Conference Program

A&WMA’s 112th Annual Conference & Exhibition

WINDS OF CHANGE
Environment, Energy & Health

JUNE 25-28, 2019
Ville de Québec

ACE 2019 Mobile App
Get the most up-to-date conference information on the new ACE 2019 mobile app. Download the AO-Event app for free on the App Store or Google Play. Click on the My App and the + sign and enter the code ACE2019.
QUÉBEC, en action pour la qualité de vie de ses citoyens
Québec city taking action for resident’s quality of life

- Réseau structurant de transport en commun
  Structuring public transit network

- Rues conviviales
  Complete streets

- Vision des déplacements à vélo
  Bicycle transportation plan

- Vision de l’arbre
  Urban forestry plan

- Centre de biométhanisation
  Biomethanization centre
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Founded in 1907, A&WMA is a nonprofit, nonpartisan professional organization that enhances knowledge and expertise by providing a neutral forum for information exchange, professional development, networking opportunities, public education, and outreach to more than 5,000 environmental professionals in 65 countries. A&WMA also promotes global environmental responsibility and increases the effectiveness of organizations to make critical decisions that benefit society.
WELCOME FROM THE A&WMA PRESIDENT

Welcome to the A&WMA Annual Conference & Exhibition in Québec City!

Bonjour et bienvenue à Québec — Vents de Changement! It is a true honor to welcome you to the 112th Annual Conference and Exhibition (ACE) of the Air & Waste Management Association (A&WMA). We have such an exciting and packed agenda for you this week with topics ranging the breadth of the environmental, energy, and health spectrums. Our Technical Council has worked to make sure that our program is engaging, top notch, and full of content for every attendee. Our Local Host Committee (LHC) has been diligent in adding a local flair to not only the technical program content but also the networking events this week. And all of this is offered in front of the amazing backdrop that is Ville de Québec. Full of historical attractions, wonderful nightlife, scenic streets, and amazing restaurants at every turn, Québec will make sure that your out-of-conference hours are just as full as your in-conference time.

As you wander your way through the halls of Centre des Congres de Québec, I encourage you to take advantage of every minute of opportunity that ACE provides. Make sure you attend Tuesday’s opening keynote panel featuring environmental leaders from Canada and the United States presenting the latest happenings and high-level perspectives in the environmental arena. Then join us for the ribbon-cutting and Exhibit Hall Grand Opening . . . you never know who might be holding those giant scissors. In addition to the technical sessions, you will find plenty of opportunities for expanding your network and learning new information. From the Women’s Professional Development Luncheon to the Opening Reception and a host of young professional and student events, there is always something happening at ACE. If you are not sure where to go or who to talk to, swing by the YP Hub in the Exhibit Hall and connect with someone helpful to direct you towards the next event or invite you to a group dinner.

This year’s Annual Critical Review focuses on an issue that is important on both sides of the border – oil sands. Dr. Jeffrey Brook explores the scientific bases behind oil sands emissions and ecosystem protection and presents the results of an enhanced monitoring and research program conducted in northern Alberta in partnership with the Province of Alberta and Environment and Climate Change Canada over the past six years.

Please make sure to track me down this week and introduce yourself. One of the best parts of this position is meeting members and non-members alike at Association events and getting their input on how we can make the Association work better for them. If you aren’t a member, seek me or one of our Board members out and let’s talk about why you should be. While ACE is an experience in and of itself, the benefits of membership extend long beyond the one week we come together each June. And finally, please also take a minute and thank one of the A&WMA staff that are running around this week. Our small team of Pittsburgh staff members work tirelessly to make sure this program goes off without a hitch (or minimize the ones that do arise), and they deserve every thank you and smile you give in return.

Thank you for joining us at ACE this year and enjoy your week in Québec! This truly is an amazing city and the program before you this week is one of the best you’ll find in the industry. Make the most out of both! Je hâte de te rencontrer!
BIENVENUE À QUÉBEC

On behalf of the Local Host Committee, it is our pleasure to welcome you to Québec City for ACE 2019. With “Winds of Change” as a theme, this international event organised by the Air & Waste Management Association is a unique opportunity to discuss numerous challenges for our society such as environment, energy, and health. We have worked very hard in collaboration with our partners to propose a world-class technical and scientific program, high-quality professional development courses, as well as a complete and diversified exhibition. Moreover, special events for young professionals, students in environmental sciences, as well as technical tours and tourist activities, are available for all conference attendees. We hope that the 112th Annual Conference & Exhibition will meet your expectations and that you will enjoy Québec City’s charm and the warm welcome for which the Québécois are famous!

Au nom du comité local d’organisation, il nous fait plaisir de vous souhaiter la plus cordiale des bienvenues à Québec pour la conférence ACE 2019. Sous le thème « Vents de changements », cet événement international organisé par la Air & Waste Management Association (A&WMA) est une opportunité unique d’échanger sur les enjeux majeurs que sont l’environnement, l’énergie et la santé. Nous avons travaillé très fort avec tous les collaborateurs et partenaires pour vous proposer un programme technique et scientifique de classe internationale, des cours de perfectionnement de qualité de même qu’un salon commercial complet et diversifié. Des événements spéciaux pour les jeunes professionnels, les étudiants, les femmes en environnement ainsi que des visites industrielles et touristiques ouverts à tous les participants vous sont également proposés. Nous espérons que cette 112e édition sera à la hauteur de vos attentes et par-dessus tout, que vous saurez profiter du charme de la Ville de Québec et de l’accueil légendaire des Québécois!

Nicolas Turgeon
General Conference Chair

Jean-Luc Allard
General Conference Co-chair

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Constant monitoring of air quality and measures taken towards zero waste aim to solidify the city’s environmental leadership.

ville.montreal.qc.ca
A&WMA gratefully acknowledges our sponsors for their generous support of the 112th Annual Conference & Exhibition.

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Cradle of French North America and a world heritage site. Québec is a modern city steeped in history. It is a great place to live, work and play. Prosperous, accommodating and resolutely turned to the future, it stands proudly among the most prestigious capitals in the world. www.ville.quebec.qc.ca/en

The Québec government is a leader in renewable energy, energy efficiency and innovation. Having committed to energy transition for several years, it is actively involved in the fight against climate change and the protection of the environment, for the benefit of current and future generations.

Le gouvernement du Québec est un chef de file en matière d’énergies renouvelables, d’efficacité énergétique et d’innovation. Engagé sur la voie de la transition énergétique depuis plusieurs années, il participe activement à la lutte contre les changements climatiques et à la protection de l’environnement, et ce, au bénéfice des générations actuelles et futures.

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NASA’s Applied Sciences Program discovers and demonstrates innovative uses and practical benefits of NASA Earth science and data from NASA’s Earth-observing environmental satellites. Applied Sciences supports applied research and targeted decision-support projects. The Program currently has formal efforts in: Health & Air Quality, Disasters, Ecological Forecasting, and Water Resources. www.nasa.gov

Gold Sponsors

Since 1955, the Bay Area Air Quality Management District has been the public agency responsible for protecting air quality in the nine counties that surround San Francisco Bay: Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, southwestern Solano, and southern Sonoma counties. Air District programs monitor air emissions sources, promote climate protection, provide clean air grants, draft rules and regulate stationary air pollution sources. The Air District’s mission is to protect and improve public health, air quality and the global climate. The Air District encourages clean commute alternatives through the Spare the Air program. www.baaqmd.gov

An expert in industrial productivity and competitiveness for 50 years, The Centre de recherche industrielle du Québec (CRIQ) provides the most extensive range of innovative services in Québec. A Québec government corporation under Ministère de l’Économie et de l’Innovation (MEI), CRIQ is at the forefront of many R&D initiatives and is proud of its collaborations with innovation partners throughout Québec. CRIQ ensures a smooth transition for innovative manufactures by providing access to labs using state-of-the-art technologies and proven methodologies for experimentation, training, and project implementation. www.criq.qc.ca

With more than $7 billion in assets, Énergir is a diversified energy company whose mission is to meet the energy needs of its 520,000 customers and the communities it serves in an increasingly sustainable way. In Québec, it is the leading natural gas distribution company and also produces, through its subsidiaries, electricity from wind power. In the US, through its subsidiaries, the company operates in nearly fifteen states, where it produces electricity from solar and wind power. Énergir values energy efficiency and invests both resources and efforts in innovative energy projects such as renewable natural gas and liquefied and compressed natural gas. Through its subsidiaries, it also provides a variety of energy services. Énergir hopes to become the partner of choice for those striving toward a better energy future. www.energir.com

Montréal has placed protecting the environment at the very heart of its priorities. Constant monitoring of air quality and measures taken towards zero waste aim to solidify the city’s environmental leadership. www.rsq.aqc.ca

With more than 15,000 employees working at over 35 sites and operations, Rio Tinto is the largest mining and metals business operating in Canada. Rio Tinto’s extensive operations in Canada include mining and manufacturing interests in aluminium, iron ore, diamonds and titanium dioxide, as well as research and development centres and hydroelectric facilities. www.riotinto.com

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www.arcadis.com

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Aclima delivers hyperlocal air pollution and climate emissions intelligence at unprecedented block-by-block resolution. With our SaaS platform, governments, companies, researchers and the public can track pollution hotspots and impacts over time. This new capability empowers informed action to reduce emissions and exposure, at both the local and global level. www.aclima.io

The Aluminium Association of Canada (AAC) brings together Canada’s three primary producers of aluminium, Alcoa, Aluminerie Alouette and Rio Tinto. It represents the Canadian primary aluminium industry towards the population, public authorities, real and potential users of aluminium, as well as key environmental and economic stakeholders.


Capital Power (TSX: CPX) is a growth-oriented North American power producer headquartered in Edmonton, Alberta. The company develops, acquires, owns, and operates power generation facilities using a variety of energy sources. Capital Power owns approximately 5,100 megawatts (MW) of power generation capacity at 25 facilities across North America. www.capitalpower.com

Whether gathering field data; preparing plans and permit applications; performing site investigations, feasibility evaluations, and remediation activities; or navigating compliance requirements, CEC seeks to build personal business relationships to better understand our clients’ objectives. Let’s talk about your toughest civil engineering and environmental challenges. www.cecinc.com

Serving customers for over 40 years, J.U.M. Engineering is a manufacturer of a wide variety of heated total hydrocarbon analyzers, non methane and non ethane hydrocarbon analyzers. They can be stationary and portable. Aerosol can leak detectors, FID related sampling instruments and data loggers are also made. Manufacturing in Germany. www.jum-aerosol.com

Founded in 1911, SNC-Lavalin is a globally integrated professional services and project management company and a major player in the ownership of infrastructure. From offices around the world, SNC-Lavalin’s employees think beyond engineering. Our teams provide comprehensive end-to-end project solutions – including capital investment, consulting, design, engineering, construction management, sustaining capital and operations and maintenance – to clients across the EDPM (engineering, design and project management), Infrastructure, Nuclear, Clean Power, and Resources businesses. www.snc-lavalin.com

Founded in 1974, Trinity is an international EHS consulting firm with offices across North America, and in the U.K., China, and the Middle East. Trinity assists organizations with meeting their permitting and compliance obligations, and with broader EHS performance and risk management concerns. Trinity’s technology team provides EHS technology solutions to help organizations streamline EHS reporting and data management, and Trinity’s BREEZE EHS modeling software is used by professionals worldwide to predict the impact of air emissions, fires, and explosions. Trinity also provides extensive professional EHS training via classroom and online formats. SafeBridge Consultants, a Trinity Consultants company, provides industrial hygiene and toxicology services to pharmaceuticals companies. www.trinityconsultants.com

Supporting Sponsors

BMW Manufacturing produces the BMW X3, X3 M, X5, X5 M and X7 Sports Activity Vehicles and X4, X4 M, X6 and X6 M Sports Activity Coupes.at the Spartanburg, SC, plant. Since the plant started production in 1994, more than 4.5 million vehicles have been produced with an investment of more than $10.3 billion. The factory has a production capacity of up to 450,000 vehicles and employs more than 11,000 people. www.bmwusfactory.com

Energie Valero Inc., Raffinerie Jean-Gaulin owns and operates the Jean Gaulin Refinery in Lévis, which has a refining capacity of some 265,000 barrels per day, along with several other logistics infrastructures in Eastern Canada, including the Montreal East oil Terminal, the most important of its kind in Canada, and the Pipeline St-Laurent that links the Lévis refinery and its Montreal facilities. Its Canadian operations also make it a leader, among others, in the field of industrial and commercial sales of petroleum products, and as a supplier to resellers and independent distributors. Valero Energy Inc. is wholly owned by Valero Energy Corporation. www.energievalero.ca

Environmental Resources Management (ERM) is a leading global provider of environmental, health, safety, and sustainability (EHSS) consulting services. We have more than 160 offices in over 40 countries and territories employing more than 4,700 people who work on projects around the world. ERM is committed to providing a service that is consistent, professional, and of the highest quality to create value for our clients. We have worked with many of the Global Fortune 500 companies delivering innovative solutions for business and selected government clients helping them understand and manage the sustainability challenges that the world is increasingly facing. www.erm.com

Founded over a half century ago in 1960, Golder has over 6,500 highly skilled engineers and scientists operating in more than 165 offices worldwide. Golder provides consulting, design, and construction services in the specialized area of earth and environment differentiated through technical excellence, innovative solutions and award-winning client service. www.golder.com
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Supporting Sponsors (continued)

Consumers Energy, one of the nation’s largest combination utilities, provides electric and/or natural gas service to 6.7 million of Michigan’s 10 million residents. Our more than 7,000 employees work to protect our environment, support our communities, honor our history and realize our purpose of world class performance delivering hometown service. www.cmsenergy.com

Gulf Power serves 460,000 customers across eight counties in Northwest Florida. More than 1,200 team members put customers at the center of everything they do, working hard to provide them with reliable and environmentally responsible energy, offering innovative energy services and giving back to the community they call home. Gulf Power has ranked among the highest performers in customer satisfaction among electric utilities - 3rd out of 19 in the Southern Region Midsized Utility Group — according to the 2017 J.D. Power Electric Utility Residential Customer Satisfaction Study. Gulf Power’s renewables account for 11 percent of its energy mix for 2018, one of the highest percentages by any electric utility in the state of Florida. Gulf Power signed the first agreement in the state to purchase wind in 2016, making the company a leading purchaser of wind energy among Florida utilities. In 2017, Gulf Power added the Gulf Coast Solar Center — 1.5 million photovoltaic-panels on three military bases that serve customers in Northwest Florida. Together, wind and solar provide enough energy to power 100,000 homes annually. Additionally, Gulf Power has produced more than 153 million kilowatt-hours of renewable energy from its Perdido Landfill Gas-to-Energy facility in Escambia County, Florida. For more information on Gulf Power, visit the company’s website at www.gulfpower.com.

What we do at HGC Engineering is highly focused – noise, vibration, acoustics – that’s it. We have expertly resolved a exchange of knowledge and ideas related to air quality, energy, climate change and health. We organize various events (conference, seminar, webinar, etc.) in collaboration with stakeholders (government departments and agencies, sectoral associations, educational institutions, municipalities, companies, etc.). Our goal is to promote networking and professional training in areas such as air quality, control of atmospheric emissions, waste management, biogas and bioenergy, etc.

A&WMA. APCAS is a professional non-profit and non-partisan organization. APCAS provides a neutral forum for the exchange of information and ideas related to air quality and waste management. For more information, visit www.apcas.org.

The Canadian Prairies and Northern Section, or CPANS, was formed in 1987 after a long affiliation with the Pacific Northwest International Section of the A&WMA. CPANS is geographically one of the largest sections of the A&WMA, encompassing the provinces of Alberta, Saskatchewan, Manitoba, Nunavut, and the Northwest Territories. Our Mission is to further the objectives of the A&WMA in our geographic region, by providing a neutral forum for the exchange of information and ideas related to air quality and waste management.

