



Welcome

Welcome to AIR TALKS 2020, an online festival celebrating CASANZ Special Interest Groups (SIGs). Running from 15 to 26 June 2020, the festival is a series of events featuring presentations from highly regarded local and international speakers.

Perhaps you would like to hear from Alberto Ayala PhD M.S.E., discoverer of the Volkswagen emissions scandal?

Or maybe your interest is the odour session, where Mike McGinley, recent recipient of the ASTM E18 Sensory Evaluation Committee Award of Merit will speak.

Whatever your interest, this festival has it covered.

Festival Themes

Modelling SIG:	Urban and near field modelling
Air Quality and Health /Transport SIG:	Health effects of traffic related air pollution
Indoor Air Quality SIG:	Indoor infiltration of smoke and other pollutants
Measurement SIG:	New applications of proven technologies
Emerging Air Quality Professionals:	Future climates
Odour SIG:	What's New in Odour

Format

8 AIR TALKS will feature over the festival period

Each AIR TALK event will be a live online event, hosted by Zoom. Events will be 2-hours duration, with the exception of the Modelling and Odour AIR TALKS which are split into two, 1-hour sessions to accommodate international time zones.

SIG Chairs will host each event, introducing speakers and facilitating questions. You can engage by posting your comments and questions in the chat or contributing to the open-mic, interactive discussion at the end.

AIR TALK session recordings will be available to registered attendees post the event.



Program at a Glance

Date	Time (AEST)	Theme	SIG
16 June 2020 AIR TALK 1	<i>Part 1: 9 am to 10 am</i> <i>Part 2: 5 pm to 6 pm</i>	<u>Urban and near field modelling</u>	Modelling
17 June 2020 AIR TALK 2	9 am to 11 am	<u>Road transport emissions and health</u>	Air Quality and Health / Transport
18 June 2020 AIR TALK 3	4.30 pm to 6.30 pm	<u>Urban planning: integration of land use and transport</u>	Air Quality and Health / Transport
19 June 2020 AIR TALK 4	9 am to 11 am	<u>Mitigation of transport related air pollution</u>	Air Quality and Health / Transport
22 June 2020 AIR TALK 5	1 pm to 3 pm	<u>Indoor infiltration of smoke and other pollutants</u>	Indoor Air
23 June 2020 AIR TALK 6	1 pm to 3 pm	<u>New applications of proven technologies</u>	Measurement
24 June 2020 AIR TALK 7	4 pm to 6 pm	<u>Future Climates</u>	Emerging Air Quality Professionals (EAQP)
25 June 2020 26 June 2020 AIR TALK 8	<i>Part 1: 5 pm to 6 pm</i> <i>Part 2: 9 am to 10 am</i>	<u>What's New in Odour</u>	Odour



Pricing

In consideration of the international Coronavirus pandemic and the impact it is having economically, CASANZ has reduced the AIR TALKS 2020 original pricing by up to 30%, to support our members and the wider air quality and environment community.

AIR TALKS 2020 SPECIAL PRICING	Standard Registration	CASANZ Member	CASANZ Corporate Member*	CASANZ Retired/Student Member
Full Event (all 8 AIR TALKS)	AUD \$250	AUD \$175	AUD\$560	AUD \$85
Single Event (1 AIR TALK)	AUD \$75	AUD \$50	AUD\$160	AUD \$25

Conditions: No further discounts apply. All prices include GST. NZ Members can pay in NZ\$.

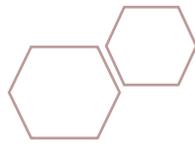
Corporate Member, Full Event registration, allows for up to 4 individuals from the same organisation, to join all 8 AIR TALKS.

Corporate Member, Single Event registration, allows for up to 4 individuals from the same organisation, to join 1 AIR TALK only.

Full event attracts 8 CAQP CPD points or 1 point per AIR TALK.

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Become a member of CASANZ today and enjoy the benefits! [Join Now](#)



Urban and near field modelling

Presented by: **Modelling SIG**
Facilitator: Dr Peter Rye

16 June 2020
Part 1: 9 am - 10 pm AEST Part 2: 5 pm - 6 pm AEST

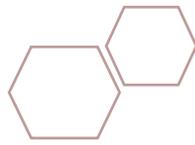
Urban and near field modelling is increasingly important as our cities and urban spaces densify. This AIR TALK will address applications and tools to represent this dynamic. The event is divided into two 1-hour blocks to accommodate time zones for our international presenters. The first hour, 9 am to 10 am AEST, will focus on roads, with Dr Paul Boulter outlining the current state of play for emissions modelling in Australia and New Zealand.

