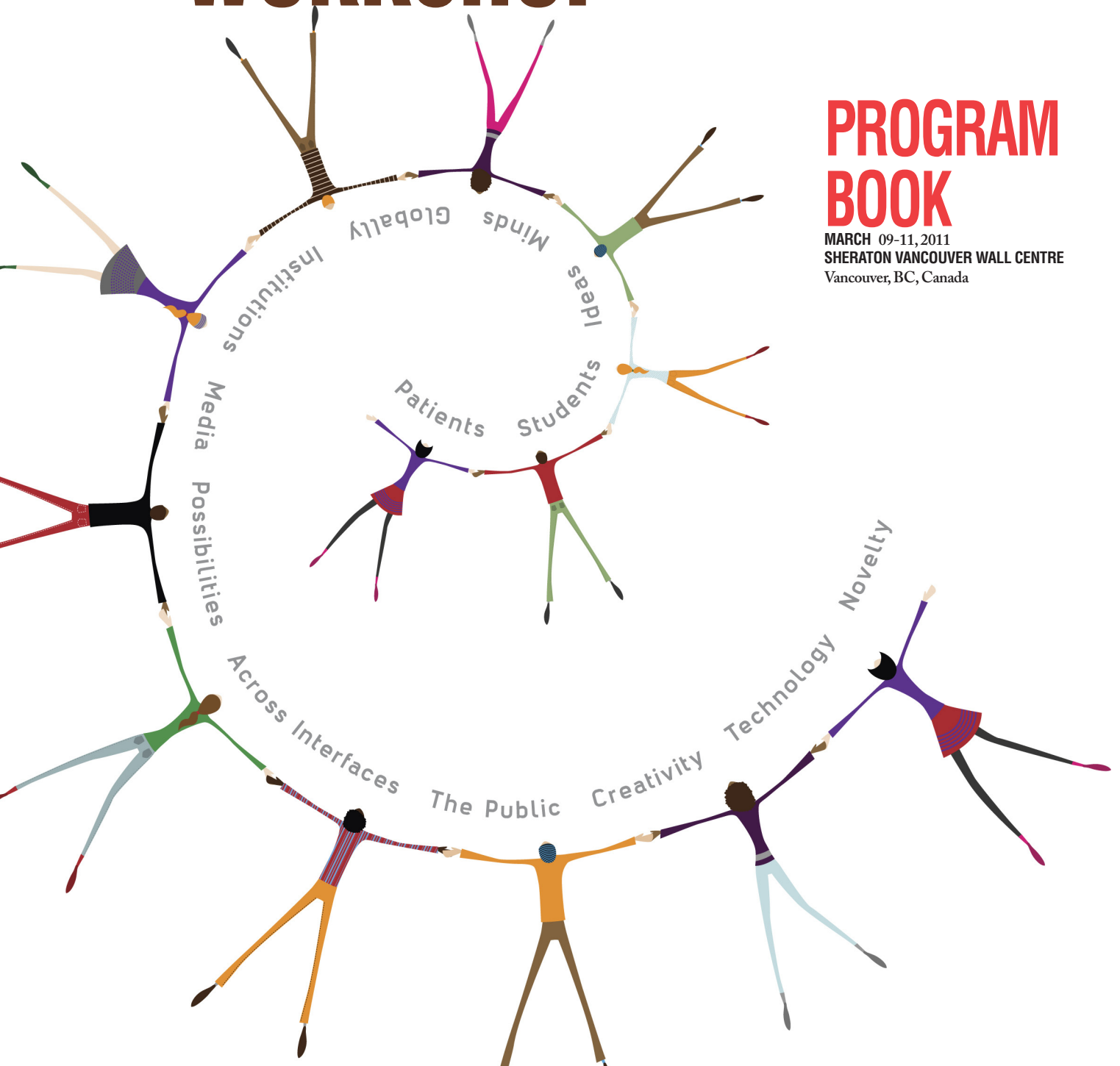


8TH ANNUAL AIR QUALITY & HEALTH WORKSHOP

PROGRAM BOOK

MARCH 09-11, 2011
SHERATON VANCOUVER WALL CENTRE
Vancouver, BC, Canada



ORGANIZING COMMITTEE

Ryan Allen PhD
Faculty of Health Sciences, Simon Fraser University
Burnaby, BC, Canada

Michael Brauer PhD
School of Environmental Health at the University of British Columbia (UBC);
Bridge Program; Division of Respiratory Medicine and the School of Population
and Public Health at UBC
Vancouver, BC, Canada