The Association pour la Prevention de la Contamination de l’Air et des Sols, or APCAS, is the Quebec Section of the A&WMA. APCAS is a professional non-profit and non-partisan organization. APCAS provides a neutral forum for the exchange of information and ideas related to air quality, energy, climate change and health. We organize various events (conference, seminar, webinar, etc.) in collaboration with stakeholders (government departments and agencies, sectoral associations, educational institutions, municipalities, companies, etc.). Our goal is to promote networking and professional training in areas such as air quality, control of atmospheric emissions, waste management, biogas and bioenergy, etc.

The board of directors is composed of 8 to 12 volunteer directors elected on an annual basis. www.apcasqc.ca

The West Coast Section (WCS) was chartered in 1957. Charter Members, S. Smith Griswold, Robert L. Chase, and Dr. W.L. Faith, were also presidents of International A&WMA/APCA. The WCS has chapters including Channel Islands, Mojave Desert, Orange County, Mid-Pacific, and San Diego. WCS has also adopted international chapters in Delhi India, Singapore, Thailand and Turkey. https://wcsawma.org/
is a proud sponsor of A&WMA's 112th Annual Conference *Winds of Change*

**PROTECTING AND IMPROVING AIR QUALITY, PUBLIC HEALTH, AND THE GLOBAL CLIMATE IN THE SAN FRANCISCO BAY AREA SINCE 1955**

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From the extraction of bauxite to its transportation by boat and train, and the refining of alumina, we produce responsible, sustainable and infinitely recyclable aluminium thanks to the energy produced at our hydroelectric facilities.
# DAILY SCHEDULE AT-A-GLANCE

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<thead>
<tr>
<th>TIME</th>
<th>EVENT</th>
<th>MEETING ROOM</th>
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</thead>
<tbody>
<tr>
<td><strong>SUNDAY, JUNE 23</strong></td>
<td></td>
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</tr>
<tr>
<td>8:00 am – 5:00 pm</td>
<td>Board of Directors’ Meeting</td>
<td>Hilton Hotel, Plaines Room</td>
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<tr>
<td><strong>MONDAY, JUNE 24</strong></td>
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<tr>
<td>8:00 am - 2:00 pm</td>
<td>Sections and Chapters Council Meeting</td>
<td>Hilton, Beauport/Beaumont Rooms</td>
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<tr>
<td>8:00 am - 2:00 pm</td>
<td>Technical Council Meeting</td>
<td>Hilton, DeTourny Room</td>
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<tr>
<td>8:00 am - 2:00 pm</td>
<td>Young Professionals Advisory Council Meeting</td>
<td>Hilton, Courville Room</td>
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<tr>
<td>7:00 am – 7:45 am</td>
<td>Joint Councils’ Breakfast</td>
<td>Hilton Sainte-Foy/Portneuf Rooms</td>
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<tr>
<td>11:30 am – 12:30 pm</td>
<td>Joint Councils’ Lunch</td>
<td>Hilton Sainte-Foy/Portneuf Rooms</td>
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<tr>
<td>2:00 pm – 6:00 pm</td>
<td>Exhibit Hall Set-up/Poster Set-up</td>
<td>Exhibit Hall 400AB</td>
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<tr>
<td>2:00 pm – 6:00 pm</td>
<td>Registration</td>
<td>Level 4 Main Hall</td>
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<td><strong>TUESDAY, JUNE 25</strong></td>
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<tr>
<td>7:00 am – 6:00 pm</td>
<td>Registration</td>
<td>Level 4 Main Hall</td>
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<tr>
<td>7:00 am – 6:00 pm</td>
<td>Technical Resource/Monitors Center</td>
<td>304AB</td>
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<tr>
<td>8:30 am – 10:30 am</td>
<td>Opening General Session: Keynote Address</td>
<td>200AB</td>
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<tr>
<td>7:00 am – 10:00 am</td>
<td>Exhibit Hall Set-up/Poster Set-up</td>
<td>Exhibit Hall 400AB</td>
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<tr>
<td>10:30 am – 5:30 pm</td>
<td>Ribbon-Cutting and Exhibit Hall Grand Opening</td>
<td>Exhibit Hall 400AB</td>
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<tr>
<td>10:45 am – 12:15 pm</td>
<td>Technical Poster/Student Poster Session</td>
<td>Exhibit Hall 400AB</td>
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<tr>
<td>11:00 am – 1:00 pm</td>
<td>Women’s Professional Development Workshop and Luncheon</td>
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<tr>
<td>11:30 am – 1:30 pm</td>
<td>Past Presidents’ Lunch</td>
<td>Hilton Hotel Courville Room</td>
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<tr>
<td>11:30 am – 1:30 pm</td>
<td>Lunch in the Exhibit Hall/Concessions</td>
<td>Exhibit Hall 400AB</td>
</tr>
<tr>
<td>11:55 am – 1:15 pm</td>
<td>TCC Meetings</td>
<td>202, 204B, 206B, 302A, 303 A&amp;B</td>
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<tr>
<td>12:00 pm – 1:00 pm</td>
<td>Student Welcome Reception and Program Orientation</td>
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<td>1:00 pm – 2:00 pm</td>
<td>Student Keynote Address</td>
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<td>2:00 pm – 2:45 pm</td>
<td>Academia 101</td>
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<tr>
<td>2:45 pm – 5:30 pm</td>
<td>Student/ECi Poster Judging</td>
<td>Exhibit Hall 400AB</td>
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<tr>
<td>3:10 pm – 4:00 pm</td>
<td>Afternoon Networking Break in the Exhibit Hall</td>
<td>Exhibit Hall 400AB</td>
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<tr>
<td>4:00 pm – 6:00 pm</td>
<td>Technical Sessions</td>
<td>202, 204B, 205 A, B&amp;C, 206B, 301 A&amp;B, 302 A&amp;B, 303 A&amp;B</td>
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<tr>
<td>5:45 pm – 6:30 pm</td>
<td>Annual Business Meeting of the Membership</td>
<td>203</td>
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<tr>
<td>6:30 pm – 8:00 pm</td>
<td>Opening Reception: Welcome to Québec City</td>
<td>Level 4 Main Hall and Foyer</td>
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<td><strong>WEDNESDAY, JUNE 26</strong></td>
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<tr>
<td>7:00 pm – 5:00 pm</td>
<td>Registration</td>
<td>Level 4 Main Hall</td>
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<td>7:00 am – 6:00 pm</td>
<td>Technical Resource/Monitors Center</td>
<td>304AB</td>
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<tr>
<td>7:15 am – 8:00 am</td>
<td>All-Exhibitor Town Hall Meeting</td>
<td>Exhibit Hall 400AB</td>
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<tr>
<td>8:00 am – 6:30 pm</td>
<td>Exhibit Hall Open</td>
<td>Exhibit Hall 400AB</td>
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<tr>
<td>8:00 am – 9:00 am</td>
<td>YP Mentor Breakfast</td>
<td>Exhibit Hall, B2B Zone</td>
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<td>TIME</td>
<td>EVENT</td>
<td>MEETING ROOM</td>
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<tr>
<td>8:00 am – 9:40 am</td>
<td>Technical Sessions</td>
<td>202, 204B, 205 A, B&amp;C, 206B, 301 A&amp;B, 302 A&amp;B, 303 A&amp;B</td>
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<tr>
<td>9:00 am – 10:00 am</td>
<td>EM Editorial Advisory Committee (EAC) Meeting</td>
<td>207</td>
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<td>10:00 am – 10:30 am</td>
<td>Joint Meeting for State of A&amp;WMA Presentation Meeting</td>
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<tr>
<td>10:30 am – 11:30 am</td>
<td>Editorial Review Board (ERB) Meeting</td>
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<tr>
<td>11:30 am – 12:30 pm</td>
<td>Publications Committee Meeting</td>
<td>207</td>
</tr>
<tr>
<td>9:00 am – 10:00 am</td>
<td>Speed Networking</td>
<td>B2B Zone, Exhibit Hall</td>
</tr>
<tr>
<td>9:30 am – 10:30 am</td>
<td>Morning Networking Break in the Exhibit Hall: Breakfast with the Exhibitors</td>
<td>Exhibit Hall 400AB</td>
</tr>
<tr>
<td>10:30 am – 12:30 pm</td>
<td>Career Panel</td>
<td>203</td>
</tr>
<tr>
<td>11:30 am – 1:30 pm</td>
<td>Lunch in the Exhibit Hall/Concessions</td>
<td>Exhibit Hall 400AB</td>
</tr>
<tr>
<td>11:55 am – 1:15 pm</td>
<td>TCC Meetings</td>
<td>205 A, B&amp;C, 301B, 302 A&amp;B, 303A</td>
</tr>
<tr>
<td>1:00 pm – 3:30 pm</td>
<td>ECI Presentations</td>
<td>203</td>
</tr>
<tr>
<td>2:00 pm – 3:00 pm</td>
<td>Rehearsal for Honors &amp; Awards Ceremony</td>
<td>200AB</td>
</tr>
<tr>
<td>3:10 pm – 3:30 pm</td>
<td>Afternoon Session Break</td>
<td>Foyer Level 2 and Level 3</td>
</tr>
<tr>
<td>3:30 pm – 5:30 pm</td>
<td>Technical Sessions</td>
<td>202, 204B, 205A 206B, 301 A&amp;B, 302 A&amp;B, 303 A</td>
</tr>
<tr>
<td>5:00 pm – 6:00 pm</td>
<td>Student Awards Ceremony</td>
<td>203</td>
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<tr>
<td>5:30 pm – 6:30 pm</td>
<td>Reception in the Exhibit Hall</td>
<td>Exhibit Hall 400AB</td>
</tr>
<tr>
<td>6:30 pm – 8:00 pm</td>
<td>Exhibit and Poster Tear-down</td>
<td>Exhibit Hall 400AB</td>
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<tr>
<td>7:00 pm – 9:00 pm</td>
<td>YP/Student Reception</td>
<td>Bistro L’Atelier Restaurant</td>
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**THURSDAY, JUNE 27**

<table>
<thead>
<tr>
<th>TIME</th>
<th>EVENT</th>
<th>MEETING ROOM</th>
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</thead>
<tbody>
<tr>
<td>7:00 am – 2:00 pm</td>
<td>Registration</td>
<td>Level 4 Main Hall</td>
</tr>
<tr>
<td>7:00 am – 3:10 pm</td>
<td>Technical Resource/Monitors Center</td>
<td>304AB</td>
</tr>
<tr>
<td>8:00 am – 10:30 am</td>
<td>Critical Review</td>
<td>206B</td>
</tr>
<tr>
<td>10:40 am – 11:40 am</td>
<td>Atmospheric Optics: Aerosols, Visibility, and the Radiative Balance, October 2020 Open Information Planning Meeting</td>
<td>207</td>
</tr>
<tr>
<td>11:50 am – 1:20 pm</td>
<td>Honors &amp; Awards Ceremony and Luncheon</td>
<td>200AB</td>
</tr>
<tr>
<td>1:30 pm – 2:30 pm</td>
<td>Critical Review Committee Meeting</td>
<td>207</td>
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<tr>
<td>3:20 pm – 4:20 pm</td>
<td>Non-ACE Programming Meeting</td>
<td>207</td>
</tr>
<tr>
<td>4:30 pm – 5:30 pm</td>
<td>2020 ACE Planning and TC Wrap-up Meeting</td>
<td>207</td>
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**FRIDAY, JUNE 28**

<table>
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<tr>
<th>TIME</th>
<th>EVENT</th>
<th>MEETING ROOM</th>
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<tbody>
<tr>
<td>8:00 am – 5:00 pm</td>
<td>Professional Development Courses</td>
<td>301 A&amp;B</td>
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</table>
Find out what’s in store for the future of the environmental industry! This spectacular event features high level environmental leaders who will share their perspective and solutions on climate change and other pertinent environmental issues. Each speaker will present and there will be a Q & A session where they will address pre-approved questions from the audience.

**Introduction by Benoit Charette**, Ministre de l’Environnement et de la Lutte contre les changements climatiques Québec for the Deux-Montagnes

Benoit Charette has been Member of the National Assembly for the Deux-Montagnes riding in the Laurentides region since 2008. He was appointed Minister of the Environment and the Fight against Climate Change in January 2019. Mr. Charette held numerous positions at the National Assembly of Québec, including as Chiefs of Staff for the 2nd Opposition Whip and Leader from 2012 to 2014. He previously served as Chair of the Committee on Institutions, as well as a member of the Committee on the National Assembly and the Committee on Culture and Education.

**The Renewable Gas Pathways of Tomorrow**

**George Minter**

*Regional Vice President, External Affairs and Environmental Strategy, SoCalGas*

Mr. George Minter is a long-time policy professional specializing in energy and environmental matters, strategic planning, program development, communications and political advocacy. As the regional vice president of external affairs and environmental strategy for SoCalGas, Mr. Minter is responsible for the company’s public affairs, community relations, public policy and energy and environmental affairs functions.

Before re-joining SoCalGas as senior director of policy and environment, Minter was managing principal for L.A.-based public affairs firms Greer/Dailey/Minter and GM Public Affairs from 2000 to 2013. He also served as director and manager of a number of other functions for SoCalGas from 1985–2000. He currently serves as co-chair of the Energy, Water and Environmental Sustainability Council of the Los Angeles Area Chamber of Commerce, is a Board member at the Coalition for Clean Air, and is a member of the Land Use (GLUE) Council for SCAG, and the Advisory Boards of the Clean Tech Initiative of the LAEDC and Water Education for Latino Leaders (WELL). He is a Phi Beta Kappa and honors graduate of the University of California at Berkeley.

**A Cardio-Environmental Model**

*Toward a Cardio-Protective City*

**Dr François Reeves**

*Cardiologist and Associate Professor of Medicine, University of Montréal*

Dr François Reeves is an interventional cardiologist and Associate Professor of Medicine with a joint appointment in the Department of Environmental and Occupational Health at the University of Montréal. Head of the cardiac catheterisation laboratories at, successively, Notre-Dame Hospital, the CHUM and Cité de la santé in Laval and member of the Steering Committee of the Québec Tertiary Cardiology Network, he now devotes a significant part of his professional life to environmental cardiology. In 2011 he published Planète Coeur, Santé cardiaque et environnement, a book which examines the impact of the environment on our arteries. The English and upgraded version, Planet Heart: How an Unhealthy Environment Leads to Heart Disease was released in March 2014 by Greystone Books, Vancouver, which was finalist for the Lane Anderson Award 2014 (Best scientific publication in Canada). He is member of many comities devoted to Environmental Health, amongst them the Advisory Board on Climate Change of the Minister of Environment of Québec.

**EPA Office of Air and Radiation Update on Priority Policy Issues**

**Bill Wehrum**

*Assistant Administrator, US Environmental Protection Agency Office of Air and Radiation*

Bill Wehrum currently serves as the Assistant Administrator for the Office of Air and Radiation. Bill has a long history of public service, and his career includes more than 31 years of working in the environmental field through engineering, legal practice, and administrative duties. He previously served as EPA’s Acting Assistant Administrator for Air and Radiation from 2005 to 2007, as well as Principal Deputy Assistant Administrator and counsel to the Assistant Administrator for Air and Radiation. Bill most recently worked as a partner and head of the Administrative Law Group at Hunton & Williams LLP, where his practice focused on air quality issues.
Production from Alberta, Canada’s oil sands has grown significantly over the past three decades as has concern about its short- and long-term impacts on the environment, including local and regional ecosystems, and the local human populations. Despite knowledge on how to assess the impacts of human development and resource extraction in the oil sands region, but also in other environments worldwide, significant knowledge gaps regarding the magnitude, causes, and implications of present and future impacts remain. To better understand environmental impacts and changes in the oil sands region, an enhanced monitoring and research program has been underway for the past six years in northern Alberta. In partnership with the Province of Alberta, Environment and Climate Change Canada has undertaken a range of monitoring studies on the air, water, and wildlife, and key findings from this work are the focus of the 2019 A&WMA Annual Critical Review.