This will be followed by a presentation from Professor Jesse Thé, Lakes Environmental Software, on new AERMOD capabilities for road sources.

In the second hour, 5 pm to 6 pm AEST, the focus expands to applications, with David Rollings discussing modelling in the context of urban planning, followed by a presentation on recent developments in Gral for near field modelling applications.

PART 1 9 AM – 10 AM AEST

No.	Presentation Title	Speaker
1	Where are we at with road transport emissions modelling in Australia and New Zealand? 30 minutes including questions	Dr Paul Boulter Associate Director, EMM, Australia
2	AERMOD capabilities for modelling emissions from roads 30 minutes including questions	Professor Jesse L. Thé, PhD, P.Eng, Canada University of Waterloo / President, Lakes Environmental Software



Dr Paul Boulter is an Associate Director at EMM's Sydney office, and Deputy Chair of the Transport Special Interest Group of CASANZ. His main areas of interest include the development of transport emission models, model evaluation, impact assessment methodologies, and the assessment of air quality policy. Paul has focussed on improving the design and performance of predictive models, and has contributed to the development of various tools and guidance. Paul's work has also included the development of vehicle inspection and maintenance procedures, including potential enhancements based on remote sensing, the characterisation of non-exhaust PM, and air pollution in and around road tunnels. He has recently led the air quality assessments for WestConnex, the Western Harbour Tunnel, Beaches Link, F6 Extension and Sydney Gateway, some of the largest road infrastructure projects in Australia.



Prof Jesse L. Thé, PhD., P.Eng., from the University of Waterloo, Canada is also the President of Lakes Environmental Software. He has over 25 years of experience in Computational Fluid Dynamics (CFD) and environmental simulations. Dr. Thé is the main author of AERMOD View, CALPUFF View, IRAP View, AUSTAL View, and AQMIS Cloud, among others. He consults for regulatory agencies in Canada, the USA, and abroad on topics related to complex air modeling projects. He has authored commercial software, co-authored technical environmental books, is an Executive Editor of the Elsevier Journal of ENERGY, and the Editor-in-Chief of ENN.Com (the largest environmental news network site in the internet). Prof. Jesse Thé is a great public speaker, who has received outstanding reviews from those attending his courses.



PART 2 5 – 6 PM AEST

No.	Presentation Title	Speaker
3	Urban planning and modelling applications 30 minutes including questions	David Rollings Associate Director Air Quality Engineer, AECOM, Australia
4	GRAL updates and an application example for a traffic hot spot 30 minutes including questions	Dr Christian Kurz Institute for Internal Combustion Engines and Thermodynamics, Research Area “Traffic & Environment”, Graz University of Technology, Austria



David Rollings is a Chemical Engineer and Certified Air Quality Professional specialising in Air Quality modelling, impact assessment and regulatory approvals. David has over 19 years experience in the air quality sector during which time he has worked in a wide array of industries including large scale transportation projects, coal mining, iron ore mining, electricity generation, pharmaceutical manufacturing, chemical manufacturing, metalliferous mining (including radio-nuclide modelling), construction, water infrastructure, contaminated land remediation and primary industry assessment. David is primarily based in the impact assessment area of AECOM, although he still maintains a capability in the ambient monitoring and stack emissions testing areas of the business where he designs the monitoring programs and assists in the high level interpretation of the stack testing results.



Christian Kurz works at the Institute for Internal Combustion Engines and Thermodynamics at the Graz University of Technology. Within the framework of his doctoral thesis, a combined emission-dispersion tool for air quality inventories was developed and tested for the City of Klagenfurt. This methodology has already been applied to most major cities in Austria. Since 2004 he has been gaining experience with the dispersion model system GRAMM/GRAL, by supporting the development, applying it for many environmental studies and teaching other users. Before his employment, he studied process plant engineering at the Graz University of Technology.



Road transport emissions and health

Presented by: **Air Quality and Health and Transport SIGs**
Facilitator: Clare Walter

17 June 2020 9 am - 11 am AEST

The Air Quality and health SIG and Transport SIG have collaborated to present three AIR TALKS on the public health impacts of traffic related air pollution. Each sessions will step you through emissions and their effects on human health, transport planning and finally, mitigation.

The SIGs have prepared an impressive list of eight speakers with a local and international focus as well as speakers with expertise in different, but related subject areas. Just what we need to understand the complex puzzle of transport and health.

For the first AIR TALK, Dr Haneen Khreis from the Texas A&M Transport Institute will provide a science-based analysis of exhaust and non exhaust emissions, with a particular focus on electric vehicles. Following this, Professor Graeme Zosky will detail micro human health impacts, including the toxicological response of emissions from road transport.