Curtis Noonan PhD
Epidemiology, University of Montana
Missoula, Montana, USA

Glen Okrainetz M.E.S
B.C. Ministry of Environment
Victoria, BC, Canada

Roger Quan
Policy and Planning Metro Vancouver
Burnaby, BC, Canada

Amanda J. Wheeler
Air Health Science Division, Health Canada
Ottawa, On, Canada

Fuyuen Yip PhD, MPH, LCDR
US Public Health Service, Air Pollution and Respiratory Health Branch, EHHE/
NCEH/CDC
Atlanta, GA, USA

BC LUNG AIR QUALITY AND HEALTH STEERING COMMITTEE

Prabjit Barn MSc.
British Columbia Centre for Disease Control & The National Collaborating Centre
for Environmental Health

Menn Biagtan MD, MPH
British Columbia Lung Association

Michael Brauer PhD
University of British Columbia

Patti Dods
Health Canada

Derek Jennejohn P. Eng
Metro Vancouver

Tom Kosatsky MD, MPH
BC Centre for Disease Control & The National Collaborating Centre for
Environmental Health

Tim Lambert PhD
B.C. Ministry of Environment

Scott McDonald
British Columbia Lung Association

Roger McNeill
Environment Canada

Glen Okrainetz M.E.S.
B.C. Ministry of Environment

Roger Quan
Metro Vancouver

Bob Smith
Fraser Valley Regional District (FVRD)

Natalie Suzuki MSc.
B.C. Ministry of Environment

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PROGRAM AT A GLANCE

WEDNESDAY

MARCH 09, 2011

Junior Ballroom

An Introduction to Tools used in Air Quality Assessment

9:00am - 5:00pm

THURSDAY

MARCH 10, 2011

Pavillion Ballroom

An International Expert Symposium on Biomass Combustion and Outdoor Air Quality: Technology, Management, Exposure and Health Impacts

8:00am - 5:00pm

Biomass Combustion Technology : SESSION 1a

8:15am - 8:55am

Biomass Smoke Characterization, Monitoring and Exposure Assessment :
SESSION 1b

9:00am - 11:05am

Health Impacts : SESSION 2a

11:05am - 1:30pm

Controlled Exposures/ Toxicology : SESSION 2b

1:30pm - 3:05pm

Management and Reduction of Health Impacts : SESSION 3

3:05pm - 5:00pm

Dr. David Bates Lecture

Junior Ballroom

5:00pm

FRIDAY

MARCH 11, 2011

Finback Room

Researcher's Symposium

8:00am - 5:00pm

WEDNESDAY

MARCH 09, 2011
9:00am - 5:00pm
Junior Ballroom

8TH ANNUAL AIR QUALITY & HEALTH WORKSHOP

AN INTRODUCTION TO TOOLS USED IN AIR QUALITY ASSESSMENT

The workshop will provide a description of local air quality health impacts and outline the need for better assessing local air quality. A discussion of air quality management in BC, as well as BC's monitoring network will follow. The remainder of the workshop will be dedicated to discussion of five air quality assessment tools; a presentation will be given to introduce participants to each tool, as well as to provide a local case example on the use of the tool. The specific assessment tools that will be discussed are: (1) emissions inventories, (2) dispersion modelling, (3) source apportionment, (4) mobile monitoring, and (5) land use regression. Health impact assessment (HIA) will also be discussed as a direct application of information provided by air quality assessment tools. A panel discussion at the end of the presentations will allow for discussion of how the tools presented throughout the day can be used to better inform the work of public health practitioners.

THROUGH PARTICIPATION IN THIS WORKSHOP, PARTICIPANTS WILL MEET THE FOLLOWING LEARNING OBJECTIVES:

1. To develop a greater understanding of five specific air quality assessment tools and their role in assessing local air quality
2. To better understand how information generated by air quality assessment tools can support the decisions that impact local air quality, including emissions permitting, industrial siting, and the development of public health messages



National Collaborating Centre
for Environmental Health
Centre de collaboration nationale
en santé environnementale

THE  LUNG ASSOCIATION™
British Columbia

FACULTY

MICHAEL BRAUER

Michael Brauer is a Professor in the School of Environmental Health at the University of British Columbia (UBC). He also holds associate appointments in the Division of Respiratory Medicine and the School of Population and Public Health at UBC and directs the Bridge Program – a strategic training program linking public health, engineering and policy. Dr. Brauer received Bachelor's degrees in Biochemistry and Environmental Sciences from the University of California-Berkeley (1986) and a doctorate in Environmental Health from Harvard University (1990). He was a visiting scientist at the Institute of Environmental and Occupational Medicine at Aarhus University in Denmark (1991), at the Institute for Risk Assessment Sciences at Utrecht University in The Netherlands (2000) and at the East-West Center in Hawaii, USA (2008).