Measurements from the surface, aircraft, and satellite platforms have been used to assess air pollutant emissions, their atmospheric levels, and transformation and deposition processes. Extended periods of high-resolution modeling have been conducted to improve the prediction of potential areas at risk of excessive acid deposition and the deposition of other oil sands industry-related chemicals of concern. An improved integrated water monitoring and assessment approach was implemented to assess the ecological health of the aquatic environment, including more sites within rivers and increased geographical coverage, increased sampling frequency, and measurement parameters to improve the potential for causal assessment. New measurements of contaminant levels and biological function in key aquatic and terrestrial species are providing information on potential wildlife impacts and possible connections to the oil sands industry. While the current monitoring program has added new understanding, unanswered questions remain and represent a long-term challenge for responsible management of oil sands development. The full-length Critical Review paper will appear in the June 2019 issue of the Journal of the Air & Waste Management Association (JA&WMA).

About the Author
Lead author, Dr. Jeffrey R. Brook, is an Assistant Professor in the Dalla Lana School of Public Health and the Department of Chemical Engineering and Applied Chemistry at the University of Toronto. He is a recently-retired senior scientist with Environment and Climate Change Canada, Air Quality Research Division. He is recognized nationally as a leading expert on air quality and has helped shape policy through his research, activities on national committees, leadership in preparing science assessments, and advice to senior levels of government. Over the past 25 years, he has contributed substantially, frequently including lead roles, to many of the government’s science assessments.

Join the Discussion
To complete the review process, the Critical Review Committee Chair will synthesize all of the discussion points into a single paper that will be published in the October 2019 issue of JA&WMA. Comments should be submitted in writing to Sam Altshuler at altshule@pacbell.net by July 25, 2019.

Want to get involved? Attend the Critical Review Committee Meeting on Thursday, June 27, 1:30 pm – 2:30 pm, Room 207.
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At 3M, we are committed to improving our business, our planet, and every life. The bottom line? A strong sense of purpose is good for business and for the big picture.

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#improvinglives
GENERAL INFORMATION

Registration Hours
Québec Convention Centre, Level 4, Main Hall Foyer

Monday, June 24: 2:00 pm – 6:00 pm
Tuesday, June 25: 7:00 am – 6:00 pm
Wednesday, June 26: 7:00 am – 5:00 pm
Thursday, June 27: 7:00 am – 2:00 pm

Exhibition Hours
Québec Convention Centre, Level 4, 400 AB

Tuesday, June 25: 10:30 am – 5:30 pm
Wednesday, June 26: 8:00 am – 6:30 pm

Technical Program Resource Center
Room 304 AB
The Technical Program Resource Center is available for authors to preview their presentations and for session chairs to print out presenter bios.

Do you have a session that you want to propose for next year’s annual conference? Come by the Technical Program Resource Center to share your ideas for the 2020 Technical Program. New ideas will be accepted until 12:00 pm on Thursday, June 27.

Open at 7:00 am daily through the end of the last session.

Monitors
Room 304 AB
Monitors will also meet in the Technical Program Resource Center before morning and afternoon sessions daily. If you have been assigned to monitor, please pick up your Monitor’s badge from Registration and report to the Monitors’ Room to check-in and to receive your materials.

If you are monitoring a morning session, please check-in at the Monitors’ Room at 7:15 am. If you are monitoring an afternoon session, please check-in at the Monitors’ Room at 12:15 pm.

Concessions
If you need a quick lunch, there’s no need to leave the Convention Center. A variety of lunch options along with beverages and snacks will be available for purchase on Tuesday and Wednesday, from 11:30 am – 1:30 pm in the back of the exhibit hall with seating available. A $5 coupon will be included with full conference registrations.

Session Breaks
Tuesday, June 25 (Exhibit Hall)
3:10 pm – 4:00 pm

Wednesday, June 26 (Exhibit Hall)
9:40 am – 10:10 am
3:10 pm – 3:30 pm

Get the most up-to-date program information and plan your week with the ACE 2019 app!

Download the A/O Event app free at the App Store or Google Play. Click on the My App and on the + sign and enter the code ACE2019.

Click on the B2B icon to unlock and create an account to use this feature to request and set up meetings.

Use the My ACE2019 feature to create your customized schedule by clicking on the stars to add events to your calendar. Browse the social feed for #AwmaACEQC to see the latest activity.

New B2B Zone in the Exhibit Hall!
Sponsored by: Québec

Network with colleagues and exhibitors in the new B2B Zone with tables and seating, charging stations, and refreshments. Semi-private meeting spaces are available for impromptu collaboration and relationship building.

Use the B2B feature on the ACE 2019 app to request and set up meetings.

Carbon Offsets
Offset your travel to ACE by making a donation to the Carbon Offset Program from COOPFA. On behalf of our many young students and their families, we thank you to support the Sco’ERE Carbon Exchange Program with your compensation.

This donation will serve the purpose of bringing the knowledge about the GHG phenomena and the sustainable development principles to a greater number of students.

Go to: https://boursescolere.com/awma-ace2019/.

Free WiFi
The Québec City Convention Centre has free WiFi throughout the conference, exhibit and foyer areas. Choose Centre_des_congres as the network and proceed through the set up.

Use the QR Code to go directly to the A/O Event App.
TECHNICAL PROGRAM HIGHLIGHTS

Technical Program Overview
Local hosts, Québec Section, staff, and Technical Council of the A&WMA are pleased to present an exciting Technical program for the 112th Annual Conference & Exhibition (ACE 2019) in the charming Québec City. This year’s conference theme, “Winds of Change” or “Vents de Changement” will focus on an exchange of ideas and energetic discussion of new solutions associated with environmental, energy and health issues. The program brings together hundreds of technical experts in air and waste management from the U.S., Canada and over 20 other countries who will be presenting their work in panel, platform and poster presentations during ACE 2019. This is an international gathering of minds to share knowledge and develop ideas and solutions for environmental concerns affecting our planet.

Harish Rao
2019 Technical Program Chair
President, Rao Consulting Services Inc.

Matthieu Girard
Technical Program Vice Chair
Researcher, Air Quality Engineering
Research and Development Institute for the Agri Environment (IRDA)

Highlights
A&WMA’s mission to provide a neutral forum will be evident at this conference as it provides a variety of views on current and emerging environmental topics from professionals working in industry, state and federal regulatory agencies, education, law, consulting, manufacturing, and public interest groups. The Keynote address and other sessions such as U.S. EPA Priorities, New Source Review issues, Critical Review on Canada’s Oil Sands, emerging PFAS contaminants and much more will provide us insight on important issues and challenges. More than 90 panel and platform sessions are organized under 17 tracks covering a range of topics such as Air Quality – Measurement and Monitoring (AQMM); Sustainability and Resource Conservation (SUST); Climate Change (CLIM); Health and Environmental Effects (H&EE) and much more (see listings by topic areas on pages 34-37). These technical sessions will inform you of current research and provide practical solutions to help you with your job. Experience all that ACE2019 offers for education, discussion, and networking with colleagues.

Mini-Symposium Series - Facing Environmental Challenges
(MINI sessions throughout Tuesday through Thursday, Room 206B, except Thu 9:40 am in Room 202).

This year’s mini-symposium will feature sessions discussing environmental challenges over a cross-section of disciplines, fitting with the ACE 2019 theme and includes eight sequential platform and panel sessions examining environmental programs and initiatives with an eye on current and forward-looking policy and technological advancements. These sessions will provide diverse perspectives from representatives of industry, environmental practitioners, regulatory agencies, law firms, municipal bodies, and advocacy organizations. Sessions include panels on air quality monitoring challenges and innovations, carbon taxes and cap-and-trade programs in the U.S. and Canada, NASA satellite images to address air quality issues, climate change litigation, and air quality regulation, with papers on air quality and greenhouse gas initiatives in North America.

Technical and Student Posters
Browse and explore a range of topics covered by technical posters from environmental professionals, as well as posters by students and Environmental Challenge International (ECI) teams. Engage in discussions with presenters during the dedicated interactive poster session on Tuesday, June 26 from 10:45 am – 12:15 pm in the Exhibit Hall. Posters will remain on display in the Exhibit Hall through Wednesday afternoon. Student Poster and ECI competition judging is from 2:45 pm – 5:30 pm on Tuesday. Attend the Student Awards Ceremony and Reception on Wednesday to see the exceptional student poster in each category and the ECI competition winners.

Perspectives on U.S. EPA Priorities for 2019-2020
MINI/REGU, Thursday, June 27, 1:30 pm - 3:10 pm, Room 206B
As U.S. EPA works through the third year of the Trump administration, questions persist over its priorities and the path it will pursue over the next two years. The Clean Air Act sets forth specific mandates that the agency must continue to address while it evaluates whether to reverse or revise certain actions from the previous administration. This panel will provide an opportunity for key interest groups to discuss pending U.S. EPA rulemaking actions and to discuss the agency’s stated objectives over the coming months as well as to comment on the priorities to be articulated by Bill Wehrum, U.S. EPA’s Assistant Administrator for Air and Radiation during the Keynote.

Adaptation to Climate Change and Litigation
MINI/CLIM, Thursday, June 27, 9:40 am - 11:40 am, Room 202
Climate is changing and is likely to continue to do so at an accelerated rate that will eventually lead to extremes in temperature, sea level, droughts, precipitation, heat waves and wildfires. Although current infrastructure design criteria used by engineering firms have evolved over the last few decades, extreme events seem to evolve much more rapidly. This panel of experts on litigation issues will cover recent climate change litigation cases and controversial topics related to climate change, namely the reliability of historical climate data to represent future climate and specifically the question of whether engineering firms are at risk of being sued for using the existing infrastructure design codes and guidelines.

Per and Polyfluoroalkyl Substances (PFAS) - Specific Technical Challenges, Litigation, & Solutions
H&EE, Tuesday, June 26, 1:30 pm – 3:10 pm, Room 204B
This panel will address the predominant sources and routes of PFAS exposure to adults and children where inhalation may be the primary driver, such as communities close to production areas and occupational populations. Methodologies to derive inhalation-based toxicity criteria to allow screening level assessment will be presented. An ecological exposure model for birds and mammals will be described to clarify exposure pathways and identify key receptors of concern. Panelists will discuss migration pathways and the impact on soil and groundwater as well as the legal implications for various parties. A PFAS platform session will follow this panel at 4:00 with another panel the next morning from 8-9:40 am in the same room.

Introductory and Educational Sessions for Young Professionals
(YPRO sessions held throughout Tuesday and Wednesday. See program for details.)
This year’s technical program includes sessions on challenges faced by different industries, commonly used pollution control devices, how industries choose the right VOC control technology, environmental regulations in the U.S. and Canada, and air dispersion modeling, to help attendees understand the basics.
TECHNICAL TOURS

Technological Park R&D Tour to INO, CRIQ, and INRS
Tuesday, June 25, 12:30 pm – 4:30 pm

This tour will include visiting three research and development facilities in Québec’s Technological Park. Organizations include:

INO: National Optics Institute
INO is the largest centre of expertise in optics and photonics in Canada. The tour will include a visit of some of INO’s labs showing some of its environmental monitoring technologies.

CRIQ: Centre de recherche industrielle du Québec
Centre de recherche industrielle du Québec (CRIQ) provides the R&D innovative services. The tour will include the following laboratories: Analysis of industrial air and odours, Environmental biotechnologies, Extraction pilot plant, Cyber-physical factory, Additive manufacturing, and Advanced quality control.

INRS: National Institute for Scientific Research
The Institut national de la recherche scientifique (INRS) (LISTE) is a graduate university composed of four research and teaching centers located in Montréal, Laval, Varennes and Québec. INRS plays a key role in the advancement of scientific knowledge and the training of highly qualified workers.

The Alcoa Deschambault Aluminum Smelter
Wednesday, June 26, 7:30 am – 12:00 pm

This guided tour will begin with an explanation of the electrolysis process and then take participants on a tour of the Alcoa Deschambault aluminum smelter, visiting all areas including the carbon sector, electrolysis sector, and the smelting sector.

Québec City Municipal Waste Incinerator
Thursday, June 27, 1:30 pm – 3:30 pm

Attendees will tour the Québec City Municipal Waste Incinerator and learn about their environmental practices. Burning annually about 250,000 tons of garbage, the incinerator of Québec City is an alternative to landfilling. After dewatering, biosolids from municipal waste treatment plants are also eliminated through incineration.

All half-day tours will include transportation to and from the Québec Convention Centre. Tour cost: $30.00 US. Advance registration and clearances required.

Tours will be leaving from the Québec Convention Centre, main entrance - 1000, boul. René-Lévesque Est - Québec (Québec) G1R 5T8.

PROFESSIONAL DEVELOPMENT COURSES

All courses will be held on Friday, June 28 in the Convention Centre.

AIR-135: Fundamentals of Air Pollution Meteorology & Dispersion Modeling
8:00 am – 12:00 pm, Room 301A
Instructor: Anthony J. Sadar, Certified Consulting Meteorologist, Air Pollution Administrator, Allegheny County Health Department, Air Quality Program

AIR-277: Environmental Issues in Gas Turbine Energy Systems
1:00 pm – 5:00 pm, Room 301A
Instructor: Manfred Klein, Principal Environmental Consultant, MA Klein and Associates

AIR-299: AERMOD Air Dispersion Modeling
8:00 am – 5:00 pm, Room 301B
Instructor: Jesse The', Ph.D., P.Eng, President/CEO, Lakes Environmental Software

Course check-in will be outside of the course rooms beginning at 7:30 am on Friday, June 28.

Continuing Education Opportunities

A&WMA offers a Certificate of Attendance for technical sessions and courses. Make sure you sign the attendance sheet at every session and course you attend to get a certificate for your hours.

The full conference technical sessions can earn you up to 17 hours. Full day courses are 7 hours and half day courses are 3.5 hours.

A Certificate of Attendance, referencing total participation hours, will be issued after the conference. The certificate may be eligible for Continuing Education Units (CEUs) or Professional Development Hours (PDHs) for Professional Engineers.

For Attorneys, A&WMA is an Accredited Provider of Continuing Legal Education (CLE) in Pennsylvania.

IMPORTANT: Continuing education requirements vary according to profession and location. Attendees are responsible for determining if the activity meets their continuing education needs. For further information, contact Gloria Henning, Education Services Associate at ghening@awma.org.

For complete details on PE and CLE credit specifics for the United States and Canada, please see the website at www.awma.org/acecontinuinged.
NETWORKING EVENTS

Exhibit Hall Grand Opening and Ribbon Cutting*
Tuesday, June 25, 10:30 am, Exhibit Hall 400 AB

Immediately following the Keynote Program at 10:30 am, join your fellow attendees and presenters for the Ribbon Cutting and Grand Opening of the Exhibit Hall. It’s the perfect opportunity to meet with leading environmental professionals showcasing their latest products and services. Enjoy a light brunch while exploring the booths and displays. The first 100 people will receive a free A&WMA water bottle.

Opening Reception—Welcome to Québec City*
Tuesday, June 25
6:30 pm – 8:00 pm, Level 4

Sponsored by:

Ville de Québec
l'accent d'Amérique

Kick off the conference in style at the Opening Reception on Tuesday evening to experience the view and connect with old friends, meet new ones, and enjoy some local and international cuisine. Come relax with your colleagues, mingle, and get spoiled by the French Canadian hospitality! Ticket required. Additional tickets can be purchased for $50.

Exhibitor Reception*
Wednesday, June 26 • 5:30 pm – 6:30 pm, 400 AB

Join us for the last hour in the Exhibit Hall to connect with exhibitors and colleagues during the Exhibitor Reception. Take advantage of this opportunity to network and get those last-minute business cards from key suppliers to add to your professional network.

Annual Honors & Awards Ceremony and Luncheon*
Thursday, June 27 • 11:50 am – 1:20 pm, 200 AB

Introductions will be made by the following local dignitaries.

Suzanne Verreault, Québec City Councilor and Member of the Executive Committee and President of the Planning and Conservation Commission.

As a member of the executive committee, Ms. Verreault is responsible for environment, sustainable development and waste management, as well as setting up the Center of Expertise for Sustainable Development. She is president of the Planning and Conservation Commission.