No.	Presentation Title	Speaker
1	Exhaust and Non-Exhaust Emissions 60 minutes including questions	Dr Haneen Khreis TTI Associate Research Scientist Centre for Advancing Research in Transportation Emissions, Energy and Health Texas A&M Transportation Institute, Texas
2	Micro human health impacts 60 minutes including questions	Professor Graeme Zosky Deputy Director, Menzies Institute for Medical Research/Professor of Physiology, Tasmanian School of Medicine, Australia



TTI Associate Research Scientist, Centre for Advancing Research in Transportation Emissions, Energy and Health, Texas

Dr. Haneen Khreis is a cross-disciplinary professional in the health impacts of transport planning and policy. She has training in transport planning and engineering, vehicle emissions monitoring and modeling, air quality monitoring and modeling, exposure assessment, systematic reviews and meta-analyses, health impact and burden of disease assessment, policy options generation, cross-disciplinary collaboration, curriculum development, and the science-policy link in transport and health. She also has experience and worked in the fields of epidemiology, childhood asthma, climate action and co-benefits and knowledge translation.



Deputy Director, Menzies Institute for Medical Research/Professor of Physiology, Tasmanian School of Medicine

Graeme is a biomedical researcher and Deputy Director of the Menzies School of Medical Research. Graeme is an expert on lung structure-function relationships and the development of novel techniques for the assessment of lung mechanics. His current research program is focused on the role of environmental exposures in determining lung growth and how this impacts on health and disease. He is also passionate about the impact of environmental exposures on health outcomes in disadvantaged populations.



 Urban planning and health: integration of transport and land use

Presented by: **Air Quality and Health and Transport SIGs**
Facilitator: Clare Walter

18 June 2020 4.30 pm - 6.30 pm AEST

This AIR TALK focuses on health, urban planning and the integration of land use and transport. The event provides both an international and local focus with presentations from Dr Mark Nieuwenhuijsen, Spain, and Adam Terrill, Australia. However urban planning and integration of uses is not just an academic exercise with the burden of planning decisions resting with the community. Recognising this, the session includes two community perspectives, Dr Kate Lycett, Australia, and Jemima Hartshorn, London.

No.	Presentation Title	Speaker
1	Local community perspective: reflections from postdoctoral research fellow. 20 minutes including questions	Dr Kate Lycett Senior Research Officer, Deakin University, Honorary Fellow, The University of Melbourne, Murdoch Children’s Research Institute, Australia
2	International community perspective: Mums for Lungs. How the community group formed; interacts with experts and policy makers and barriers/enablers that contribute to the group’s success and failures. 30 minutes including questions	Jemima Hartshorn Founder, Mums for Lungs, UK
3	Snapshot of urban and transport planning perspectives from a world leading expert in environmental exposure assessment. This talk will highlight Dr Nieuwenhuijsen’s work on new concepts, methods and tools to improve health in cities. 45 minutes including questions	Mark Nieuwenhuijsen PhD Research Professor, Director of the Urban Planning, Environment and Health Initiative and Director of the Air pollution and Urban Environment Programme, IS Global, Spain



No.	Presentation Title	Speaker
4	Local planning perspective: what are the challenges and opportunities for transport and urban planning integration in Australia? 25 minutes including questions	Adam Terrill Senior Principal Planner & Team Leader Tract, Vice President, VPELA, Australia



Dr Kate Lycett is a co-funded NHMRC and National Heart Foundation Early Career Researcher. Her research interests span child mental health, sleep, obesity, cardiovascular health, epidemiology, public health, and well-being at both the individual and societal levels.



I am a strategist, policy expert, grant manager and community leader, with 15 years' experience in non-governmental organisations and the public sector in the UK, Germany, Belgium and Ethiopia. I am passionate about addressing social injustices, especially air pollution, and was named by the Evening Standard as one of 2019's most influential Londoners for my environmental activism. I am an experienced strategic leader, having founded a prominent campaigning group, Mums for Lungs, and served on the board of an international development charity, The Hunger Project, for eight years. I have managed numerous grants in the areas of air pollution, climate, and human rights.



Mark J Nieuwenhuijsen PhD is a world leading expert in environmental exposure assessment, epidemiology, and health risk/impact assessment with a strong focus and interest on healthy urban living.

He led the TAPAS (active transportation and health) and PHENOTYPE (green space and health) studies and participates in the ESCAPE (air pollution and health), HELIX (exposome and health), EXPOSOMICS (exposome and health) and PASTA (active transportation and health) studies.