Dr. Brauer's research emphasis is on the assessment of exposure and health impacts of air pollution, with specific interest in transportation-related and biomass air pollution. He has participated in monitoring and epidemiological studies throughout the world (U.S., Canada, Mexico, Asia, eastern/western Europe) and served on advisory committees to the World Health Organization (WHO), the US National Academy of Sciences and Institute of Medicine, the Royal Society of Canada and the International Joint Commission. He is currently a member of the outdoor air pollution expert working group of the Global Burden of Disease Project, the International Scientific Oversight and Review Committees of the Health Effects Institute and the WHO Household Fuel Combustion Indoor Air Quality Guideline Development Group. He chairs the external scientific advisory committee of the Mesa-Air Study and is an Associate Editor of *Environmental Health Perspectives*.

GLEN OKRAINETZ

Glen Okrainetz has served with the Ministry of Environment for 17 years. Since 2003, he has led the provincial ambient air quality program. A primary focus of the ambient air quality program is to reduce the risk to human health from air contaminants. Prior to that Glen was a senior policy analyst with a focus on intergovernmental relations. In this capacity he worked on environmental health issues such as chairing the national committee that developed the Canada Wide Standards for releases of dioxins and furans to the atmosphere. Glen has a Masters degree in environmental studies, and a Bachelor's degree in Physical Geography.

NATALIE SUZUKI

Natalie Suzuki is an Air Quality Science Specialist with the Ministry of Environment in Victoria, BC. She has been with the Ministry's Air Protection group since 1993, working on a variety of technical and policy issues regarding outdoor air quality. Natalie has a Bachelor of Applied Science in Chemical Engineering and a Master of Science in Meteorology, both from the University of British Columbia.

MARK GRAHAM

Mark Graham works for the Ministry of Environment as acting Manager of the Water and Air Monitoring and Reporting section, a group that coordinates and manages the provincial air, water, groundwater and snow monitoring networks. He received his MSc in Environmental Management in 2004 and began his career with the provincial government in 2003, working in the Air Protection group as an air quality meteorologist specializing in receptor modeling and monitoring. He lives and plays in Victoria with his wife and 3 sons.

WARREN MCCORMICK

Warren McCormick grew up in the airforce in Ottawa and attended University of Waterloo achieving a Bachelor's and Master's degrees in Mechanical Engineering in the field of Environmental Fluid Mechanics. After working nearly 10 years in private consulting in Southern Ontario, he saw the light and won the Air Quality Meteorologist position in the Prince George regional office. He continued in that position at the Nanaimo regional office for 18 years. Mr. McCormick is presently with the headquarters Air Protection Branch as the Emission Inventory Specialist overseeing inventory projects on a provincial scale. He is enjoying the newest

addition to the family, a grand-daughter and hobbies include weather phenomena and flying.

PETER JACKSON

Peter Jackson is a mesoscale meteorologist whose research mostly concerns windflow in complex terrain (i.e. in mountains and along coastlines) and environmental applications including dispersion of, and exposure to atmospheric pollutants. In pursuing this theme, he and his research group use surface and Doppler Sodar observations, as well as numerical models. He is a Professor of Atmospheric Science in the Environmental Science and Engineering Programs at the University of Northern British Columbia (UNBC), and a member of the Natural Resources and Environmental Studies Institute. He teaches courses in Weather and Climate, Boundary Layer and Synoptic Meteorology, as well as Air Pollution and Research Methods. Before joining UNBC, he was an Assistant Professor in the Geography Department at the University of Western Ontario, and a weather forecaster with the Meteorological Service of Canada. He has a PhD from the University of British Columbia.

ELEANOR SETTON

Eleanor Setton is an adjunct assistant professor in the Geography Department at the University of Victoria. Her main research interests are in identifying how and where people are exposed to pollutants in the environment, with a focus on spatial methods. As a PhD student, she worked on the Border Air Quality study and was introduced to mobile monitoring methods for woodsmoke. Since then, she has partnered with numerous communities to study local air quality.