Jean-Yves Duclos, Member of Parliament for Québec

Duclos was elected as the Member of Parliament for Québec on October 19, 2015. He was then appointed Minister of Families, Children and Social Development on November 4, 2015. He is the Minister in charge of issues related to child care, homelessness and housing.

Konrad H. Sioui, Grand Chief of the Huron-Wendat Nation

Mr. Sioui is responsible for the internal management of his community and for the participation in meetings with municipal, provincial, federal and other First Nations governments.

Sylvain Gaudreault

Sylvain Gaudreault is currently a Member of Parliament for Jonquière at the Québec National Assembly, spokesman for the Environment and the Fight against Climate Change, in the fields of Energy and Health, as well as Vice-President of the Committee on Public Administration.

Ticket required. Additional tickets may be purchased for $50.

Young Professional/Student Networking Reception
Wednesday, June 26 • 7:00 pm – 9:00 pm

Bistro L'Atelier, 624 Grande Allée Est

Sponsored by:

Civil & Environmental Consultants, Inc.

Join A&WMA Young Professionals as they host a fun evening out of networking and comraderie at one of Québec City’s most popular establishments. With five stories and a chic industrial atmosphere, L’Atelier offers excellent food and a wide variety of drinks. Includes heavy hors d’oeuvres and one drink ticket. Ticket required. Additional tickets can be purchased in advance for $30.

Scholarship Raffle Drawing

Drawn at the Honors & Awards Ceremony on Thursday, June 27

Help support future environmental scientists by purchasing raffle tickets for the chance to win a 32GB iPad 6th generation. Tickets will be sold for $5 each or 5 for $20, cash only, at the Council meetings, registration desk, Opening Reception, and at the beginning of the Honors & Awards Luncheon. Winner need not be present.

*Events included with full conference registration
NETWORKING EVENTS

Women’s Professional Development Workshop and Luncheon
Tuesday, June 25 • 11:00 am – 1:00 pm, Room 207
Cost: $50. Ticket required.

Sponsored by:

Empowering Women and Changing Mentalities

Join two successful scientists in an interview setting as they exchange their experiences and perceptions as women in the science field. Their presentations will be followed by a moderated discussion on empowerment and changing mentalities.

Current topics in today’s culture will be covered, including:
• Gender bias in academia and the STEM fields
• Mental health: fighting stigma and creating awareness
• Women in science after #metoo
• Family-work balance

Speakers:

Parisa A. Ariya, James McGill Professor and Chair, Chemistry and Atmospheric and Oceanic Sciences, McGill University

Dr. Parisa A. Ariya is a James McGill Chair in Chemistry and Atmospheric and Oceanic Sciences at McGill University. She is a leading world expert in fundamental and applied atmospheric and interfacial chemistry. Her major scientific contributions are in the domains of aerosols, photochemistry, kinetics, microphysics, nanoparticles, emerging contaminants, air/ice/water interactions and development of sustainable of technology. Dr. Ariya has authored numerous publications including over 120 international peer-reviewed publications, 3 patents issued and 1 book. She has conducted over 250 conference proceedings and presented over 100 invited lectures, including several keynotes, plenary distinguished named lectures on 4 different continents.

Kathy Baig, Présidente à l’Ordre des ingénieurs du Québec

Kathy Baig is a graduate in Chemical Engineering (Polytechnique de Montréal) and Business Administration (HEC Montréal). She has been working in engineering for more than 10 years at IBM, Johnson & Johnson, Pyrogenesis and Aéroports de Montréal. She was elected President of the Ordre des ingénieurs du Québec (OIQ) in 2016, she was re-elected in 2018 for a two-year term. Under her leadership, the association wants to be recognized as a unifying body and the benchmark for protecting the public within the professional system. Kathy Baig also sits on the boards of directors of Engineers Canada and Via Rail Canada.

Moderator:

Marika Wheeler, CBC Québec’s Travelling Journalist

Marika Wheeler has visited many corners of Québec including several Indigenous communities telling stories that matter to people who live in La Belle Province for Canadian Broadcast Corporation (CBC) Radio and cbc.ca. She covers a range of topics including education, healthcare, natural resources and the impact of climate change. She grew up in the Laurentians, and after her studies in Journalism joined the CBC team in Quebec City more than a decade ago. Her reporting kit is always ready, whether it’s to cover major breaking news or record a conversation in someone’s kitchen about their community and their lives.
STUDENT EVENTS

Student Platform Paper Presentations
Tuesday, June 25 – Thursday, June 27
See your fellow students present their research as platform presentations throughout the week.

Student Welcome Reception and Program Orientation
Tuesday, June 25 • 12:00 pm – 1:00 pm, Room 203
Students participating in the Student Poster Competition and the Environmental Challenge International (ECi) are invited to meet and network with fellow students from around the world. Poster setup guidelines and ECi rules will be reviewed.

Student Keynote Presentation
Tuesday, June 25 • 1:00 pm – 2:00 pm, Room 203
From Research to Politics: How We Can Promote Science in Public Policy
The Honorable Senator Rosa Galvez, Ph.D., P. Eng.
Dr. Rosa Galvez was appointed under recommendation of Prime Minister Justin Trudeau as an independent Senator for Québec on December 6, 2016. Senator Galvez is currently the Chair of the Standing Committee on Energy, the Environment and Natural Resources. She is also a member of the Standing Committee on Transport and Communications. Dr. Rosa Galvez’s background is in sanitary engineering, in which she obtained a degree at the Universidad Nacional de Ingeniería in Lima, Peru. Dr. Galvez obtained in 1989 and 1994, respectively, a master and doctorate in environmental engineering from McGill University, Montreal, Canada. From 2011 to 2016, Dr. Galvez was the Chair of the Civil and Water Engineering department at Laval University in Québec, a high administrative academic post in engineering rare for women to achieve.

Academia 101: How to Apply For and Get a Faculty Position
Tuesday, June 25 • 2:00 pm – 2:45 pm, Room 203
Emile-Jade Poliquin, Ph.D., Research Grant Officer, Research and Valorization Department, INRS
Students and young professionals interested in pursuing jobs in academia are invited to learn about the academic job search process and how to prepare for an academic job. This is also an opportunity to meet with university representatives.

Student and ECi Poster Set Up
Monday, June 24 • 2:00 pm – 6:00 pm and Tuesday, June 25, 7:00 am – 10:00 am in the Exhibit Hall

Student Poster Competition
Tuesday, June 25 • 2:45 pm - 5:30 pm, Exhibit Hall
Visit the exhibit hall to watch as students present their posters to the judges during this year’s Student Poster Competition. The competition recognizes student posters to be the best among those considered in the undergraduate, masters, and doctoral categories. Awards for exceptional posters will be provided at the Student Awards Ceremony and Reception on Wednesday, June 26.

Environmental Challenge International
ECi Poster Judging
Tuesday, June 25 • 2:45 pm - 5:30 pm, Exhibit Hall
Join the ECi teams as they interact (often in surprising ways) with role players, and present their posters to the judges.

ECi Final Presentations
Wednesday, June 26 • 1:00 pm - 3:30 pm, Room 203
Watch the top ranking ECi teams present their final problems and solutions incorporating using the “tweak” they received prior to the conference.

Student Awards Ceremony and Reception
Wednesday, June 26 • 5:00 pm - 6:00 pm, Room 203
All students and professionals participating with the Student Program are invited to the Student Awards Ceremony and Reception, which will honor exceptional students who have received scholarships, poster awards, platform paper awards, thesis and dissertation awards, and ECi awards.

Thank you to this year’s ECi supporters:
The YP (Young Professional) Hub is a meet up space in the Exhibit Hall (Booth #315) targeting students and young professionals. The Hub will serve as a lounge to relax or hang out between technical sessions, networking space, demonstration space for interested vendors/exhibitors, and meet and greet venue with speakers and A&WMA leaders. Events are planned during technical session breaks, lunch, and exhibition hall networking events Tuesday and Wednesday. While many of the events are marketed towards students and young professionals (35 years and under), all of the events are open to attendees of all ages.

YP Hub Schedule

**Tuesday, June 25**
During Lunch Break (11:30 am – 1:30 pm)
12:00 pm – 12:30 pm: Regulator Meet Up
12:30 pm – 1:00 pm: VIP Meet and Greet
1:00 pm – 1:20 pm: Vendor Demo

During Technical Session Break (3:10 pm – 4:00 pm)
3:10 pm – 3:30 pm: Student Meet Up
3:30 pm – 3:50 pm: Vendor Demo

**Wednesday, June 26**
8:00 am – 9:00 am: Mentor Breakfast
9:00 am – 10:00 am: Speed Networking
9:30 am – 10:30 am: Breakfast with the Exhibitors

During Lunch Break (11:50 am – 1:30 pm)
12:00 pm – 12:30 pm: Industry Meet Up
12:30 pm – 1:00 pm: VIP Meet and Greet
1:00 pm – 1:20 pm: Vendor Demo

During Technical Session Break (3:10 pm – 3:30 pm)
3:10 pm – 3:30 pm: Vendor Demo (TBD)

During Exhibit Hall Reception (5:30 pm – 6:30 pm)
5:30 pm – 6:00 pm: VIP Meet and Greet
6:00 pm – 6:30 pm: YP/Student Meetup

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**Young Professionals’ Mentor Breakfast**
**Wednesday, June 26 • 8:00 am – 9:00 am, B2B Zone, Exhibit Hall**

This annual professional networking breakfast gives young professionals and recent graduates the opportunity to network and be mentored by an experienced environmental professional. For established professionals this is a great opportunity to connect with the industry’s next generation of rising stars.

Cost: $20 Pre-registration required.

**Speed Networking**
**Wednesday, June 26 • 9:00 am – 10:00 am, B2B Zone, Exhibit Floor**

Don’t miss this opportunity to practice your networking skills! Young and experienced professionals and students are invited to engage in a fast paced networking exercise. Answer questions, provide perspectives, and learn the best techniques for making connections that count.

**Career Panel**
**Wednesday, June 26 • 10:30 am – 12:00 pm, Room 203**

Get the inside scoop from a panel of young professionals as they share their career experiences and answer questions in this interactive and enlightening discussion.

Panelists include:
- William Korbatly, Founder, Mediator, and Arbitrator, Korbatly & Associates Law
- Selina Lee-Anderson, Partner, McCarthy Tétrault LLP
- Vicki Bowman, Environmental Team Lead, Parkland Refining (B.C) Ltd.

**YP/Introductory Technical Sessions**
Become familiar with current environmental technology and find out how the different disciplines are connected.

**How Does it Work? Control Devices**
**Tues., June 25, 4:00 pm – 6:00 pm, Room 301 B**

**How Does It Work? Environmental Regulations in the United States and Canada**
**Wednesday, June 26, 10:10 am – 11:50 am, Room 204B**

**Case Studies in Air Dispersion Modeling for Young Professionals**
**Wednesday, June 26, 1:30 pm – 3:10 pm, Room 204B**

**How Does it Work? Industries**
**Wednesday, June 26, 3:30 pm – 5:30 pm, Room 204B**

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**YP/Student Networking Reception**
**Bistro L’Atelier, 624 Grande Allée, Wednesday, June 26**
7:00 pm – 9:00 pm
Sponsored by: [CEC](https://www.civilex.com)

Join A&WMA students and young professionals for a fun evening of networking in a casual environment at Bistro L’Atelier. This popular event draws many students, YPs, and seasoned professionals looking for a little fun. With five stories and a chic industrial atmosphere, L’Atelier offers excellent food and a wide variety of drinks. Includes heavy hors d’oeuvres and one drink ticket. Cost $30. Tickets must be purchased in advance.
Membership

The environmental industry is rapidly changing and the way to stay up to date on the latest developments is to become a member of the Air & Waste Management Association and connect with professionals from all over the world, sharing the common goal of advancing the environmental industry.

Our members enjoy many benefits including: discounts of $100 - $200 for ACE and specialty conferences; unlimited access to EM and the JA&WMA; professional development through webinars and CEUs; membership in your local chapter or section; leadership opportunities; access to the Career Center; and discounts on subscriptions, publications, the Buyer’s Guide, and all products through the online store. Join now at www.awma.org/join.

At A&WMA we depend on our volunteers to provide the foundation and expertise that sets us apart from other environmental associations. In order to continue to offer conferences, programs and webinars that cover the latest topics, we rely on our members to take an active role in the Association through their participation which includes joining a committee, serving on the Board, presenting or organizing a session, developing a Webinar, presenting a paper or serving as a panelist and taking a leadership role in a local section or chapter.

Volunteers can serve on each of our four councils: Education, Sections & Chapters, Technical, and Young Professionals Advisory. Attend a council meeting on-site at the Annual Conference to learn more! Everyone is welcome.

Education Council

The Education Council provides input into the development of products and services offered to A&WMA members such as professional development educational needs. The Education Council is made up of three divisions: Professional Development, Higher Education and Public Education. Professional Development is responsible for continuing education programs and services related to electronic learning. Higher Education is responsible for university education, student development, and student membership. Public Education is responsible for developing programs on environmental issues for the members to become more actively involved in environmental education efforts.

Sections & Chapters Council

Monday, June 24, 8:00 am – 2:00 pm
Hilton Hotel, Beauport/Beaumont Room

The Sections and Chapters Council enables, encourages, and ensures strong sections and chapters to fulfill the core purpose of the Association at the local level while communicating closely with Association leadership. It is comprised of a Chair, Vice Chair, two Committee Chairs, several advisors, and one representative from each Section and Chapter of the A&WMA.

Technical Council

Monday, June 24, 8:00am – 2:00 pm
Hilton Hotel, DeTourny Room

The Technical Council provides the technical expertise to determine and produce the technical programs at annual meetings and specialty conferences; peer-review articles and publications, and works with other Councils to develop programming and webinars. The Council is divided into four groups: Air Group; Environmental Management Group; Sustainability, Climate Change, Resource Conservation and Waste Management Group; and Industrial, Power, Government, and Indigenous Sectors Group. These groups are comprised of 10 divisions; the divisions are further divided into technical coordinating committees (TCCs). Stop by the Technical Program Resource Center (Room 304 AB) to learn more about opportunities to participate. In addition to the council meeting, you can attend the following meetings:

- Non-ACE Programming (PRG) Task Force, Thursday, June 27, 3:20 pm – 4:20 pm, Room 207
- ACE 2020 Planning Meeting, Thursday, June 27, 4:30 pm – 5:30 pm, Room 207
- See the following page for the Division/TCC Meetings

Young Professionals Advisory Council

Monday, June 24, 8:00 am – 2:00 pm
Hilton Hotel, Courville Room

The Young Professional Advisory Council advises the A&WMA Board and other Councils on what services and activities effectively engage young professionals (YPs). This Council provides great opportunity for younger members to develop their leadership skills and become more involved in the Association. This Council also facilitates the integration of student members into the Association upon graduation.
# TECHNICAL COUNCIL STRUCTURE AND TECHNICAL COORDINATING COMMITTEES (TCCs) MEETINGS

<table>
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<th>Groups</th>
<th>Divisions</th>
<th>Division Names</th>
<th>TCCs</th>
</tr>
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<tr>
<td>Atmospheric Processes and Measurements (APM)</td>
<td>AA</td>
<td>Measurement, Monitoring and Controls Division</td>
<td>AAC, AAE, AAM</td>
</tr>
<tr>
<td></td>
<td>AP</td>
<td>Atmospheric Process Division</td>
<td>APC, APM, APV</td>
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<tr>
<td>Environmental Management (EM)</td>
<td>EE</td>
<td>Effects &amp; Exposure Division</td>
<td>HEE, RAM, ODR</td>
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<tr>
<td></td>
<td>EP</td>
<td>Program Administration Division</td>
<td>REG, EPE, PUB</td>
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<tr>
<td></td>
<td>ET</td>
<td>Transportation Division</td>
<td>OMS, PLU, CNV</td>
</tr>
<tr>
<td>Sustainability, Climate Change, Resource Conservation and Waste Management (SMCRW)</td>
<td>SR</td>
<td>Sustainability and Resource Conservation Division</td>
<td>SUS, SRC</td>
</tr>
<tr>
<td></td>
<td>CC</td>
<td>Climate Change Impacts, Mitigation and Adaption Division</td>
<td>CCP, CCI</td>
</tr>
<tr>
<td></td>
<td>WM</td>
<td>Waste Management/Processing, Waste-to-Energy and Bioenergy Division</td>
<td>WMB, WMR</td>
</tr>
<tr>
<td>Industrial, Power, Government and Indigenous Sectors (IPGI)</td>
<td>FI</td>
<td>Federal Facilities and Indigenous Environmental Affairs Division</td>
<td>FED, IEA</td>
</tr>
<tr>
<td></td>
<td>IN</td>
<td>Power, Petroleum/Industry/Mining and Nanotechnology Division</td>
<td>PWR, PIM, NAN</td>
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<tr>
<td></td>
<td>ITF</td>
<td>Inter-Committee Task Force</td>
<td>PRG, COM</td>
</tr>
</tbody>
</table>

**GET INVOLVED!** To become involved in one or more of the TCCs, attend any of the committee meetings in Québec City or contact the appropriate Division or TCC Chair, or visit the Technical Council Resource Center in Room 304AB at the Québec City Convention Centre if interested. All ACE attendees are welcome to attend. All are also welcome to attend any TCC meeting and the Non-ACE Programing Task Force Meeting (see previous page for details). Division and TCC Meetings are scheduled as shown below:

<table>
<thead>
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<th>Date and Time</th>
<th>Division and/or TCC</th>
<th>Room Number*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thursday, June 27 3:10 pm – 4:20 pm</td>
<td>NAN-Nanotechnology</td>
<td>205B</td>
</tr>
<tr>
<td>3:20 pm – 4:20 pm</td>
<td>PRG Non-ACE Programming</td>
<td>207</td>
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* All Rooms located in the Québec City Convention Centre on Levels 2 and 3.
THANK YOU TO OUR ORGANIZATIONAL MEMBERS

Thank you to all of our organizational members for your support of membership and A&WMA conferences, events, and activities this past year as we continue to strive to provide optimum products and services to meet your needs.