He currently participates in the iMAP (Urban environment and cognition), BlueHealth (Bluespace and health), Lifecycle (Birth cohorts) and CitiesHealth (Citizen science and health) studies.

He has edited 3 books on Exposure Assessment and on Environmental Epidemiology, and one on Integrating human health into Urban and Transport planning, and has co-authored more than 400 papers published in peer reviewed journals and 30 book chapters.

In 2018, he was awarded the ISEE John Goldsmith Award for Outstanding Contributions to Environmental Epidemiology.



Adam Terrill is a Senior Principal Town Planner with over 18 years of industry experience. He leads a diverse range of major planning, development and environmental projects, possessing skills in strategic and statutory planning, rezonings, structure plans, and VCAT and Planning Panels advocacy. He is a broad thinker with multi-disciplinary skills, and is a certified planning professional (CPP).

He is also a team leader of the Victorian planning division at Tract, one of Australia's largest town planning consultancies, responsible for strategic direction, recruitment, and financial performance.



Mitigation of transport related air pollution

Presented by: **Air Quality and Health and Transport SIGs**
Facilitator: Dr Robin Smit

19 June 2020 9 am - 11 am AEST

Featuring a presentation from Dr Alberto Ayala, discoverer of the Volkswagen emission scandal.

Air pollution mitigation from transport sources became a high-profile topic when the VW “dieselgate” scandal erupted in 2015. Subscribe to this event to hear Dr Ayala’s experience with VW as well as his more recent reflections on policy and politics in the United States.

Joining Dr Ayala will be Joshua Miller, Manager of the International Council on Clean Transportation (ICCT) Modeling Center. Mr Miller will discuss the effectiveness of modern emission control.

No.	Presentation Title	Speaker
1	The discoverer of the VW emissions scandal will talk about VW, emission mitigation, electric vehicles and policy/political implications of the current political situation in the USA. 60 minutes including questions	Alberto Ayala PhD M.S.E Executive Director, Air Pollution Control Officer, Sacramento Metropolitan Air Quality Management District, USA
2	How effective is emission control in modern on-road vehicles? An international perspective from the Manager of the International Council on Clean Transportation Modeling Center. 60 minutes including questions	Joshua Miller Modeling Center Manager, The International Council on Clean Transportation, USA



Dr. Alberto Ayala began his tenure in July 2017 as the new Executive Director and Air Pollution Control Officer of the Sacramento Metropolitan Air Quality Management District. In this capacity and under the guidance of the Air District Board of Directors, Ayala leads a team of dedicated professionals charting a course towards clean air and a low-carbon future for the California capital region. Ayala came to the Air District after 17 years with the California Air Resources Board, serving most recently as Deputy Executive Officer. Prior to ARB, he was a member of the engineering faculty at West Virginia University, where he still holds an Adjunct Professor appointment, and a Design Engineer for Teledyne Ryan Aeronautical. Ayala has published extensively in refereed scientific journals and is a recognized speaker and lecturer on air pollution and combustion emissions. He holds B.S. ('91), M.S.E. ('93), and Ph.D. ('97) degrees in mechanical engineering from the University of California, Davis.



Joshua Miller joined the International Council on Clean Transportation (ICCT) in 2012. He manages the ICCT's Modeling Center, which concentrates the models, expertise, and datasets needed to create scenarios and cost-benefit assessments of adopted and potential government actions spanning all transport modes and regions. He also leads ICCT's activities in the G20 Transport Task Group, which provides direct support to regulators in G20 economies to improve the energy efficiency and environmental performance of transport, with a focus on heavy-duty vehicles. Mr. Miller has served as a principal investigator for numerous emissions inventories, regulatory impact assessments, and cost-benefit studies covering a wide range of national and local jurisdictions and policies. He has worked with policymakers in Europe, North America, South America, East Asia, Southeast Asia, South Asia, the Middle East, and Africa. Mr. Miller holds an M.S. in Transportation Technology and Policy from the University of California, Davis and a B.A. in Economics from Vassar College, where he graduated with honors in 2010.



Indoor infiltration of smoke and other pollutants

Presented by: **Indoor Air SIG**
Facilitator: Dr Bill Trompetter

22 June 2020 1 pm - 3 pm AEST

Infiltration of outdoor smoke into homes has become very topical recently, especially when bushfire smoke was blanketing parts of Australia, and public were being advised to stay indoors for some protection. A similar situation occurs in many southern Australian and New Zealand, towns and cities, where outdoor smoke levels frequently exceed air quality guidelines during cold, calm winter nights. In this AIR TALK, four presentations collectively address the topic of infiltration of outdoor air pollution into buildings and homes, indoor exposures and deposition onto indoor surfaces, and finally a look into mitigation measures.