SARAH HENDERSON

Sarah Henderson is an Environmental Health Scientist at the BC Centres for Disease Control and an adjunct member of the School of Environmental Health faculty at the University of British Columbia. She has an undergraduate degree in environmental engineering and did her doctoral research on forest fire smoke exposure and its public health impacts in British Columbia. Sarah did her post-doctoral research at the University of Tasmania on the global burden of disease due to vegetation fire smoke. She has expertise in air pollution exposure assessment, spatial analysis, remote sensing, biostatistics, environmental epidemiology and hobby farming.

CHRISTINE BENDER

Christine Bender is a certified environmental health officer with a Bachelor's degree in Botany/Ecology (1974) from Miami University (Ohio) and a Master's degree in Environmental Science from Washington State University (1980). She worked for five years in the environmental consulting field conducting environmental impact assessments in the mining and energy sectors in both the U.S. and Canada.

She subsequently earned the Diploma of Technology in Environmental Health (Honors) from the B.C. Institute of Technology (1991). She has worked in environmental health in Victoria since 1991 with both the Health Protection and Environmental Services Division and the Population Health Surveillance Unit in the portfolio of the Chief Medical Health Officer as the Regional Environmental Health Assessment Consultant. Her work involves the application of a screening level risk assessment framework to community health concerns associated with exposure to environmental agents.

Christine also plans and co-ordinates multidisciplinary studies and research projects related to portfolio goals and objective. Her work often includes collaborative efforts with municipal, regional and provincial government agencies; non-governmental agencies, such as BC Lung and the Canadian Cancer Society; community groups as well as research institutions, such as the BC Centres for Disease Control; the University of British Columbia; the University of Victoria and Royal Roads University.

PANELISTS

CHARMAINE ENNS

Dr. Charmaine Enns originates from Saskatchewan and was initially trained as a family physician. While a family doctor she and her family have lived and worked in Kenya East Africa as well as in rural/remote communities throughout Vancouver Island. Subsequently, Charmaine went on to further training to qualify as a Community Medicine specialist with the Royal College of Physicians and Surgeons of Canada. She has been the Medical Health Officer for North Vancouver Island for the past 8 years and still looks forward to going to work (most days). Vancouver Island has been home to Charmaine, her husband John and their two sons for the past 16 years.

KEN CHRISTIAN

Ken was born in Kelowna and pursued his formal education at BC Institute of Technology, Cariboo College and eventually University of Victoria. His 35 year career in Public Health in the Kamloops region has seen him start as Public Health Inspector and Licensing Officer in the 1970's and 1980's. In 1988 he became the Chief Environmental Health Officer in Kamloops, then Manager of Environmental Health with the Thompson Health Region and most recently the Director of Health Protection with the Interior Health Authority.

Throughout his career he has been a leader in Water Quality, Food Safety, Community Sanitation, Air Quality, Disease Control and Emergency Preparedness. In recent years his interests have turned to Public Policy Development, Administrative Law, Sustainability, Social Determinants of Health and the relationship between Health and the Built Environment.

Ken has served his community for the last 16 years as an elected School Trustee on the Kamloops Thompson Board of Education, including 8 years as Chairman. In his spare time Ken coaches and refs basketball and enjoys the Shuswap with his wife Brenda and their three children.

GLEN OKRAINETZ

AGENDA

Registration / Breakfast

8:00am - 9:00am

Opening Remarks

Speaker: *Tom Kosatsky* (BC Centre for Disease Control; The National Collaborating Center for Environmental Health)

9:00am - 9:10am

Health Impacts of Local Air Quality

Speaker: *Michael Brauer* (University of British Columbia)

9:10am - 9:40am

Air Quality Management in BC

Speaker: *Glen Okrainetz* (Ministry of Environment)

9:40am - 10:10am

BC's Monitoring Network

Speaker: *Natalie Suzuki* (Ministry of Environment)

10:10am - 10:35am

Break 10:35am - 10:50am

Source Apportionment

Speaker: *Mark Graham* (Ministry of Environment)

10:50am - 11:25am

Emissions Inventories

Speaker: *Warren McCormick* (Ministry of Environment)

11:25am - 12:00pm

Dispersion Modeling

Speaker: *Peter Jackson* (University of Northern British Columbia)

12:00pm - 12:35pm

Lunch 12:35pm - 1:45pm

Mobile Monitoring

Speaker: *Eleanor Setton* (CAREX Canada; University of Victoria)

1:45pm - 2:20pm

Land Use Regression

Speaker: *Sarah Henderson* (BC Centre for Disease Control)

2:20pm - 2:55pm

Health Impact Assessment

Speaker: *Christine Bender* (Vancouver Island Health Authority)