3M Company
AECOM
AET Environmental
AF Global Corporation
Air Quality Services, LLC
Air Resource Specialists, Inc.
Air Sciences Inc.
Allegheny County Health Department
Alliance Source Testing
American Airlines
American Petroleum Institute (API)
ARCADIS
Archer Daniels Midland Company
Arizona Department of Environmental Quality
August Mack Environmental
Babst Calland
Barnes & Thornburg LLP
Barr Engineering Company
Bay Area Air Quality Management District
Bingham Greenebaum Doll LLP
Bureau of Reclamation, LCR
Burns & McDonnell Engineering Co., Inc.
Calpine
Chevron Energy Technology Company
CITGO Petroleum Corporation
Civil & Environmental Consultants, Inc.
C-K Associates
Clark County
Consumers Energy
Cornerstone Environmental Group
Davis Graham & Stubbs LLP
DSG Solutions, LLC
Duke Energy
Eastern Research Group
EHS Technology Group, LLC
Elit Lilly & Company
Entergy
ERM
Federal Highway Administration
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GAI Consultants, Inc.
Georgia-Pacific LLC
GHD
Golden Valley Electric Association
Golder Associates
Hennepin County
H-Gac
Huntington Ingalls Industries
Idaho Department of Environmental Quality
Idaho Power Company
Indiana Dept of Environmental Management OQL
International Paper
Jacobs
Kansas City Board Of Public Utilities
Kansas Dept. of Health & Environment
Kentucky Division For Air Quality
KEY Environmental, Inc.
Kleinfelder
Koch Industries
Los Angeles Dept of Water and Power
Lane Regional Air Proection Agency
LEHDER Environemntal Services
Locke Lord LLP
Los Angeles County Sanitation District
Louisiana Dept of Environmental Quality
Maricopa County
Maryland Dept. of the Environment
McCoy and Associates
Methanex USA Services LLC
Metro Vancouver/Michigan DEQ
Michigan Dept. of Environmental Quality
Ministry of Environment
Minnesota Pollution Control Agency
Mississippi Dept. Of Environmental Quality
Mojave Desert AQMD
Montrose Environmental Group
Mosaic
North Carolina DENR Division of Air Quality
Nebraska DEQ
NGL Energy Partners LP
Northern Tier Energy
Northwest Clean Air Agency
Novel Geo-Environmental, LLC
Novus West
Nucor Steel Jackson, Inc.
NV Energy
NY State Dept. Of Env. Conservation
Oklahoma Dept. of Environmental Quality
Olympic Region Clean Air Agency
ORTECH Environmental
PA DEP / Bureau Of Air Quality
PDC Energy
POWER Engineers, Inc.
PPM Consultants, Inc.
Providence Engineering
Ramboll US Corporation
Regional Air Pollution Control Agency (RAPCA)
Research Triangle Institute
RTP Environmental Associates
RWDI Air Inc.
Salt River Project
San Joaquin Valley APCD
Sasol Chemicals (USA) LLC
South Coast Air Quality Management District
SCDHEC
SLR International Corp
Sonoma Technology, Inc.
Southern California Edison Co.
Southwest Pennsylvania Air Quality Partnership
Spokane Environmental Solutions, LLC
Stanley Consultants, Inc.
Stantec Consulting Ltd.
Steptoe & Johnson PLLC
Strata, LLC
Taiwan Power Company
Tampa Electric Company
Tennesse Air Pollution Control
The Boeing Company
The Winter Construction Company
Tricorntech
Trinity Consultants
Tucson Electric Power Company
US EPA RTP - Library
US EPA Region 4
US EPA Region 7 (AWMD)
Utah Division of Air Quality
WA State Dept. of Ecology
Washtoe County Health District
Waste Management
Weaver Consultants Group
Wenck Associates, Inc.
Westlake
Winstead PC
Wood.
Woodard & Curran
WSP Canada, Inc.
Xcel Energy

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EXHIBIT HALL ATTRATIONS

The Exhibit Hall at the 112th A&WMA Annual Conference & Exhibition is the one-stop destination for environmental technology solutions, product and service demonstrations, and informative visits with experts from across the environmental spectrum.

Be sure to visit the Exhibit Hall during these hours:
Tuesday, June 26: 10:30 am – 5:30 pm
Wednesday, June 27: 8:00 am – 6:30 pm

**Exhibition Grand Opening and Ribbon Cutting**
Tuesday, June 25 • 10:30 am – 5:30 pm
Immediately following the Keynote Program, join your fellow attendees and presenters for the Grand Opening and Ribbon Cutting in the Exhibit Hall. It’s the perfect opportunity to meet with leading companies showcasing their latest products and services. Enjoy a complimentary light brunch from 10:30 am – 11:30 am and purchase lunch in the concessions with your $5 coupon until 1:30 pm. The first 100 people will receive a free A&WMA water bottle!

**Technical and Student Poster Session**
Tuesday, June 25 • 10:45 am – 12:15 pm

**Student and ECi Poster Judging**
Tuesday, June 25 • 2:45 pm - 5:30 pm

**Breakfast with the Exhibitors**
Wednesday, June 26 • 9:30 am – 10:30 am

**Refreshment Breaks**
Please join our many exhibitors for refreshment breaks in the exhibit hall between technical sessions.
Tuesday, June 25 • 3:10 pm – 4:00 pm
Wednesday, June 26
9:30 am – 10:30 am and 3:10 pm – 3:30 pm

**Exhibitor Reception**
Wednesday, June 26 • 5:30 pm – 6:30 pm
Join us for a hospitality hour in the Exhibit Hall to connect with exhibitors and friends during the Exhibitor Reception. Take advantage of this opportunity to network and trade those last-minute business cards with key suppliers to add to your professional network.

**Exhibit Hall Booth Crawl**
Make the most of your time in the Exhibit Hall. Enter the Exhibit Hall Booth Crawl and get a sticker from 10 participating booths to be entered into a drawing to win a $100 gift card. Entries can be submitted in the B2B Zone or at Registration on Thursday. Winners will be drawn following the conference and will be notified via email.

**New this Year!**

**B2B Zone**
Network with colleagues, exhibitors and sponsors in the new B2B Zone on the exhibit floor or use one of the semi-private meetings spaces to establish relationships and collaborate on solutions.

Use the app B2B feature to request and confirm appointments. Download the AO-Event app from the App Store or Google Play, then choose My App and +, enter the code ACE2019. Click on the B2B icon to unlock and create an account to use this feature.

**The YP Hub**
Stop by Booth #315 to see what’s going on and attend planned events such as meet-and-greets with professionals, regulators, and VIPs, exhibitor demonstrations, and more.

Find out about ACE, YP, and A&WMA events and get help with the ACE 2019 app if you need it.

**A&WMA and ACE 2020 Booth #115**
With the theme of “Gateway to Innovation”, the A&WMA 2020 Annual Conference will travel to San Francisco, CA, June 29-July 2. Learn about beautiful, historic San Francisco and reserve your exhibit booth for next year. Also discover many A&WMA programs and services including membership, specialty conferences, webinars, and explore volunteer opportunities.

**Concessions**
If you need a quick lunch, there’s no need to leave the Convention Center. A variety of lunch options along with beverages and snacks will be available for purchase on Tuesday and Wednesday, from 11:30 am – 1:30 pm in the back of the exhibit hall with seating available. A $5 coupon will be included with full conference registrations.

Sponsored by Québec
EXHIBIT HALL FLOOR PLAN

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www.awma.org

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Aclima ......................................................314
https://aclima.io

Aclima delivers hyperlocal air pollution and climate emissions intelligence at unprecedented block-by-block resolution. With our SaaS platform, governments, companies, researchers and the public can track pollution hotspots and impacts over time. This new capability empowers informed action to reduce emissions and exposure, at both the local and global level.

AECOM ...................................................406
www.aecom.com

As the number and stringency of air, waste and environmental regulatory requirements increases, AECOM is working with our clients to strategize and implement compliance solutions using innovative approaches and advanced technology. With 85,000 employees in 150 countries, AECOM is at the forefront—tackling issues with strategic thinking and collaboration.

Aerqual .....................................................421
www.aerqual.com

Aerqual is changing the way people understand the air they breathe. We make tools that consultants, companies, communities and citizens can use to monitor and respond, in real-time, to air pollution. Aerqual has spent more than a decade perfecting sensor-based air quality measurements in a variety of applications and climates in more than 50 countries worldwide.

ALL4 Inc. ..................................................517
http://all4inc.com

ALL4 is an environmental consulting company with a focus on air quality consulting. Founded in 2002, ALL4 has offices in Philadelphia, Atlanta, Houston, Raleigh, and Washington DC, in addition to regional support staff members. Our practice is built with a passionate team of engineers, scientists, and meteorologists from the consulting, industry, and regulatory fields. We provide a work environment that fosters employee innovation, creativity, and fun. Our culture translates into a very stable workforce, providing consistency, continuity, and quality for our clients.

ALS Environmental .................................610
www.alsglobal.com

ALS specializes in the analysis of ambient/indoor air pollution, stationary source emissions, process gas, and industrial hygiene samples. ALS also performs routine and specialty analytical testing, including complex projects requiring analysis of large numbers of samples, difficult matrices, and low-level detection.

Ambilabs ..................................................502
www.ambilabs.com

Ambilabs specializes in supplying innovative ambient air monitoring technology solutions. Our experienced staff provide instrumentation, systems and solutions for obtaining valid, accurate, and precise air quality data. We directly supply, install, and train on a broad range of gas and particulate monitoring instrumentation for our customers in Canada, USA, and the Caribbean. Please visit our booth to discuss the latest “Airpointer” which is an EPA FEM & FRM designated air monitoring “station in a suitcase”, and also the new AqMesh suite of pollutant monitoring sensors packaged together into a tiny pod that is no larger than a football. Also ask about our latest “2WIN” high precision particulate/haze/visibility monitoring sensor solution.

American Academy of Environmental Engineers & Scientists ..................215
www.aaees.org

The American Academy of Environmental Engineers and Scientists consists of highly-qualified professional engineers and scientists who have imposed self-testing and review for entry qualification. Each Board Certified Environmental Engineer, Environmental Engineering Member, and Board Certified Environmental Scientist has the prerequisites for specialty certification and has passed rigorous exams and reviews.

American Ecotech .................................403
www.americanecotech.com

American Ecotech specializes in supplying state of the art instruments measuring specific gases, aerosols, and particulate airborne matter, including gas analyzers to measure NOx, CO, SO2, CO2, NH3, H2S, NOy, and/or ozone. We supply digital dataloggers, and advanced remote maintenance software for automated field data validation and reporting.

APTIM .................................................306
www.aptim.com

APTIM plans for the unexpected, develops insights, and delivers solutions by leveraging teams of engineers, scientists, builders, economists, and craft professionals. We go to work knowing we make an impact globally. Offering engineering, program management, environmental services, disaster recovery, facility maintenance, and construction we are partners/advocates with every client.

ARCADIS .................................................321
www.arcadis.com

Arcadis is the leading global Design & Consultancy firm for natural and built assets. Applying our deep market sector insights and collective design, consultancy, engineering, project and management services we work in partnership with our clients to deliver exceptional and sustainable outcomes throughout the lifecycle of their natural and built assets. We are 27,000 people active in over 70 countries that generate $3.8 billion in revenues. We support UN-Habitat with knowledge and expertise to improve the quality of life in rapidly growing cities around the world.

Atmospheric and Environmental Research (AER) .........................411
www.aer.com

Atmospheric and Environmental Research (AER) is an internationally recognized scientific organization providing science-based solutions to global environmental challenges. Our scientists and software engineers on our Air Quality and Atmospheric Composition team collaborate to perform state-of-the-science air quality modeling and research, and provide advanced, cloud-based tools to meet our clients’ scientific, technical, and regulatory needs. Visit us on the web at www.aer.com/government/air-quality/.

Barr Engineering & Environmental Science Canada Ltd. ...............210
www.barr.com

Barr Engineering and Environmental Science Canada is a subsidiary of Barr Engineering Co., an employee-owned consulting firm with Quebec City, QC | A&WMA 112th Annual Conference & Exhibition | June 25-28, 2019 29
CRIQ, Centre de recherche industrielle du Québec (CRIQ) provides the most extensive range of innovative services in Québec. A Québec government corporation under Ministère de l’Économie et de l’Innovation (MEI), CRIQ is at the forefront of many R&D initiatives and is proud of its collaborations with innovation partners throughout Québec. CRIQ ensures a smooth transition for innovative manufactures by providing access to labs using state-of-the-art technologies and proven methodologies for experimentation, training, and project implementation.

CHWMEG, Inc. .................................. 207
www.chwmeog.org

CHWMEG promotes responsible environmental stewardship, focusing on the proper management of production wastes and spent materials. Through 2019, CHWMEG will have conducted over 5,051 comprehensive reviews of over 1,883 unique recycling, treatment, and disposal facilities in 51 countries. CHWMEG membership now equals 289 member organizations with 546 participating affiliates.

Civil & Environmental Consultants, Inc. .......................... 420
www.cecinc.com

Civil & Environmental Consultants, Inc. (CEC) is an engineering and environmental consulting firm with more than 1,000 team members and 24 offices nationwide. Headquartered in Pittsburgh, Pennsylvania, CEC is an employee-owned team of empowered, engaged, and passionate professionals working seamlessly with our clients to deliver inspired solutions to their most complex air quality and waste management challenges. We work hard to learn our clients’ business and serve a wide range of markets and industries — manufacturing, mining, oil & gas, power, public sector, real estate, and solid waste. Every member of our team has a personal stake in ensuring the success of our clients because their success is our success. We don’t just work at CEC, we own it.

Clarity Movement .............................. 516
https://clarity.io/

Founded in 2014, Clarity Movement Co. is an environmental startup leveraging our expertise in air sensing technology, IoT devices, and data analytics to create actionable and accessible air quality monitoring solutions for cities. Our turn-key solution for hyperfocal air quality monitoring expands upon existing monitoring stations with a high density network of stationary sensors and toolbox of Cloud services to deliver ubiquitous spatial and temporal air quality insights that empower civic stakeholders and decision makers to build healthier communities with smarter data.