No.	Presentation Title	Speaker
1	Winter air quality and outdoor-indoor air exchange in 85 homes in New Zealand’s most polluted town 30 minutes including questions	Dr Ian Longley Principal Air Quality Scientist, NIWA, New Zealand
2	Sources of airborne particulate matter in a sample of New Zealand homes and the impact of ventilation/infiltration 30 minutes including questions	Dr Perry Davy Senior Atmospheric Chemist, GNS Science, New Zealand
3	Infiltration and Surface Sampling Methodology for Assessing Indoor Deposition of Bushfire Ash 30 minutes including questions	Brad Prezant Chief Scientific Officer ValidAir Sciences, Australia
4	The use of portable HEPA air cleaners to improve residential indoor air quality during biomass burning events 30 minutes including questions	Dr Amanda Wheeler Senior Research Fellow, Australian Catholic University, Australia



Dr Ian Longley is the Principal Air Quality Scientist at NIWA – the National Institute for Atmospheric Research (NIWA) - in Auckland, New Zealand. He joined NIWA in 2007 and has led the “Impacts of Air Pollutants” research programme since 2012. He has a degree in Engineering and a PhD in Atmospheric Physics, both from the University of Manchester. His expertise covers exposure to emissions from road traffic and domestic heating, and citizen participatory research.

Presenter: Longley, I. Olivares, G., Kachhara, A., Barraza, F.

TITLE: **Winter air quality and outdoor-indoor air exchange in 85 homes in New Zealand’s most polluted town**

ABSTRACT There is very little observational data on air quality in New Zealand homes. Anecdotally there are widely differing opinions on whether buildings provide protection from outdoor air pollution or not, and whether indoor or outdoor sources are more significant, especially on winter nights in wood-burning communities when ambient air quality standards are breached. This is largely due to the cost and inconvenience of monitoring in homes and the large number of potential variables making it difficult to establish whether or not any home is representative of others.

Low-cost sensors now offer a solution allowing simultaneous indoor and outdoor monitoring in multiple homes. In winter 2019 a gridded network of outdoor PM sensors was deployed in Arrowtown, Otago. During the winter similar indoor sensors were deployed in 85 homes in 5 waves.

In 2019 Arrowtown recorded the highest number of exceedences of the PM₁₀ standard of anywhere in the country. Our study revealed a wide variation in indoor air quality, infiltration of outdoor smoke and indoor sources. Infiltration was observed in nearly every home that had significant exposure to outdoor pollution indicating that no home provided full protection. Our results indicated the significance of pollutants becoming trapped and accumulated in more airtight homes especially overnight.



Dr Perry Davy is a Senior Atmospheric Chemist and Lead Scientist of the Air Particulates Laboratory at the Institute of Geological and Nuclear Sciences (GNS Science) in Wellington, New Zealand. He has been researching the composition and sources of air pollution in NZ and overseas for more than 20 years. Perry's work has encompassed all aspects of atmospheric particulate matter characterisation and source apportionment, from research monitoring program design, execution and reporting, to providing laboratory services, expert data analytics and reporting to external clients and collaborators. He has an MSc degree in Organic Chemistry (Auckland University) and a PhD in Atmospheric Chemistry (Victoria University of Wellington).

Presenter: Davy, P.K., Trompetter, W. J.

TITLE Sources of airborne particulate matter in a sample of New Zealand homes and the impact of ventilation/infiltration

ABSTRACT The identification of indoor air pollutants is useful for exposure analysis and air quality management as we spend 80-90% of our time in built environments. We present the results from a study of indoor aerosol composition across a range of residential housing stock in Wellington, New Zealand. High resolution (two-hourly) samples of air particulate matter were collected simultaneously both indoors and outdoors of occupied dwellings and the elemental composition of the samples was then measured using ion beam analysis. The compositional data was used to define the sources of particulate matter and assess the differences between indoors and outdoors as well as examine the infiltration of outdoor air pollution to indoor spaces. We show that indoor emission sources (cooking, wood burner use, household dust) can generate high concentrations of particulate matter and that the fine fraction from outdoor sources infiltrates our homes essentially unimpeded.

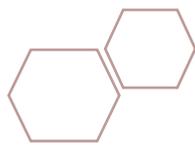


Brad Prezant, MSPH, MBA, CAQP, CIH, COH, CPE (CPE retired 2012) is an evidence-based public health scientist, occupational epidemiologist, and occupational hygienist. The majority of his career has been spent as a consultant in private practice; his University experience includes full-time employment and faculty status at several universities (University of Washington, Seattle, WA, USA, and Massey University, Wellington, NZ), where he initiated as well as contributed to occupational health research. He is currently employed as Chief Scientific Officer at ValidAir Sciences, Pty., Ltd., in Melbourne, Australia.

