC HEALTH POLICY FOR RADON IN CANADA

Tom Kosatsky, BC Centre for Disease Control

Interest in radon as a Canadian public health issue has waxed and waned. Until recently, exposure reduction was seen largely as a private householder issue with mass campaigns urging testing around a target exposure threshold. Revisions to the Canadian and provincial building code have moved the focus towards population exposure reduction. Despite the application of fiscal incentives and disincentives to other hazardous exposures and practices, the carrot and stick approach has not been applied to radon. Policy options will be explored and a road map developed to provoke discussion of effective means to lower Canada's radon-associated lung cancer burden.

RADON EXPOSURE AND RISK OF LUNG CANCER

Sandra Krueckl, Canadian Cancer Society BC

Exposure to radon increases the risk of lung cancer. Radon is the leading cause of lung cancer in non-smokers and the second leading cause of lung cancer in smokers. The Canadian Cancer Society is working hard to reduce the incidence and mortality rates of cancer in BC. Together we can stop cancer before it starts. This presentation highlights Canadian Cancer Society's multi-pronged approach to address the rising public health concern of radon exposure using strategies such as awareness, community engagement, capacity building and advocating for healthy public policies. We believe Canadians have the right to know if they are being exposed to cancer-causing substances at work, at home or in the environment. We will discuss strategies that can be used at individual, community and policy levels to reduce radon exposure and cancer risk, save lives and reduce the economic burden on our health care systems. We will share our stories and experiences from the frontlines and BC communities whom we engaged around this issue.



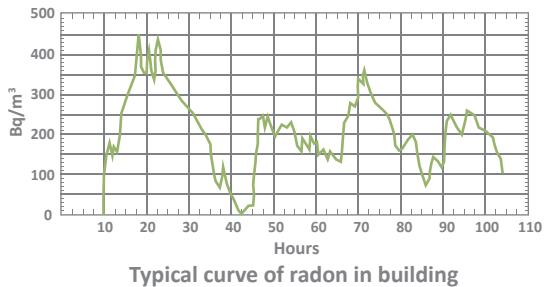
Managing indoor radiation exposure with the latest in responsive technology.



Radostat™ is the first instrument to pilot any active ventilation system in real time for radon elimination.

Active systems are an efficient and economical way to address high radon concentrations in dwellings.

Radostat™ utilizes the latest in radon detection and mitigation technology integrated into an existing building design.



- High sensitivity at 150 Bq/m³ conforms to Health Canada guideline of 200 Bq/m³ for indoor radon exposure.
- Patented design allows significant energy savings when ventilation is piloted using Radostat™ smart technology.

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Radon Environmental Management
Committed to a healthy future

EXPERIENCES WITH DIFFERENT APPROACHES TO INVOLVE THE CITIZEN AND THE BUILDING PROFESSIONAL IN RADON PROTECTION IN AUSTRIA

Angelika Kunte, National Radon Centre of Austria

In this work, different approaches to information and measurement campaigns conducted in Austria are presented with respect to their goal, methodology, cost and success. Various information channels have been used like internet, local and regional press, local informative events, free illustrative brochures, etc. Regardless of methodology, it is apparent that continuous information through various channels is required to substantially increase public awareness of the radon problem. Currently the National Radon Centre is developing a radon risk communication strategy in order of the Austrian Ministry of Agriculture, Forestry, Environment and Water Management as part of the national radon action plan. The corner stones of this strategy will also be part of the presentation. Measurement campaigns were carried out in different ways through interviewers or members of the fire brigade yielding different response rates. Financial aid has been given by one federal state to citizens since 1997 with the objective of promoting radon measurements, mitigation and prevention in dwellings. However, the willingness of citizens to take action is generally low.

BRONCHOSCOPIC INNOVATIONS FOR DIAGNOSIS OF EARLY LUNG CANCER

Pierre Lane, BC Cancer Agency

Lung cancer is the most common cause of cancer death worldwide. More than 1.3 million people die annually and the 5-year survival rates have improved only marginally in the last three decades. While population-based screening programs that use low-dose computed tomography (CT) are likely to reduce the number of deaths due to lung cancer, a significant challenge that remains is how to safely and accurately diagnose small spots (nodules) found on a screening CT. In this talk I will discuss our recent efforts to develop small imaging-guided biopsy tools to improve the accuracy and safety of transbronchial biopsy. Our new tools employ optical coherence tomography (OCT) to confirm the exact location of the spot to be sampled. The principle of OCT is similar to ultrasound. Instead of sound waves, near-infrared light is used to produce a high definition image similar to looking down a microscope. Our OCT probe is much smaller than an ultrasound probe. It can detect blood vessels using the Doppler effect and analyze the chemical contents of the nodule using tissue autofluorescence and polarization imaging. The procedure is done under local anesthesia to the throat and conscious sedation. This innovative imaging-biopsy catheter will be the first of its kind to allow the accurate biopsy of small lung nodules while minimizing complications such as bleeding and lung collapse. It will advance the bronchoscopic diagnosis of small lung lesions.