EXHIBITORS BY COMPANY

nine offices in Calgary and the U.S. We integrate engineering and environmental expertise to help clients across North America and around the world develop, manage, process, and restore natural resources. Working together, Barr’s 800 engineers, scientists, and technical specialists help organizations in the public and industrial sectors address environmental and engineering challenges.

Biorem Technologies, Inc. .............. 310
www.biorem.biz

Biorem Technologies Inc. (www.biorem.biz) is North America’s oldest and most experienced odor control company. We design and manufacture equipment to control odors generated from food and beverage production, wastewater treatment, organics processing, cannabis, pet food, perfume and many other industries that generate odors and hydrogen sulfide. Biorem has over 1,200 installations globally and is active in 23 countries. If you have concerns about the odors generated from your facility, drop by Biorem’s booth or contact them at 519-767-9100 x283.

Brault Maxtech, Inc. ...................... 101
www.braultmaxtech.com

“Brault Maxtech Inc represents a complete line of water and wastewater treatment equipment manufacturers for the municipal and industrial Quebec markets, with SUEZ Water Technologies & Solutions who provides advanced technologies to solve the most complex challenges in terms of water treatment.

Brault Maxtech inc représente les meilleurs manufacturiers d’équipement de traitement des eaux pour les marché municipaux et industriels au Québec avec SUEZ Water Technologies & Solutions fournit des technologies avancées pour résoudre les challenges les plus complexes en termes de traitement des eaux.

Camsco ....................... 614
www.camsco.com

Since 1991, Camsco has been the premier manufacturer and service provider for air monitoring applications targeting volatile organic compounds (VOC’s) utilizing thermal desorption tubes (sorbent tubes). Camsco has manufactured more than 2.5 million sampling tubes for a wide range of applications such as chemical weapons monitoring, fence-line monitoring and breath analysis.

CHWMEG, Inc. .............................. 207
www.chwmeog.org

DR DAS, LTD .............................. 211
http://www.dr-das.com

DR DAS LTD is the pioneer in digital data collection. Learn about innovative data acquisition and control solutions for air quality, emissions and property line monitoring. Envidas Ultimate DAS, EnvistaARM and public information products (Websites, Kiosks, Telephony, Mobile Apps) will be on display. Learn why 40+ agencies rely on DR DAS.

Eisenmann Corporation .................. 415
www.eisenmann.us.com

Eisenmann is an internationally recognized environmental system integrator, basically we design and build plants and systems, for treatment or destruction of hazardous and toxic compounds in gases, liquids and solids. A healthy environment and state-of-the-art production are not a contradiction, rather they can go hand in hand thanks to sophisticated technologies that enable sound processes. With over 2,500 custom built solutions we can put our experience to work for you!

Entech Instruments, Inc. .............. 203
www.entechninst.com

Entech Instruments is a leading developer and manufacturer of analytical instrumentation that supports professionals in the Environmental, Industrial Hygiene, Food & Beverage, Product Testing, Forensic & Clinical Analysis markets. We specialize in the creation of inert sample collection equipment as well as GC & GC/MS sample preparation and introduction technologies.

EnviroSuite ....................... 409
www.envirosuite.com

Envirosuite provides the most comprehensive and intuitive real-time monitoring, investigative and predictive environmental management software in the world. We’re for government regulators looking for a solution that monitors industry impact and pinpoints the source of environmental breaches. We’re for those operating close to communities or
in urban areas who want to stay ahead of regulation, while turning environmental data into operational efficiencies. Built on insights from 30+ years experience as environmental consultants, Envirosuite seamlessly converts data into action, enabling real action in real-time.

GHD ................................. 311
www.ghd.com

GHD is one of the world’s leading employee owned professional services companies operating in the water, energy and resources, environment, property and buildings, and transportation markets. Established in 1928, we employ more than 9,000 people in 200+ offices across the globe, including 12 offices in Quebec.

Global Analyzer Systems Ltd. ....... 206
www.gasl.ca

Global Analyzer Systems is a Canadian air emission monitoring equipment and service provider. We manufacture complete turn-key Continuous Emission Monitoring Systems (CEMS), serving our clients by providing state-of-the-art Data Acquisition Systems (DAS), reporting software, and accurate measurement solutions. We are committed to helping our clients set up and maintain the highest standard environmental air quality assurance programs. We perform emission reporting, quality system audits, training and consulting services; in addition to providing a host of technical onsite support services including: RATA supervisions, CGAs, preventative maintenance programs, and trouble call response.

Grimm Aerosol Canada Inc. .......... 507
www.grimm-aerosol.com

The name GRIMM is an institution in respect to optical dust measurement solutions for official and industrial networks. As the pioneer with the first US EPA approved system of optical environmental dust monitoring, we passed until now over 15 equivalence tests worldwide. From handheld solutions to instant measurements over 19” rack versions, from professional container solutions to stand-alone versions we cover all applications you need.

K-12 Environmental Education Committee ......... 123
A&WMA’s K-12 Environmental Education Committee, part of teh Education Council’s Public Education Division, develops and delivers materials to educate members, professionals, media, educators and the public about environmental issues. Come see the wealth of materials including the Environmental Education Resource Guides (EERGs) that give environmental educators the tools to reach their students.

INO ..................................... 309
www.ino.ca

INO is the largest centre of expertise in optics and photonics in Canada. For 30 years, we have been offering a complete and integrated range of services to meet the needs of companies. Our “Energy, Resources and Environment Business Unit” has developed LiDAR platforms for aerosol and pollutants monitoring, perfect for saving on your emissions control infrastructure costs.

Jacobs .................................. 510
www.jacobs.com

Jacobs leads the global professional services sector delivering solutions for a more connected, sustainable world. With approximately $12 billion in revenue and a talent force of 50,000, Jacobs provides a full spectrum of services including scientific, technical, professional and construction- and program-management for business, industrial, commercial, government and infrastructure sectors.

LafargeHolcim ............................. 201
www.lafargeholcim.us

LafargeHolcim personnel have more than 30 years experience using cementious products for both in-situ and ex-situ solidification/stabilization of contaminated soils, dredge spoils, etc. Characteristic hazardous waste can be rendered non-hazardous and left in place. This is the ultimate in sustainable development, reduces leachability and is less expensive than landfiling.

Lakes Environmental Software ......... 300
http://www.weblakes.com

Lakes Software is internationally recognized for its technologically advanced environmental modeling software and data products. Since 1995 we remain dedicated to providing industry and the regulatory community with exceptional service and cost-effective environmental IT solutions. Our products increase productivity, reduce errors, and provide unique solutions in an ever-increasing regulatory constrained world. Expertise includes: Air Dispersion Modeling; Emissions Inventory; · Regulatory Permit and Compliance Solutions; Custom IT Solutions; Real-Time and Fore-
Montrose Air Quality Services, LLC ... 111 www.montrose-env.com

Montrose Air Quality Services is the nation’s largest provider of air quality measurement solutions and offers an extensive range of ambient, fence-line, stack and LDAR capabilities. Our technical and consulting teams will utilize standard or cutting-edge emerging technologies to ensure a best-fit project approach.

NASA .............................................. 501 www.nasa.gov

NASA’s Applied Sciences Program discovers and demonstrates innovative uses and practical benefits of NASA Earth science data and data from NASA’s Earth-observing environmental satellites. Applied Sciences supports applied research and targeted decision-support projects. The Program currently has formal efforts in: Health & Air Quality, Disasters, Ecological Forecasting, and Water Resources.

Ormantine USA Ltd., Inc. ........... 109 www.ormantineusa.com

Ormantine USA Ltd., Inc.’s Environmental Division is a market leader in the supply and analysis of ambient air pollution monitoring products. We serve environmental consultants, government agencies, universities and engineering firms worldwide. We specialize in providing low cost and easy to use products for air sampling, covering a wide range of applications. Our success has been built on providing a flexible and cost effective service that tailors the application capabilities of the monitors to exact customer requirements, with an added service of accurate and timely analysis – the ultimate solution for environmental monitoring. Passive monitoring technology provides inexpensive, long-term air sampling over a large area without the need for capital investment, infrastructure or a power supply.

Pacwill Environmental ............. 410 http://fr.pacwill.ca/

Pacwill Environmental represents the leading manufacturers in the industry for ambient air analyzers, process ozone, continuous emissions, particulate samplers and instrumentation for stack sampling.

Pacwill Environnement représente les principaux fabricants d’analyseurs pour la mesure d’air ambiant, d’ozone de procédé, d’émissions en continu, des échantillonneurs de particules et des instruments pour l’échantillonnage en cheminée.

Rio Tinto .... 521 www.riotinto.com

With more than 15,000 employees working at over 35 sites and operations, Rio Tinto is the largest mining and metals business operating in Canada. Rio Tinto’s extensive operations in Canada include mining and manufacturing interests in aluminium, iron ore, diamonds and titanium dioxide, as well as research and development centres and hydroelectric facilities.

RTP Environmental Associates, Inc. ... 301 www.rtpenv.com


RWDI ......................... 107 www.rwdi.com

RWDI is a leading Canadian consulting engineering firm that offers solutions for waste management, air quality, microclimate and environmental issues. Since opening its offices in 1972, the firm has grown to over 500 employees worldwide and enjoys a trusted 40-year reputation for our deep knowledge and sophisticated technology solutions for complex environmental and engineering problems. A staff of unique experts, along with a suite of modelling and measurement tools help solve even the most complex issues related to air quality, GHG, weather and climate, noise and vibrations, geosciences and solid waste. The facilities include a boundary layer wind tunnel, an open channel water flume, and advanced computer modeling capabilities (including Computational Fluid Dynamics modeling). Environmental services have been core competencies at RWDI for over 30 years including a team of engineers and specialists (many with graduate degrees), meteorologists, engineering technologists and technicians. We have offices in Guelph, Sudbury, Peterborough, Windsor, Hamilton, Ottawa, Thunder Bay, Vancouver, and Calgary, as well as international offices in the United States, United Kingdom, India, China, Hong Kong, Australia and Singapore.

Sabio Environmental .................... 515 www.sabio.com

Sabio Environmental is focused on ambient air pollution monitoring with a full suite of US EPA designated analyzers, Gas Dilution Calibrators and Zero-air Generators, along with supporting instruments and equipment.

Scentroid .............................. 616 www.scentroid.com

Scentroid is the word leader in air pollution and odor measurement equipment and services. Based in Toronto, Canada, we export to over 45 countries around the world. Scentroid www.scentroid.com, headquartered in Canada, is a global business that designs, manufactures and sells air quality and odor monitoring instruments and accessories.

SolVay / Manuchar ............... 103 www.manuchar.com

SOLVAY is an advanced materials and specialty chemicals company. SOLVAir® Solutions is SOLVAY’s Air Pollution Control entity that offers and continuously develops competitive and sustainable environmental solutions used for acid gas emissions control. Manuchar is a global trading, logistics and distribution company focused on commodity and specialty chemicals. Active in air pollution control, mining, animal nutrition, manufacturing, water treatment.

SPTC ....................... 200 www.sptcusa.net

SPTC KOREA is Particulate monitor manufacturer for CEMS and efficient Monitoring system. P-SC can be used in a various industry of thermal power plants, cogeneration plants, waste incinerators, steel & iron industry, the petrochemical industry, cement industry, paper pulp industry, oil refinery industry, automotive industry, non-ferrous metals industry.

Taylor & Francis Group ............. 217 www.taylorandfrancis.com

For two centuries, Taylor & Francis has been fully committed to the publication of scholarly research. Taylor & Francis is the publisher of the official journal of A&WMA. Visit the Taylor & Francis Booth to learn about our products and services, and to request FREE sample copies.
Telops ............................. 320
www.telops.com

Telops is a leading supplier of high-performance infrared cameras and hyperspectral imaging systems for defence, industrial, and academic research applications. Telops is especially renowned for the powerful Hyper-Cam, which provides rich hyperspectral data for a wide variety of applications, including methane detection. Telops also offers measurement services for customers in need of remote or on-site support and training.

Thermo Fisher Scientific ............. 407
www.thermofisher.com

We offer a full range of Thermo Scientific Air Quality instruments to monitor gases and particulates, enabling our customers to make the world a cleaner, safer and healthier place. Our market knowledge, innovative technologies, and customer support help protect people and the environment.

Tisch Environmental, Inc. ............. 401
www.tisch-env.com

Tisch Environmental is a family business founded to develop and manufacture air pollution monitoring instruments. The Tisch family have produced nearly half million devices for the air pollution monitoring community over the last 60 years. TEI is looking into the future needs of today’s aerosol research professionals.

TRC Environmental Corp. ............ 606
http://www.trccompanies.com

Since the 1960s, TRC has served clients with air quality systems design, permitting, dispersion modeling, licensing, regulatory compliance, engineering, auditing, due diligence review, litigation support, and expert witness services. As one of the nation’s largest air measurement firms, TRC also provides emission testing, ambient monitoring, and meteorological monitoring services.

Trinity Consultants .................. 506
www.trinityconsultants.com

Founded in 1974, Trinity is an international EHS consulting firm with offices across North America, and in the U.K., China, and the Middle East. Trinity assists organizations with meeting their permitting and compliance obligations, and with broader EHS performance and risk management concerns. Trinity’s technology team provides EHS technology solutions to help organizations streamline EHS reporting and data management, and Trinity’s BREEZE EHS modeling software is used by professionals worldwide to predict the impact of air emissions, fires, and explosions. Trinity also provides extensive professional EHS training via classroom and online formats. SafeBridge Consultants, a Trinity Consultants company, provides industrial hygiene and toxicology services to pharmaceuticals companies.

TSI Incorporated ..................... 208
www.tsi.com

TSI, a world leader in particle measurements, offers a variety of air quality monitors for real-time, direct-reading results. The DustTrak™ Environmental Monitor measures PM1, PM2.5, respirable, PM10 and total PM size fractions, providing near-reference quality data. In addition, TSI offers ultrafine particle monitors and next-generation lower cost PM2.5 sensors.

U.S. EPA’s Air and Energy National Research Program ........... 508
www.epa.gov/air-research

The Air and Energy National Research Program at the U.S. Environmental Protection Agency (EPA) conducts state-of-the-art science to improve air quality and protect public health and the environment. The research objectives are to assess human and ecosystem impacts of air pollutants; develop and evaluate new approaches to prevent and reduce air pollution now and in the future; advance air measurement and modeling and deliver the science needed to implement the nation’s air quality regulations and policies. An integrated science focus is wildland fire impacts on public health and the environment. Website: epa.gov/air-research.

Young Professionals Advisory Council (YPAC) YP HUB ............ 315
www.awma.org/yp

Realizing the value of young professionals (YPs) under the age of 35 to the environmental industry, the Young Professionals Advisory Council (YPAC) supports learning and networking opportunities to help YPs excel in their careers. The Council advises the A&WMA Board and Councils regarding services and activities to engage YPs. It recruits and retains YP members by fostering relationships with current YP members, employers, and A&WMA Sections and Chapters. Additionally, it assists leadership to recruit, retain, and develop YP members to serve in roles within A&WMA and integrate students into the Association.

Vaisala ................................ 209
www.vaisala.com

Vaisala is a global leader in weather, environmental and industrial measurement. Building on over 80 years of experience, Vaisala provides observations for a better world. We are a reliable partner for customers around the world, offering a comprehensive range of innovative observation and measurement products and services. Headquartered in Finland, Vaisala employs approximately 1,850 professionals worldwide and is listed on the Nasdaq Helsinki stock exchange. vaisala.com twitter.com/VaisalaGroup

Wood .................................. 511
www.woodplc.com

Wood is a global leader in project delivery, engineering and technical services, providing efficient, integrated solutions across the asset life cycle in multiple sectors. We are proud of our rich heritage which underpins our unrivalled breadth and depth of capability. We employ people with the brightest minds and the sharpest skills, who use our leading-edge technology to help our customers succeed.