Presenter: Prezant, B.

TITLE Infiltration and Surface Sampling Methodology for Assessing Indoor Deposition of Bushfire Ash

ABSTRACT Bushfire events create extremely high ambient levels of fine particulate (PM 2.5) that travels long distances downwind. Infiltration to buildings is particle-size dependent, with a time delay to fine particle infiltration, but little attenuation. Public health advice is often not correct, suggesting that protection from bushfire particulate is provided by the indoor environment in the same manner that protection from pollen is offered by the indoors during allergy season. Indoor exposure to bushfire smoke can be important for epidemiologic research, and also for insurance purposes. Historical assessment of bushfire residue using soot and char scoring can lead to incorrect conclusions regarding the source of observed particulate. Bark and leaves contain stony minerals termed phytoliths, composed of calcium oxalate. These substances are present in ash, and travel many kilometres downwind from a bushfire, providing a fingerprint of the species of plants burned, the temperature of the fire, the distance from the source, and other information that forms a distinctive signature of the bushfire. Assemblage analysis of surface tapelift samples based on calcium oxalate detection can be utilised to distinguish between particulate from bushfires and other combustion sources common around homes. The particulate from bushfires remains present indoors on surfaces for many weeks or months, permitting contemporaneous as well as retrospective assessment of exposure and/or smoke damage.



Dr Amanda Wheeler is a Senior Research Fellow in the Behaviour, Environment and Cognition Research program based at the Mary MacKillop Institute for Health Research, Australian Catholic University. She is part of the team investigating the effects of the built environment, air pollution and noise on the cognitive health of older adults. Her other research interests include evaluating interventions to improve indoor air quality that is impacted by biomass smoke. Her published research interests include personal exposures to air pollution from residential and ambient sources, tracking activity patterns, and understanding the intra-urban variability of air pollutants using GIS tools and developing Land Use Regression (LUR) models. She has experience with a range of environmental pollutants including particulate matter, volatile organic compounds, phthalates and polycyclic aromatic hydrocarbons. She is also an Honorary Fellow at the University of Tasmania and The University of Melbourne.

Presenter: Wheeler, A.J., Longley, I., Reisen, F., Allen, R., Borchers Arriagada, N., Olivares, G., Williamson, G., Dennekamp, M., Garvey, K., Johnston, F.H.

TITLE **The use of portable HEPA air cleaners to improve residential indoor air quality during biomass burning events.**

ABSTRACT Bushfires, prescribed burns and residential wood burning are a significant source of fine particles (PM_{2.5}) affecting the health and well-being of many communities. Studies conducted internationally have demonstrated that much of the outdoor particulate matter generated through biomass burning is able to infiltrate indoors resulting in elevated residential indoor PM_{2.5} concentrations. There is some international evidence of the value of using portable indoor air cleaners to reduce PM_{2.5} exposure. These have yet to be successfully evaluated in the Australian context where building codes and housing designs differ significantly from Europe, Canada and the US, where much of this research has been previously conducted.

Between 2017 - 2020 three residential indoor air quality studies were undertaken to assess the efficacy of portable High Efficiency Particulate Air (HEPA) cleaners at reducing indoor PM_{2.5} concentrations. Homes participated in the studies that included emissions from winter woodsmoke, planned burns and a Tasmanian bushfire emergency. Residential indoor and outdoor PM_{2.5} concentrations were measured continuously using Plantower 3003 sensors. Baseline and intervention periods using a portable HEPA air cleaner were conducted in all homes. Housing characteristic surveys and daily diaries of household activities were tracked to interpret the findings. A subset of homes included air exchange rate measurements using the carbon dioxide decay method.

Preliminary data from regulatory monitoring stations indicate that ambient PM_{2.5} concentrations reached hourly averages of approximately 1,200µg/m³ during the bushfire and approximately 80µg/m³ during winter woodsmoke events. Woodsmoke impacted homes demonstrated an average change in PM_{2.5} indoor to outdoor ratios from baseline to HEPA interventions between 0.89–0.76. Preliminary results suggest that on average the HEPA cleaners reduce PM_{2.5} concentrations by approximately 50% (range 27-84%). Data from all biomass events will be presented including results from the bushfire emergency. This will provide intervention data for regulatory agencies facing extreme smoke events in populated areas where evacuations are challenging or there are populations vulnerable to health effects of smoke exposure.