2:55pm - 3:30pm

Break 3:30pm - 3:50pm

Panel Discussion

Panelists: *Charmaine Enns* (Vancouver Island Health Authority), *Ken Christian* (Interior Health Authority), *Glen Okrainetz* (Ministry of Environment)
Moderator: *Tom Kosatsky*

3:50pm - 4:50pm

Closing Remarks / Evaluations

4:50pm - 5:00pm

FACULTY

RYAN ALLEN

Ryan Allen has a Master's degree in Environmental Engineering and a PhD in Environmental Health from the University of Washington in Seattle. During a post-doctoral fellowship at the University of Washington he worked as part of an ongoing study that is evaluating the relationship between chronic air pollution exposure and the progression of cardiovascular disease. Dr. Allen is now an assistant professor in the Faculty of Health Sciences at Simon Fraser University in British Columbia, Canada. His current research interests include the cardiovascular health effects of combustion air pollution sources, air pollution in developing countries, and the environmental determinants of childhood asthma.

PAUL BEAUCHEMIN

Paul Beauchemin, a Professional Engineer, is Director and Partner of Envirochem Service Inc., an environmental management and energy consultancy headquartered in Vancouver, BC.

Paul has project managed or led research on over a dozen studies into the environmental impacts and controls for biomass combustion. He was an environmental engineer for three levels of government, from municipal to federal, and also formerly President and owner of an alternate energy equipment manufacturing and distributing company.

His consulting experience includes: air emission control and mitigation; GHG quantification and offsets; energy and environmental audits; government liaison and out-sourced environmental management. His industry experience ranges from: pulp and paper, biomass and fossil fuel energy production; wood gasification; wood pellet manufacturing; to the oil sands.

Mr. Beauchemin is past president of the Air and Waste Management Association's Pacific North West International Section (PNWIS) and recipient of their "Distinguished Achievement Award" in recognition of his "outstanding contribution to air quality management in the Pacific Northwest Region, and to the Association".

ANETTE KOEBACH BØLLING

Dr. Kocbach Bølling received her MSc degree at the Norwegian University of Life Sciences in 2001. She graduated in Biological Physics on the topic "Mathematical modelling of the visual pathway of cats". Dr. Kocbach Bølling did her PhD training in Environmental Toxicology at the Norwegian Institute of Public Health, and received her PhD from the University of Oslo, Norway, in 2008. Her thesis concerned the pro-inflammatory potential of particles from residential wood smoke and traffic, with emphasis on the importance of the physicochemical properties of the particles. Dr. Kocbach Bølling is currently engaged as a Post. Doc. at the Norwegian Institute of Public Health on a project concerning the influence of phthalates and bisphenol A on the development of diabetes and asthma.

CHRISTOFFER BOMAN

Dr. Christoffer Boman is a researcher at Energy Technology and Thermal Process Chemistry, a research group at Umeå University in northern Sweden, presently in a position as assistant professor. He is educated in Environmental Health and Chemistry with 15 year experience of research on small and medium scale biomass combustion, technical ash related problems, emissions measurements, aerosol characterization and health effects studies. Presently he act as national PI for two international collaboration projects within the EU based Era-Net Bioenergy program on Clean Biomass Combustion. He's presentation today will include biomass combustion aerosol particle formation and characteristics as well as technology and air quality issues. The presentation will highlight the considerable influences of technology, fuel and operation on the physicochemical particle properties of further relevance for behavior and toxicological impact.

MICHAEL BRAUER

Michael Brauer is a Professor in the School of Environmental Health at the University of British Columbia (UBC). He also holds associate appointments in the Division of Respiratory Medicine and

the School of Population and Public Health at UBC and directs the Bridge Program – a strategic training program linking public health, engineering and policy. Dr. Brauer received Bachelor's degrees in Biochemistry and Environmental Sciences from the University of California-Berkeley (1986) and a doctorate in Environmental Health from Harvard University (1990). He was a visiting scientist at the Institute of Environmental and Occupational Medicine at Aarhus University in Denmark (1991), at the Institute for Risk Assessment Sciences at Utrecht University in The Netherlands (2000) and at the East-West Center in Hawaii, USA (2008).