URG Corporation ..................... 500
www.urgcorp.com

URG is helping to ensure the air we breathe is the best it can be by creating the Ambient Ion Monitor (AIM) for the time-resolved, direct measurement of gas (hydrogen chloride, nitric acid, nitrous acid, sulfur dioxide, ammonia) and artifact free particulate matter (nitrate, sulfate, nitrite, phosphate, chloride ammonium, sodium, calcium, potassium, magnesium) air pollutants. We specialize in Teflon coated cyclones with various cut-points and flow rates, and stainless steel cyclones for diesel emissions.
### TECHNICAL SESSIONS BY TOPIC AREA

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<tr>
<td><strong>Mini-Symposium: Facing Environmental Challenges</strong></td>
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<tr>
<td>Tue 1:30 pm – 3:10 pm</td>
<td>Air Quality Monitoring: Challenges and Innovations - Part 1</td>
<td>MINIAQMM</td>
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<tr>
<td>Tue 4:00 pm – 6:00 pm</td>
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<td>Wed 8:00 am – 9:40 am</td>
<td>Carbon Pricing in the US and Canada: Successes and Key Program Features</td>
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<tr>
<td>Wed 10:10 am – 11:50 am</td>
<td>Answering Critical Challenges Facing our Planet in Air Quality by Using NASA's Current &amp; Future Earth Observing Satellites</td>
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<td>Quebec and California Cap and Trade Update and Expectations for Post 2020</td>
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<td>Perspectives on EPA Priorities 2019-2020</td>
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<td><strong>Air Quality—Control Technology</strong></td>
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<td>Tue 1:30 pm – 3:10 pm</td>
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<td>How Does It Work? – Control Devices</td>
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<td>Dry Sorbent Injection for effective SO₂ and HCI emissions control</td>
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<td>SOx, VOC, and Toxic Gas Control Technologies - Part 1</td>
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<tr>
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<td>Beyond Design: Industry’s Perspective on Selecting the Right VOC Control Technology</td>
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<td>Wed 10:10 am – 11:50 am</td>
<td>Answering Critical Challenges Facing our Planet in Air Quality by Using NASA's Current &amp; Future Earth Observing Satellites</td>
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<td>Air Monitoring Methods, Data, and Uncertainties</td>
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<td>Elemental, Ionic, and Organic Analysis for Air Measurement Applications</td>
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<td>Transportation Air Quality Modeling</td>
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<td>Air Dispersion Modeling Case Studies: AERMOD</td>
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<td>Air Dispersion Modeling Case Studies: CFD and Photochemical Grid Modeling</td>
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<td>Thu 1:30 pm – 3:10 pm</td>
<td>Innovative AERMOD Applications &amp; Meteorology</td>
<td>AQMO</td>
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### Climate Change

<table>
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<th>Title</th>
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<tr>
<td>Tue 1:30 pm – 3:10 pm</td>
<td>Climate Change, Health, and Local Adaptive Management</td>
<td>CLIM</td>
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<td>Tue 1:30 pm – 3:10 pm</td>
<td>Climate Change Communication</td>
<td>CLIM</td>
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<tr>
<td>Tue 4:00 pm – 6:00 pm</td>
<td>Diesel-Free By '33: Ending Diesel Pollution in the San Francisco Bay Area</td>
<td>CLIM/TRAN</td>
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<td>303A</td>
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<tr>
<td>Wed 8:00 am – 9:40 am</td>
<td>Carbon Pricing in the US and Canada: Successes and Key Program Features</td>
<td>MINI/CLIM</td>
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<tr>
<td>Wed 10:10 am – 11:50 am</td>
<td>Greenhouse Gas Inventories</td>
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<tr>
<td>Wed 1:30 pm – 3:10 pm</td>
<td>Air Pollutant/Greenhouse Gas Emissions Initiatives</td>
<td>MINI/CLIM</td>
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<td>Wed 1:30 pm – 3:10 pm</td>
<td>Downscaling Global Climate Models to use in Local Adaptation Planning</td>
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<tr>
<td>Wed 3:30 pm – 5:30 pm</td>
<td>Québec and California Cap and Trade Update and Expectations for Post 2020</td>
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<td>Carbon Offsets, Prices and Trading</td>
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### Health and Environmental Effects

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<tr>
<td>Tue 1:30 pm – 3:10 pm</td>
<td>Per- and Polyfluoroalkyl Substances (PFAS) - Specific Technical Challenges, Litigation, and Solutions</td>
<td>H&amp;EE</td>
<td>panel</td>
<td>204B</td>
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<tr>
<td>Tue 4:00 pm – 6:00 pm</td>
<td>Health Benefits of Emissions Reductions</td>
<td>H&amp;EE</td>
<td>platform</td>
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<tr>
<td>Tue 4:00 pm – 6:00 pm</td>
<td>Per- and Polyfluoroalkyl Substances (PFAS) and Other Emerging Contaminants in Waste Management</td>
<td>WAST/H&amp;EE</td>
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<tr>
<td>Wed 8:00 am – 9:40 am</td>
<td>Risk Assessment/Management: Methods, Techniques and Recent Experience</td>
<td>H&amp;EE</td>
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<tr>
<td>Thu 9:40 am – 11:40 am</td>
<td>Health Effects &amp; Exposure - Part 1</td>
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<tr>
<td>Thu 9:40 am – 11:40 am</td>
<td>Odor Detection, Control and Management - Part 1</td>
<td>H&amp;EE</td>
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<td>Bioaerosols and Transmission of Human and Animal Pathogens</td>
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<td>Health Effects &amp; Exposure - Part 2</td>
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<td>Odor Detection, Control and Management - Part 2</td>
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### Power, Industry, and Manufacturing

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<tr>
<td>Tue 4:00 pm – 6:00 pm</td>
<td>Power Industry Technology - Innovation, Challenges and Benefits</td>
<td>POWR</td>
<td>platform</td>
<td>302B</td>
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<tr>
<td>Wed 3:30 pm – 5:30 pm</td>
<td>How Does It Work - Industries</td>
<td>YPRO/INDU</td>
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<td>Thu 9:40 am – 11:40 am</td>
<td>Industrial Air Quality Compliance</td>
<td>REGU/INDU</td>
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<td>Thu 1:30 pm – 3:10 pm</td>
<td>Hot Topics in the Chemicals and Refining Industries</td>
<td>INDU</td>
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### Nanoparticles

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<tr>
<td>Thu 9:40 am – 11:40 am</td>
<td>Nanomaterials and Nanotechnology-based Products: Occupational and Consumer Safety, Management and Regulation</td>
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<tr>
<td>Thu 1:30 pm – 3:10 pm</td>
<td>Nanotechnology Research Advances</td>
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### Oil and Gas

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<td>Wed 1:30 pm – 3:10 pm</td>
<td>Environmental Monitoring in the Oil Sands</td>
<td>O&amp;GS</td>
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<td>Methane Emission Management in the Oil and Gas Industry</td>
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### Regulatory and Legal

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<tr>
<td>Tue 1:30 pm – 3:10 pm</td>
<td>Waiting to Exhale: The Potential Environmental Impacts and the Regulatory Landscape</td>
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<td>303B</td>
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<tr>
<td>Tue 1:30 pm – 3:10 pm</td>
<td>Streamlining Government Business Processes for Environmental Protection</td>
<td>REGU/AQES</td>
<td>panel</td>
<td>202</td>
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<tr>
<td>Tue 4:00 pm – 6:00 pm</td>
<td>Air Legislation, Regulation &amp; Policy Developments</td>
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## TECHNICAL SESSIONS BY TOPIC AREA

<table>
<thead>
<tr>
<th>Day/Time</th>
<th>Title</th>
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<tbody>
<tr>
<td>Tue 4:00 pm – 6:00 pm</td>
<td>Not in My Backyard: Legal Issues in Finding Common Ground for the Approval of Major Resource Projects</td>
<td>REGU</td>
<td>panel</td>
<td>205B</td>
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<tr>
<td>Wed 8:00 am – 9:40 am</td>
<td>Cross-Functional Panel Discussion on the Treatment of Confidential Information in Regulatory Submittals</td>
<td>REGU</td>
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<tr>
<td>Wed 8:00 am – 9:40 am</td>
<td>Permitting Case Studies</td>
<td>REGU</td>
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<tr>
<td>Wed 10:10 am – 11:50 am</td>
<td>Air Permitting Problems and Solutions</td>
<td>REGU</td>
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<tr>
<td>Wed 10:10 am – 11:50 am</td>
<td>How Does It Work? Environmental Regulations in the United States and Canada</td>
<td>YPRO/REGU</td>
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<tr>
<td>Wed 1:30 pm – 3:10 pm</td>
<td>Economics, Partnerships &amp; Environmental Leadership</td>
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<td>Wed 1:30 pm – 3:10 pm</td>
<td>Modeling Issues in PSD/Nonattainment/Minor NSR Permitting</td>
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<td>Wed 3:30 pm – 5:30 pm</td>
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<td>Thu 9:40 am – 11:40 am</td>
<td>New Source Review (NSR) Issues and Recent Developments</td>
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<tr>
<td>Thu 9:40 am – 11:40 am</td>
<td>Industrial Air Quality Compliance</td>
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<td>BACT Development and Implementation</td>
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<tr>
<td>Thu 1:30 pm – 3:10 pm</td>
<td>Perspectives on U.S. EPA Priorities 2019-2020</td>
<td>MINI/REGU</td>
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### Sustainability and Resource Conservation

<table>
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<tr>
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<tr>
<td>Tue 1:30 pm – 3:10 pm</td>
<td>Resource Conservation and Sustainability: Innovative Policies and Practices - Part 1</td>
<td>SUST</td>
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<tr>
<td>Tue 4:00 pm – 6:00 pm</td>
<td>Resource Conservation and Sustainability: Innovative Policies and Practices - Part 2</td>
<td>SUST</td>
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<td>301A</td>
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<tr>
<td>Wed 8:00 am – 9:40 am</td>
<td>Zero Waste: Sustainability Issues and Practical Approach</td>
<td>SUST</td>
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<td>Wed 10:10 am – 11:50 am</td>
<td>Corporate Implementation of Sustainability: Ethics, Methods, Metrics, Reporting, and Measured Benefits - Case Studies</td>
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<tr>
<td>Wed 1:30 pm – 3:10 pm</td>
<td>Sustainability Tracking, Metrics, Initiatives, and Analytics</td>
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### Transportation

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<td>Transportation Air Quality Modeling</td>
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<td>Electric Vehicles: Effects on the Environment</td>
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<td>Community Noise and Transportation Emissions</td>
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### Waste Management

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<tr>
<td>Tue 1:30 pm – 3:10 pm</td>
<td>Solid Waste Generation and Treatment</td>
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<td>platform</td>
<td>302B</td>
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<tr>
<td>Tue 1:30 pm – 3:10 pm</td>
<td>Hazardous Materials Treatment and Reuse Process Development</td>
<td>WAST</td>
<td>platform</td>
<td>302A</td>
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<tr>
<td>Tue 4:00 pm – 6:00 pm</td>
<td>Per- and Polyfluoroalkyl Substances (PFAS) and Other Emerging Contaminants in Waste Management</td>
<td>WAST/H&amp;EE</td>
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<td>Wed 8:00 am – 9:40 am</td>
<td>Bio Fuel from Waste and Waste Composting</td>
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<td>Wed 8:00 am – 9:40 am</td>
<td>Prediction, Measurement and Management of Multimedia Environmental Fate of PFAS and Emerging Contaminants from Source Facilities</td>
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<td>Wed 10:10 am – 11:50 am</td>
<td>Renewable Natural Gas: Opportunities for Waste Management</td>
<td>WAST/SUST</td>
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<tr>
<td>Wed 1:30 pm – 3:10 pm</td>
<td>Waste Management and International Perpectives</td>
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<tr>
<td>Wed 3:30 pm – 5:30 pm</td>
<td>Waste Management, Beneficial Use, and Energy Recovery</td>
<td>WAST/SUST</td>
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<td>Thu 9:40 am – 11:40 am</td>
<td>Waste to Energy and International Perspectives</td>
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### Young Professionals and Education

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<tr>
<td>Tue 4:00 pm – 6:00 pm</td>
<td>How Does It Work? Control Devices</td>
<td>YPRO/AQCT</td>
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<tr>
<td>Wed 10:10 am – 11:50 am</td>
<td>How Does It Work? Environmental Regulations in the United States and Canada</td>
<td>YPRO/REGU</td>
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<tr>
<td>Wed 1:30 pm – 3:10 pm</td>
<td>Case Studies in Air Dispersion Modeling for Young Professionals</td>
<td>YPRO/AQMO</td>
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<tr>
<td>Wed 3:30 pm – 5:30 pm</td>
<td>How Does It Work? Industries</td>
<td>YPRO/INDU</td>
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<td>Thu 1:30 pm – 3:10 pm</td>
<td>Challenges and Opportunities in Delivering Environmental Education</td>
<td>EDUC</td>
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**TECHNICAL SESSIONS – TUESDAY**

**Tuesday, June 25, 2019**

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<th>Track</th>
<th>Session</th>
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<tr>
<td>8:30 am – 10:30 am</td>
<td>Opening General Session: Keynote Plenary</td>
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<td>Panel</td>
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<tr>
<td>10:30 am – 5:30 pm</td>
<td>Exhibit Hall Open</td>
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<tr>
<td>10:45 am – 12:15 am</td>
<td>Technical Poster Session</td>
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<td>Poster</td>
<td>Exhibit Hall</td>
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<tr>
<td>11:55 am – 1:15 pm</td>
<td>Technical Coordinating Committee Meetings</td>
<td>MINI/AQMM</td>
<td>Panel</td>
<td>206B</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>Air Quality Monitoring: Challenges and Innovations - Part 1</td>
<td>AQCT/MM</td>
<td>Panel</td>
<td>206B</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>GHG, Mercury and Ammonia Control Technologies</td>
<td>AQCT</td>
<td>Platform</td>
<td>301B</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>Streamlining Government Business Processes for Environmental Protection</td>
<td>AQES/RECU</td>
<td>Panel</td>
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<td>Waiting to Exhale: Cannabis in Canada — The Potential Environmental Impacts and the Regulatory Landscape</td>
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<td>Platform</td>
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<tr>
<td>3:10 pm – 4:00 pm</td>
<td>Session Break</td>
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<tr>
<td>4:00 pm – 6:00 pm</td>
<td>Air Quality Monitoring: Challenges and Innovations - Part 2</td>
<td>MINI/AQMM</td>
<td>Panel</td>
<td>206B</td>
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<tr>
<td>4:00 pm – 6:00 pm</td>
<td>Remote Sensing and Satellite-Based Monitoring</td>
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<td>Platform</td>
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<td>4:00 pm – 6:00 pm</td>
<td>Air Dispersion Modeling Case Studies: AERMOD</td>
<td>AQMO</td>
<td>Platform</td>
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<td>4:00 pm – 6:00 pm</td>
<td>Electric Vehicles: Effects on the Environment</td>
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<td>4:00 pm – 6:00 pm</td>
<td>Per- and Polyfluoroalkyl Substances (PFAS) and Other Emerging Contaminants in Waste Management</td>
<td>WAST/H&amp;EE</td>
<td>Platform</td>
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<td>4:00 pm – 6:00 pm</td>
<td>How Does It Work? – Control Devices</td>
<td>YPRO/AQCT</td>
<td>Panel</td>
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<td>MINI</td>
<td>Mini-Symposium: Facing Environmental Challenges</td>
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Posters will be displayed in the exhibit hall, 400 AB.
Poster session: Tuesday, June 25, 10:45 am – 12:15 pm

Student/ECi Poster Judging: Tuesday, June 25, 2:45 pm – 5:30 pm

Posters will remain on display through Wednesday.
Chair: David Minott, Arc5 Environmental Consulting, LLC

Air Quality – Measurement, Monitoring, Modeling

Attention Risk Assessors! It’s Time to Move to the AERSCREEN Air Dispersion Model
Paper # 585652
Christopher Rogers, Kevin Mishoe: Wood Environment & Infrastructure Solutions, Inc.; Melissa Puchalski, Gregory Beachley, John T. Walker: U.S. EPA