New applications of proven technologies

Presented by: **Measurement SIG**
Facilitator: Ben Payami

23 June 2020 1 pm - 3 pm AEST

Measurement is a dynamic field with changes in technology advancing the field at a rapid rate. However existing tools, with proven value, continue to offer solutions for air quality monitoring applications. In this AIR TALK the Measurement SIG will examine the application of proven technologies in new areas.

No.	Presentation Title	Speaker
1	SIFT-MS A new air quality monitoring technique for real-time detection of volatile compounds 60 minutes including questions	Dr Vaughan Langford Principal Scientist, Syft Technologies, New Zealand
2	Pollution source apportionment using combined elemental and real time particulate matter measurement 60 minutes including questions	Erika Matsumoto Senior First Class Radiation Protection Supervisor, Engineer, Process and Environmental Instruments, R&D Department, HORIBA, Japan



Principal Scientist, Syft Technologies, New Zealand

Vaughan joined Syft Technologies in 2002 after completing his PhD in Physical Chemistry at the University of Canterbury, and post-doctoral fellowships at the Universities of Geneva, Western Australia, and Canterbury. With an extensive background in diverse applications of SIFT-MS – including environmental and odour monitoring – he provides advanced applications support to SIFT-MS users globally.

Presenter: [Langford, V.](#)

TITLE **SIFT-MS A New air quality monitoring technique for real-time detection of volatile compounds**

ABSTRACT Air pollution has been described by the World Health Organization (WHO) as the largest single environmental health risk and attributes eight million deaths annually as a result of exposure to air pollution. Air is, however, a dynamic matrix and is complex at trace levels. Conventional analytical techniques (such as those based on gas chromatography) lack the time resolution and responsiveness required to provide timely answers so that the root cause of air quality perturbations can be rapidly identified and addressed. Selected ion flow tube mass spectrometry (SIFT-MS) is a direct mass spectrometric technology for continuous and selective robust analysis of ambient air for trace volatile organic compounds and inorganic pollutants. This presentation will introduce the SIFT-MS technique and provide example data from case studies in New Zealand and East Asia (China and Vietnam).



**Process & Environmental Instruments R&D Department,
HORIBA, Japan**

Having experienced development of ambient pollution monitor, especially Continuous Particulate Monitor with X-ray Fluorescence PX-375, currently doing application development specialist of PX-375. Also experienced development of environmental radiation monitor in her career.

Presenter: Matsumoto, E.

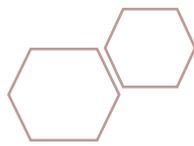
TITLE Pollution source apportionment using combined elemental and real time particulate matter measurement

ABSTRACT Particulate matter has attracted much attention as one of the key items in air pollution. In order to identify where the PM is being generated and the mechanism of release, it is critical to rapidly analyze material substances and their constituents. HORIBA developed the PX-375 to continuously measure mass concentration by the beta attenuation and element concentration by X-ray fluorescence (XRF). Development of our own unique filter tape (TFH-01L) has enabled PX-375 to measure mass and element concentration with high-sensitivity and time resolution. We confirmed favorable correlation results between the PX-375 and the inductively coupled plasma mass spectrometry method (ICP-MS). This presentation introduces the validity of field-testing using the PX-375.

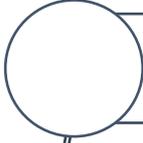
The field testing of PX-375 has been conducted at multiple locations internationally. This presentation introduces a part of field testing results. From the field test results, the PX-375 has proven its effectiveness in its capability to monitor PM_{2.5} mass and element concentration. Conventional analysis techniques are unable to capture rapid outbreaks of unique element concentrations for given time periods due to high-cost and time consuming analysis procedure. The PX-375 provides continuous measurement with the high time resolution in the field and users are capable of understanding outbreaks by studying relative variation of element concentration. Long-term measurement will assist in the knowledge of changes in the outbreak source and the characteristics at a regional level.

Although the contribution of inorganic elements to the total PM mass is not significant, they can serve as trace elements in air source management since different contamination generation sources emit their unique inorganic elements.

For example, modeling with the Chemical Mass Balance method or the Positive Matrix Factorization method is a method to specify stationary sources in utilization of measurement data of inorganic elements, gaseous species such as Sulfur Dioxide, and Nitrogen Oxides.