Dr. Brauer's research emphasis is on the assessment of exposure and health impacts of air pollution, with specific interest in transportation-related and biomass air pollution. He has participated in monitoring and epidemiological studies throughout the world (U.S., Canada, Mexico, Asia, eastern/western Europe) and served on advisory committees to the World Health Organization (WHO), the US National Academy of Sciences and Institute of Medicine, the Royal Society of Canada and the International Joint Commission. He is currently a member of the outdoor air pollution expert working group of the Global Burden of Disease Project, the International Scientific Oversight and Review Committees of the Health Effects Institute and the WHO Household Fuel Combustion Indoor Air Quality Guideline Development Group. He chairs the external scientific advisory committee of the Mesa-Air Study and is an Associate Editor of *Environmental Health Perspectives*.

ELLEN BURKHARD

Dr. Ellen Burkhard is a Senior Project Manager at the New York State Energy Research and Development Authority (NYSERDA). Ellen manages projects funded by NYSERDA's Environmental Monitoring Evaluation and Protection, Clean Diesel, and Biomass Heating R&D programs. These projects focus on air-quality and health-effects due to energy use and production. The Biomass Heating R&D program she will speak about today supports research to provide objective information for the development of high-efficiency and low-emission biomass heating initiatives in New York State.

STEPHAN VAN EEDEN

Dr. Stephan van Eeden is an Internist at St. Paul's Hospital and Professor in the Faculty of Medicine attached to the Division of Internal Medicine & Respiriology. He graduated from the University of Stellenbosch, Cape Town, South Africa in 1975, and after four years as a family practitioner resumed his studies in Internal Medicine at the same University. He trained and certified in Pulmonology and Critical Care in 1985 and was promoted to Director of Critical Care, Tygerberg Hospital, University of Stellenbosch in 1989. He did his PhD in the Department of Experimental Medicine, University of British Columbia with Dr. James C. Hogg as his supervisor. He graduated in 1995 and completed his Canadian specialist examination (FRCPC) in 1996. He is currently a Principal Investigator at the James Hogg iCapture Centre for Pulmonary and Cardiovascular Research in St. Paul's Hospital and Director of the COPD Chronic Disease Management Program at Providence Health Care.

SARAH HENDERSON

Sarah Henderson is an Environmental Health Scientist at the BC Centres for Disease Control and an adjunct member of the School of Environmental Health faculty at the University of British Columbia. She has an undergraduate degree in environmental engineering and did her doctoral research on forest fire smoke exposure and its public health impacts in British Columbia. Sarah did her post-doctoral research at the University of Tasmania on the global burden of disease due to vegetation fire smoke. She has expertise in air pollution exposure assessment, spatial analysis, remote sensing, biostatistics, environmental epidemiology and hobby farming.

PETER JACKSON

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and his research group use surface and Doppler Sodar observations, as well as numerical models. He is a Professor of Atmospheric Science in the Environmental Science and Engineering Programs at the University of Northern British Columbia (UNBC), and a member of the Natural Resources and Environmental Studies Institute. He teaches courses in Weather and Climate, Boundary Layer and Synoptic Meteorology, as well as Air Pollution and Research Methods. Before joining UNBC, he was an Assistant Professor in the Geography Department at the University of Western Ontario, and a weather forecaster with the Meteorological Service of Canada. He has a PhD from the University of British Columbia.

FAY JOHNSTON

Dr. Johnston is a public health physician and environmental epidemiologist. Her main research interests lie in the trans-disciplinary area of human health and ecological sustainability, particularly in the context of global environmental change. Her current research focuses on the health impacts of smoke from landscape fires and other types of biomass combustion. She is also a sessional physician for the Tasmanian Aboriginal Health Service.

MARKUS KELLERHALS

Markus Kellerhals graduated from the University of British Columbia with a Diploma in Meteorology and a Masters in Atmospheric Science from the Department of Geography. Following his degree he worked for nine years with Environment Canada's Edmonton regional office where he had the position of Air Quality Scientist and subsequently Manager of the Air Quality Science Unit. With Environment Canada he worked on a range of air quality issues including measurement of atmospheric mercury, measuring benzene from upstream oil and gas facilities, regional modelling of ozone, and environmental assessment of large energy projects.

Returning from his exile east of the Rockies, Markus took the position of Senior Air Quality Science Officer with BC Ministry of Environment in 2008. With BC Environment, Markus has worked on a range of issues including modelling the potential health benefits of BC's climate policies and a multi-agency pilot project to manage atmospheric visibility in the Lower Fraser Valley. Several of his recent projects have focused on managing emissions from biomass combustion, namely the development of the Smoke Management Framework for BC, the ongoing revision of BC's woodstove regulation, and the updating of the Model Backyard Burning Bylaw.