NRC HELPS INTEGRATING RADON TECHNOLOGY INTO THE NATIONAL BUILDING CODE

Frank Lohmann and Liang Grace Zhou, National Research Council Canada

The presentation will start by describing the 2010 NBC requirements relating to Radon, as well as the principles for development of new code solutions (minimum acceptable solutions, cost-effective regulation). The speakers will explain how innovative technologies and methods are evaluated (CCMC) and how CCMC can assist an emerging industry such as the radon



industry. The second half of the presentation will be a showcase of recent research projects of radon technologies including how research supports CCMC evaluations. It will also point out how research can demonstrate compliance of construction products with building code requirements and how to meet the performance based criteria. The presentation will also explain how NRC can support the radon products industry in creating effective regulation and in creating greater market access for new products.

OVERVIEW OF THE BC LUNG ASSOCIATION RADON AWARE PROGRAM

Scott McDonald, BC Lung Association

Scott McDonald, President and CEO of the British Columbia Lung Association, will provide a very brief overview of recent significant achievements and learnings of the Lung Association's RadonAware program in British Columbia and welcome delegates to Vancouver and to the 2015 CARST/ACSTR Conference.

AN OVERVIEW OF THE EUROPEAN RADON ASSOCIATION (ERA): ITS OBJECTIVES, MEMBERSHIP AND ACTIVITIES

James McLaughlin, European Radon Association

The European Radon Association (ERA) is a relatively new organization and was founded in 2013. ERA is a non-profit International Organization registered under Belgian law (www.radoneurope.org). It was founded to serve the interests of the European radon community and thereby to contribute to the reduction of the health burden from radon both to the general public in their homes and to those occupationally exposed to radon. It has a broad and inclusive spectrum of members ranging from those in the radon industry (mitigation and measurement companies), to those in regulatory bodies and to those involved in radon research (both academic and applied). Membership is not restricted to Europeans and in fact ERA wishes to collaborate and form links with kindred associations on a global basis. A primary objective of ERA is to promote public awareness about radon and its risks. Amongst other objectives ERA is committed to ensuring that quality standards are developed and adopted in radon measurement, mitigation and in the application of preventative techniques. It also plans to contribute to training and education in the radon field. It aims to serve as a consultative body to both national and international bodies in regard to laws, regulations and standards. This year the 3rd Annual ERA Workshop will take place on the 29th May in Kraków, Poland in conjunction with the "Radon in the Environment 2015" Conference May 25th-29th (www.radon2015.pl). The ERA Workshop theme this year is "Designing National Radon Action Plans."

IMPROVING RADON REQUIREMENTS IN THE BC BUILDING CODE

Zachary May, Building & Safety Standards Branch,
Government of BC

On December 19, 2014, the BC Building Code introduced new requirements for protection from soil gases, including radon. These requirements apply to all homes east of the Coastal mountains (Radon Area 1 in the BC Building Code), and go beyond the model National Building Code. This presentation will provide an overview of the new requirements as well as the consultation process involved in developing the new Code content.

EDUCATING SCHOOL PERSONNEL AND TESTING ALASKA'S SCHOOLS FOR RADON

Arthur Nash, University of Alaska Fairbanks

Jim Burkhart, University of Colorado-COLORADO SPRINGS

Alaska does not require any of its 54 school districts to test for radon, and in surveying schools in 2013 and 2014, it was found that only two urban districts could confirm having tested in the past. Schools above the Arctic Circle and in Southwest Alaska were primarily built on pad and post foundations due to permafrost and had, to the best of our knowledge, no need for testing. Noting that the two largest districts in the State were in the EPA's zone 2, University of Alaska Fairbanks chose to test these districts, utilizing SIRG funds, who were able and interested. One of the authors (Burkhart), acting as a consultant, assisted in training over a dozen facility staff for 3 school districts on how to test for radon using either video conferencing or live attendees. Fifteen elementary schools and 2 high schools were tested in three school districts a distributed sample in the late spring of 2014. The consultant frequently accompanied school personnel in retrieving canisters as a quality control measure. The most valuable relationship here is the ongoing assistance with the trained staff now in place who will employ the rest of 1200 carbon canister kits purchased in 2015 within the three school districts. It is anticipated that this trained cadre will be useful, also, as more school districts are tested. Training material, radon results, and geology correlations will be shared with the attendees.

HOW POLITICS MAY AFFECT THE HEALTH AWARENESS AND BEHAVIOUR OF A POPULATION, REDUCING RADON INDUCED CANCER IN NORWAY

Gunn-Berit Neergård, GEM Radon Detectors

Norway struggles with increasingly high concentrations of indoor radon. During the last decade, the Norwegian government has determined several radon laws and regulations, affecting contracting firms, landlords, schools and kindergartens. With these regulations, the radon industry has been established, and the radon awareness seems to be increased among the general population. This serves as an example of how politics may affect the health awareness and behaviour of a population, reducing radon induced cancer.

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