Future Climates



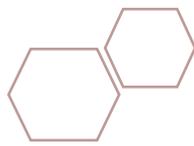
Presented by the **EAQP**
Facilitator: Kirsty Tanner



24 June 2020 4 pm - 6 pm AEST

Globally, natural disasters have been increasing in frequency and intensity which has resulted in devastating impacts on our communities and natural environments. Last summer, Australia experienced unprecedented bushfire events which resulted in poor air quality across much of the nation for extended periods of time. The amount of scientific research linking climate change with increasingly worsening natural disasters is overwhelming. It is clear to the EAQP that the steps required to limit climate change impacts and maintain clean air are, more often than not, one and the same. This AIR-TALKS session will explore air quality impacts during extreme events, including lockdowns resulting from the COVID-19 pandemic, and actions to be taken to achieve progress towards climate change mitigation and clean air.

No.	Presentation Title	Speaker
1	An EAQP’s perspective on climate change and air quality with a focus on changes in impacts during recent extreme events 40 minutes including questions	EAQP Speakers
2	How two types of natural disaster increased air pollution levels in Chile: the case of wildfires and an extreme flooding event. 40 minutes including questions	Dr Francisco Barraza Lecturer, School of Geography, University of Otago, New Zealand
3	Climate change and net zero infrastructure. 40 minutes including questions	Sam Friggens Climate Change Practice Leader, Mott MacDonald, UK



Lecturer, School of Geography, University of Otago, New Zealand

Dr Barraza is an enthusiastic Environmental Health and Climate Change researcher. His expertise has developed through studies focused on environmental pollution, public health, paleoscience and climate change.



Climate Change Practice Leader, Mott MacDonald, UK

Sam Friggens is a senior consultant in energy strategy and innovation for Mott MacDonald, a global engineering and management consultancy. His work focusses on energy system transformation, climate change and technology innovation, working with Governments and investors in the UK and globally. In 2018 he worked with the UK Committee on Climate Change exploring the role of biomass in a low carbon economy. Currently he manages a consortium delivering the UK Government's 2050 International Carbon Calculator Programme. He is also leading the formation of a new infrastructure industry coalition to support the implementation of the UK's net-zero GHG emissions target.



What's New in Odour

Presented by: **Odour SIG**
Facilitator: Geordie Galvin

25 June 2020 Part 1: 5 pm - 6 pm AEST	26 June 2020 Part 2: 9 am - 10 am AEST
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The Odour SIG presents two speakers on What's New in the odour field. This AIR TALK is split into two parts to accommodate timezones for Europe and North America.

Part 1, 25th June, 5 pm to 6 pm, will feature Ton van Harreveld, Founder of Odournet in the Netherlands. Ton will provide an update on European Standard EN13725 and its progress towards revision. EN13725 "Air quality-determination of odour concentration by dynamic olfactometry" was first published in 2003, with this revision including more detail on sampling and updates to olfactometry measurement. You may remember Ton from the CASANZ 2007 Conference. He is an engaging and knowledgeable speaker, not to be missed.

Part 2 will be held on 26th June, 9 am to 10 am. In this second part the focus will shift to North America, where Mike McGinley will detail his perspective on field odour surveys and development of olfactometry standards. Mike is Laboratory Director at St Croix Sensory and an ASTM Sensory Evaluation Committee Task Group Leader. Mike was also awarded the ASTM E18 Award of Merit in October 2019.

No.	Presentation Title	Speaker
1	Progress of EN13725 revision, the standard used to determine odour concentration and odour treatment efficiency 60 minutes including questions	Ton van Harreveld Founder, Odournet, Netherlands



Ton is an innovative environmental scientist and applied entrepreneur, who created 70+ jobs in an emerging field of environmental odour assessment and management.

Ton's goal is to ensure that our micromultinational, Odournet, delivering sensory expertise since 1980, remains viable, independent and fun to work in, while gradually reducing his personal involvement and building a strong team with a solid financial basis.

Expand the focus of the firm centered on two key activities: a. environmental annoyance (noise, odour) and b. sensory evaluation and sensory marketing (air, food, drink, consumer products).

PART 2: 26 JUNE: 9 AM TO 10 AM AEST

No.	Presentation Title	Speaker
2	North American perspective on What's New in the field of odour analysis and field surveys 60 minutes including questions	Michael McGinley P.E. Laboratory Director, St Croix Sensory, USA



P.E. Laboratory Director, St Croix Sensory, USA

Mr. McGinley is the Laboratory Director of St. Croix Sensory. He has a Bachelor of Chemical Engineering degree from the University of Minnesota and a Masters degree in Environmental Health Engineering from the Johns Hopkins University School of Public Health.

Mike is a member of several industry organizations including AWMA, WEF, and ASTM. Mike's work at St. Croix Sensory involves overseeing daily laboratory operations including environmental air and product odor evaluations, laboratory QA/QC, and manufacturing of odor testing products.