CURTIS NOONAN

Curtis' interest in environmental health traces back to his undergraduate days at University of California, Berkeley, in 1989. Further studies at George Washington University granted him a Master's degree and he received his PhD in environmental health, epidemiology at Colorado State University. Dr. Noonan is an award winning researcher and author in his chosen field and currently is an Associate Professor of Epidemiology at the University of Montana where his focus is on health effects of exposure to air pollutants.

TORBEN SIGSGAARD

Torben is a physician and a Professor, Director of the Department of Environmental and Occupational Medicine, School of Public Health at Aarhus University in Denmark. He has a very long experience in research leadership nationally and internationally. He has collaborated on research studies in Europe, Scandinavia and USA and recently engaged in another collaborative research study with Chinese Universities in Wuhan and Beijing. He has worked on risk assessment via his work in the European Respiratory Society and through his work with World Health Organization (WHO) and the European Commission on Health and Consumer Protection. At present, Dr. Sigsgaard is responsible for the research consortium consisting of five independent partners from four universities and a research institution and is heading a group of 18 people engaged in respiratory research on asthma and allergy. Dr. Sigsgaard received his medical degree at the University of Odense.

AGENDA

8:00am - 8:15am	Welcome / Introduction Speakers: <i>Michael Brauer</i> , University of British Columbia (UBC); <i>Curtis Noonan</i> , University of Montana; <i>Judy Qualters</i> , Environmental Hazards and Health Effects National Center for Environmental Health, Centers for Disease Control and Prevention.
	<i>Biomass Combustion Technology</i> : SESSION 1a Chairs: <i>Amanda Wheeler</i> , Health Canada; <i>Curtis Noonan</i> , University of Montana
	HEATING
8:15am - 8:35am	Residential Wood Boiler Technologies and Emissions Relative to Traditional Heating Fuels Speaker: <i>Ellen Burkhard</i> , New York State Energy Research and Development Authority (NYSERDA)
	ELECTRICAL POWER GENERATION
8:35am - 8:55am	Projected Industrial Biomass Combustion Emissions and Controls Speaker: <i>Paul Beauchemin</i> , Envirochem
	<i>Biomass Smoke Characterization, Monitoring and Exposure Assessment</i> : SESSION 1b
9:00am - 9:40am	Residential Combustion for Heating: Emissions Characteristics and Air Quality Impacts Speaker: <i>Christoffer Boman</i> , Umea University
9:40am - 10:10am	Landscape Fire Smoke: Particulate Emissions and Human Exposure Speaker: <i>Sarah Henderson</i> , BC Centres for Disease Control (BCCDC)
10:10am - 10:45am	Panel Discussion Panellists: <i>Ellen Burkhard</i> ; <i>Paul Beauchemin</i> ; <i>Christoffer Boman</i> ; <i>Sarah Henderson</i> ; <i>Gerd Sallsten</i> , University of Goteborg; <i>Tony Ward</i> , University of Montana
Break 10:45am - 11:05am	
	<i>Health Impacts</i> : SESSION 2a Chairs: <i>Ryan Allen</i> , Simon Fraser University; <i>Fuyuen Yip</i> , Centers for Disease Control and Prevention
	EPIDEMIOLOGY
11:05am - 11:30am	Woodsmoke and Children's Health: Findings from the Border Air Quality Study Speakers: <i>Michael Brauer</i> , University of British Columbia; <i>Curtis Noonan</i> , University of Montana
11:30am - 11:50am	The Australian Landscape Fire Smoke Project Speaker: <i>Fay Johnston</i> , University of Tasmania
11:50am - 12:10pm	Biomass Smoke Exposures and Systemic Inflammation Speaker: <i>Stephan van Eeden</i> , University of British Columbia
Lunch 12:15pm - 1:30pm	Lunch Break and Presentation PRESENTATION OF DR. ROBERT CATON AND DR. DAVID BATES SCHOLARSHIPS
	<i>Controlled Exposures/Toxicology</i> : SESSION 2b
1:30pm - 1:50pm	Experimental Exposure to Wood-Smoke Particles in Healthy Atopic Humans (HIPWOODS Study) Speaker: <i>Torben Sigsgaard</i> , Aarhus University
1:50pm - 2:10pm	Toxicity of Wood Smoke Particles Generated Under Different Combustion Conditions Speaker: <i>Anette Kocbach Bolling</i> , Norwegian Institute of Public Health
2:10pm - 2:45pm	Panel Discussion Panellists: <i>Michael Brauer</i> ; <i>Fay Johnston</i> ; <i>Stephan van Eeden</i> ; <i>Torben Sigsgaard</i> ; <i>Anette Kocbach Bolling</i> ; <i>James Lu</i> , Vancouver Coastal Health
Break 2:45pm - 3:05pm	

Management and Reduction of Health Impacts : SESSION 3

Reducing Community and Household Exposures to Residential Wood Combustion

Speaker: *Curtis Noonan*, University of Montana

3:05pm - 3:30pm

Air Filter and Stove Exchange Impacts on Indoor Air Quality and Health

Speaker: *Ryan Allen*, Simon Fraser University (SFU)

3:30pm - 3:50pm

Biomass, Climate and Health: A B.C. Perspective

Speaker: *Markus Kellerhals*, BC Ministry of Environment

3:50pm - 4:10pm

Panel Discussion

Panellists: *Curtis Noonan*; *Ryan Allen*; *Markus Kellerhals*; *Vicki Morell*, Canadian Clean Air Alliance; *Xiaotao (Tony) Bi*, University of British Columbia

4:10pm - 4:45pm

DISCUSSION ON SOLUTION AND INTEGRATED POLICY ISSUES INCLUDING AIR QUALITY, CLIMATE, HEALTH AND RESOURCE MANAGEMENT

Closing Remarks / Evaluations

4:45pm - 5:00pm

Dr. David Bates Lecture

Junior Ballroom

Lessons from Occupational Medicine: The 'Healthy Worker' Effect and Other Issues

Speaker: *Dr. Margaret Becklake*

5:00pm

AWARDS

8TH ANNUAL AIR QUALITY & HEALTH WORKSHOP

ROBERT CATON AWARD

Recipients



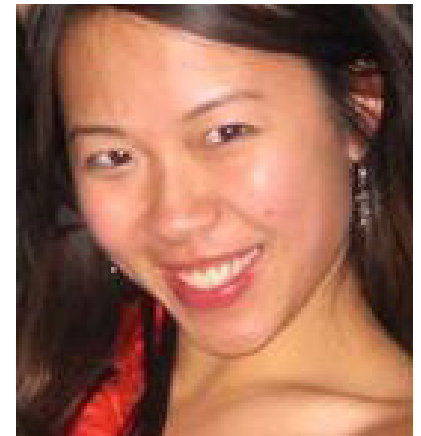
HIND SBIHI

Hind Sbihi is a second-year PhD student at the University of British Columbia in the School of Environmental Health. She is working under the supervision of Dr. Brauer on air pollution exposure assessment methods for birth cohort studies of childhood asthma. She received her engineering degree in Industrial Engineering at Ecole Polytechnique Montreal and her Master's of Science in Occupational and Environmental Hygiene from the University of British Columbia. Her Master's thesis examined methods to improve exposure assessment of historical cohort studies of noise and cardiovascular disease. Her research interests are mainly concerned with how to best measure exposures for epidemiological studies of children's health in order to advance our understanding of environmental contaminants source-health effects link. She is currently involved in the Canadian Healthy Infant Longitudinal (CHILD) study, and is currently examining the contribution of traffic-related air pollution to indoors exposition.



PERRY HYSTAD

Perry Hystad is a PhD candidate in the School of Population and Public Health at the University of British Columbia (UBC). He is supported by a UBC Bridge scholarship, a Michael Smith Foundation for Health Research senior graduate trainee award, and a Canadian Institute of Health Research Frederick Banting and Best research scholarship. His dissertation focuses on air pollution and lung cancer risk in Canada, with an emphasis on social-environment interactions. His other research activities broadly cover spatial epidemiology and place and health. He is also a researcher with CAREX Canada, a national occupational and environmental carcinogen exposure surveillance initiative, and is developing GIS and Population Health and Spatial Epidemiology courses for Population Data BC.



MANDY M. PUI

This year's recipient of the CLEAR Scholarship is Mandy M. Pui, a MSc candidate in the Experimental Medicine program at the University of British Columbia (UBC). She is interested in studying diesel exhaust-associated changes in innate immunity in human asthmatics at the Air Pollution Exposure Laboratory under the supervision of Dr. Christopher Carlsten. She hopes that her research findings will help better equip knowledge translation researchers and policymakers in developing remediation strategies to protect susceptible populations exposed to ambient air pollution. She is also involved in the Collaborative Research and Training Experience - Atmospheric Aerosol Program (CREATE-AAP) at UBC, where she has the opportunity to get trained in other disciplines related to air quality, as well as share her research findings and passion in experimental medicine. She is training for her first triathlon and loves to travel during her spare time.

NOTES