Air Monitoring Activities in Québec
Paper # 590236
Antony Laberge: Québec Ministère de l’Environnement et de la Lutte Contre les Changements Climatiques

CEAEQ: A Québec Leader in Analytical Services and Air Quality Testing
Paper # 601522
Karine Gingras, Paule Emilie Groleau: Québec Ministère de l’Environnement et de la Lutte Contre les Changements Climatiques

Total Reduced Nitrogen (NHx) Measurement Methods for Implementation in Long-Term Monitoring Networks
Paper # 603789
Christopher Rogers, Kevin Mishoe: Wood Environment & Infrastructure Solutions, Inc.; Melissa Puchalski, Gregory Beachley, John T. Walker: U.S. EPA

Optimization of Acrolein Determination in Ambient Air Using GC-MS and Pentafluorophenylhydrazine
Paper # 615286, Student Poster #32
Ruth Schumaker, Anthony Cutler, Robin Bond, Clyde Barlow, Jenna Nelson, Hasina Hill: The Evergreen State College; Odelle Hadley: Olympic Regional Clean Air Agency

Temporal Variation of Polycyclic Aromatic Hydrocarbons (PAHs) in the Atmosphere of Cuernavaca
Paper # 614648, Student Poster #41
Esaú Rodríguez, Nayeli Lugo-Cruz, Brenda Valle-Hernandez, Violeta Mugica-Alvarez, Jesus Figueroa-Lara: Metropolitan Autonomous University, Mexico

Factors Affecting the Settling Rate of Dust from Anthropogenic & Natural Sources
Paper # 616720, Student Poster #43
Tamar Richards-Thomas: Trent University

Air Pollutant Emission Quantification and Reporting

Spatial and Temporal Allocations in the Canadian Regional Air Quality Deterministic Prediction System: Updates and Analysis for Some Key Emissions Sectors
Paper # 600693
Mehrez Samaali, Philippe Martin, Daniel Rioux, Sylvain Labrecque, Mike Moran, Junhua Zhang, Qiong Zheng, Mourad Sassi: Environment and Climate Change Canada

Quantifying the Air Quality and Energy Consumption Impacts of Connected and Autonomous Vehicles in an Urban Network
Paper # 601844
Ran Tu, Marianne Hatzopoulou: University of Toronto; Lama Al Faseeh, Shadi Djavadian, Bilal Farooq: Ryerson University

Black Carbon and Brown Carbon from Combustion of Two Chilean Native Species Using a Controlled Combustion Chamber for Emissions
Paper # 601908
Karen Yañez, Victor Vidal, Selma Cea, Ximena Fadic-Ruiz: Universidad Técnica Federico Santa María, Chile; Magín Lapuerta, Francisco Cereceda-Balic, Luis A. Diaz-Robles, Ernesto Pino: University of Santiago, Chile; Magín Lapuerta: University of Castilla–La Mancha, Spain

Physical-Chemical Characterization, Emission Factor of PM2.5 and Combustion Gases from Different Cellulose Industry Wastes Using a Controlled Combustion Chamber for Emissions
Paper # 601915
Karen Yañez, Victor Vidal, Selma Cea, Ximena Fadic-Ruiz: Universidad Técnica Federico Santa María, Chile; Francisco Cereceda-Balic, Luis A. Diaz-Robles: University of Santiago, Chile; Magín Lapuerta: University of Castilla–La Mancha, Spain

Contribution of VOC Emissions from Small-Scale Dry Cleaning to Ozone Formation
Paper # 586347, Student Poster #6
Hyeonji Lee, Daekeun Kim: Seoul National University of Science and Technology

Dust Emissions and Wind Erosion Management from Construction Sites in the Lake Simcoe Area
Paper # 599530, Student Poster #17
Denis Clement: University of Guelph

Evaluation of Long-Term Trends and Regional Sources of Fine Particulate Matter Measured in Urban Areas Near-By the Nuclear Power Plant of Three-Mile Island, Pennsylvania
Paper # 600788, Student Poster #19
Logan Gabrielson, Saritha Karnae: Wilkes University

Mass Spectrometry for the Speciation of Hg2+ Compounds Suspected of Being Emitted from Coal-Fired Power Plants
Paper # 613735, Student Poster #30
Xavier Schafer, Theodore Dibble: State University of New York, College of Environmental Science and Forestry
TECHNICAL AND STUDENT POSTERS

Evaporative and Exhaust VOC Emission Profiles from Gasoline Vehicles in Mexico
Paper # 615320, Student Poster #33
Claudia Martínez-Reyes, Jorge L. Palma-Jaimes, Ivonne Martínez-Rodríguez, Nathaly Tello, Violeta Mugica-Alvarez: Metropolitan Autonomous University, Mexico

Wildfires and Woodstoves: Air Toxics in Western Washington State
Paper # 616088, Student Poster #35
Anthony Cutler, Ruth Schumaker, Robin Bond, Clyde Barlow, Jenna Nelson, Hansina Hill: The Evergreen State College; Odelle Hadley: Olympic Regional Clean Air Agency

Air Emission Control Technologies

Mercury Speciation and Mass Distribution of Two Coal-Fired Power Plants in Taiwan
Paper # 580416
Chien-Ping Chou, Tien-Chin Chang: National Taipei University of Technology, Taiwan; Chun-Hsiang Chiu: Academia Sinica, Taiwan; Hsing-Cheng Hsi: National Taiwan University, Taiwan

Performance Evaluation of Different Orifice Wet Scrubber Systems for Particulate Matter Emission Control from Small Korean Grill Restaurants
Paper # 599749
Kyung-Suk Cho, Yun-Yeong Lee, Jeonghee Yun, Ji Hyeon Kwon, Hyung-Joo Park, Yoonjoo Seo, Shi-nae Jang: EWHA Womans University, Republic of Korea

Nd-Based Perovskite as the Three-way Catalysts for Automobile Emissions Control
Paper # 600973
JuiChien Hong, JuiChien Hong, Hsunling Bai, Wen-Yinn Lin: National Chiao Tung University, Taiwan

Adsorption of Decane Using Non-Carbon Sorbent
Paper # 587431, Student Poster #7
Jeongmin Park: Chungbuk National University, Republic of Korea

Effectiveness of Air Biofiltration for the Removal of Hydrophobic Volatile Organic Compounds
Paper # 592779, Student Poster #11
Assem Dewidar: University of Cincinnati

Simulating VOC Adsorption on a Polymeric Adsorbent in a Multistage Fluidized Bed Adsorber
Paper # 593740, Student Poster #13

Development of Smart Energy Recovery-Ventilation System for Elderly Care Facilities
Paper # 601271, Student Poster #20
Hye-Won Lee, Na-Na Jeong, Ji-Hoon Seo, Jong-Ryeul Sohn: Korea University, Republic of Korea

Performance Tests of Activated Carbons on Mercury Adsorption
Paper # 616232, Student Poster #37
Sinang Choi, Jeongmin Park: Chungbuk National University, Republic of Korea

Measurement of Velocity Distribution in an Electrostatic Precipitator
Paper # 616237, Student Poster #38
Dong-Uk Kim, Chungbuk National University; and Sang-Hyun Jung and Sung-Hoon Shim, Korea Institute of Machinery & Materials

Performance Tests of an Entrained-Flow System for Mercury Adsorption Test
Paper # 616244, Student Poster #39
Doah Kim and TanVeer Ahmad, Chungbuk National University

Air Pollutant Exposure and Health Risks

Prediction of Air Quality and Health Effects from Mt. Baek-du Eruption
Paper # 598784
Young Sunwoo, Hyerim Kim: Konkuk University, Republic of Korea

Evaluation of Risk for Different Industrial Sectors using Toxic Release Inventory
Paper # 599555
Saisantosh Vamshi, Harsha Madiraju, Ashok Kumar: University of Toledo

Evaluation of Incorporation/Accumulation Pathway of Trace Element in a High Pollution Industrial Area Using Cupressus Macrocarpa as a Biomonitor
Paper # 601459
Tamara Gorena, Rocio Torrealfa, Ximena Fadic-Ruiz, Francisco Cereceda-Balic: Federico Santa Maria Technical University, Chile; Nuno Ratola: University of Porto, Chile

The Predicted Impact of VOC Emissions from Cannabis spp. Cultivation Facilities on Ozone Concentrations in Denver, CO
Paper # 598842, Student Poster #16
Chi-tsan Wang, William Vizuete, University of North Carolina; Christine Wiedinmyer: Cooperative Institute for Research in Environmental Sciences; Kirsti Ashworth: Lancaster Environment Centre; Peter Harley, John Ortega

Comparing Cardiovascular Effects in Ovariectomized and Intact Female Mice Exposed to Concentrated PM2.5
Paper # 611339, Student Poster #27
David Herman, Rebecca Johnson, Irene Hasen, Laura Ortiz, Ulrike Luderer, and Michael Kleinman, University of California at Irvine
TECHNICAL AND STUDENT POSTERS

The Use and Efficacy of Murine Nose-Only Exposure Systems in Nicotine Inhalation Studies
Paper # 611340, Student Poster #28
David Herman, Rebecca Johnson, Michael Kleinman: University of California at Irvine

Odor Monitoring and Control

Electrolysis Device for Eliminating Odor Substances Emitted in the Process of Roasting of Pork
Paper # 601562
Woo Young Yang, Tae Ho Lee, Hee Wook Ryu: Soongsil University, Republic of Korea

FIDOR as a Tool to Assess Odour Impact from Industrial Sources
Paper # 602623
David Giard, Marilou Filliol: BBA Inc.

Low-Level Odorous VOCs Can Be Effectively Identified by Three-Adsorbent Tubes in Series
Paper # 601361, Student Poster #21
Yelim Choi, Daekeun Kim: Seoul National University of Science and Technology

Landfill Management and Environmental Impacts

Monitoring and Analysis of Gas Emissions from a Closed Landfill Site at Jleeb in Kuwait
Paper # 601336
Ratish Menon: SCMS School of Engineering and Technology, India; Mohammad Al Ahmad, Marwan Al Dimashki: Environment Public Authority, Kuwait; Vahidudeen Shanavas: Kerala State Pollution Control Board, India

Residuals and Waste: Reclamation, Re-Use, and Recycling

Development of a Granulation Process Using Mining Residues and Carbon Dioxide to Make Recoverable Artificial Aggregates
Paper # 590770, Student Poster #10
Elisabeth Viry, Lan Huong Tran, Louis-César Pasquier, Jean-François Blais, Guy Mercier: Institut National de la Recherche Scientifique, Eau Terre Environnement (INRS-ETE)

Hydrogen Production by Glycerol Steam Reforming over Heterogeneous Ni-Promoted Metallurgical Waste-Driven Catalyst
Paper # 601696
Ommolbanin Ali Zadeh Sahraei, Maria Iliuta, Faical Larachi: Université Laval; Nicholas Abatzoglou: University of Sherbrooke

CO₂ Sequestration by Red Mud Carbonation
Paper # 614919, Student Poster #31
Sirine Boussorra, Guy Mercier, and Louis-César Pasquier, Institut National de la Recherche Scientifique, Eau Terre Environnement

Waste Conversion to Energy and Products

Multi-Faceted Approach to Evaluation of Biodegradability and Conversion of Organic Waste Products
Paper # 594670
Greg Kleinheinz, Carmen Thiel, Marisa Richter: University of Wisconsin Oshkosh

Catalytic Cracking to Optimize Pyrolytic Oil Quality Produced from Agricultural Plastic Waste: Preliminary Study
Paper # 601571
Joahnn H. Palacios-Ríos, Stéphane Godbout, Patrick Brassard, Dan Zegan, Étienne Le Roux: Research and Development Institute for the Agri-Environment (IRDA); Maria C. Diaz-Acosta: National University of Columbia; Patrice Seers: Université du Québec

High-Purity Hydrogen Production by Sorption-Enhanced Steam Reforming via Glycerol and Coal Fly Ash Valorization
Paper # 601481, Student Poster #22
Kang Gao, Maria Iliuta: Université Laval

Universal Biomass Solution
Paper # 603906, Student Poster #26
Kwaku Jyamfi: Farm to Flame Energy, Inc. and Carnegie Mellon University; Will McKnight, Farm to Flame Energy, Inc.

Hazardous Waste – Treatment, Site Remediation, Vapor Intrusion

Urban Creek Impacted Sediment Removal and Isolation Utilizing a Geosynthetic Clay Liner
Paper # 592814
Trevor Litwiller: August Mack Environmental, Inc.; Joel Ruselink: Environmental Field Services, Inc.

Recovery of PO₄³⁻ from Aqueous Solutions Using La/GO Composites and Adsorption/Desorption Process
Paper # 593999
Shanshan Chu, Chungsying Lu: National Chung Hsing University, Taiwan

Health Canada’s Vapour Intrusion Guidance: A 2019 Update
Paper # 601798
Lindsay Smith-Munoz, Ian Hers, Christine Levicki, Thalia Zis: Health Canada

Removal of Lead from Soil Contaminated with Slag by Soil Washing
Paper # 615823, Student Poster #34
Tania Ortiz-Reyes, Mabel Vaca-Mier, Jessica Islas-Olvera, and Diego Torres-León: Metropolitan Autonomous University—North; Maria Rojas-Valencia: National Autonomous University of Mexico
TECHNICAL AND STUDENT POSTERS

Wastewater/Water Treatment and Energy Recovery

Examination of Plant Based Coagulants to Replace Lime and Alum for Surface Water Treatment
Paper # 601975
Saisantosh Vamshi, Harsha Madiraju, Ashok Kumar, and Lakshika Nishadhi Kuruppuarachchi: University of Toledo

Enhanced Photocatalytic Hydrogen Generation with Iron-Modified CeO$_2$ Nanocomposites via Water Splitting
Paper # 597085, Student Poster #15
Chang-Tang Tang: National Ilan University, Taiwan

Renewable Energy – Wind and Solar

Exposure to Low Frequency Noise from Wind Turbines in Indoor Environments of Different Building Materials
Paper # 586344
Shih-Chun Candice Lung, Chun-Hsiang Chiu, Academia Sinica, Taiwan

Metallophthalocyonine Semiconductors: Towards Sustainable Development of Photovoltaic Devices
Paper # 582818, Student Poster #5
Mariel Leyva Esqueda and Maria Elena Sánchez-Vergara, Anahuac University - North, Mexico

Nanotechnology: Applications, Research Advances, Safety

Enhanced Photocatalytic Hydrogen Generation with Iron-Modified CeO$_2$ Nanocomposites Via Water Splitting
Paper # 597099
Yang Hsu, Chang-Tang Chang, Liu Fang: National Ilan University, Taiwan

Determination of Optoelectronic and Transport Properties of Thin Films Based on Organic Semiconductors
Paper # 589512, Student Poster #9
Alejandra Arreola, Maria Elena Sánchez-Vergara: Anahuac University - North, Mexico

Growth of Films of Composite Materials with Polymeric Matrix (PEDOT: PSS) and Organic Semiconductor Reinforcement for Photovoltaic Applications
Paper # 588342, Student Poster #8
Karen González Reyes and Maria Elena Sánchez-Vergara, Anahuac University - North, Mexico

Economic/Technical Design for the Implementation of a Photovoltaic System Interconnected to the Network of the Unit Azcapotzalco of the UAM
Paper # 616158, Student Poster #36
Omar Hernández, Lilia Rodríguez, Jorge Morales: Metropolitan Autonomous University - North, Mexico

Environmental Justice

Assessment of Environmental Justice Surrounding Industries in Franklin County, Ohio using GIS
Paper # 602069, Student Poster #25
Maruti Bathula, Saisantosh Vamshi Harsha Madiraju: University of Toledo
Air Quality Monitoring: Challenges and Innovations - Part 1
Track: MINI/AQMM
Room: 206B
6/25/2019, 1:30 PM
Panel – TCC: AAM
Chair: Sonia Melançon, Ville de Montréal
Vice Chair: Antony Laberge, Québec Ministère de l’Environnement et de la Lutte Contre les Changements Climatiques

Methods used by agencies to measure and analyze air quality have evolved quickly over the last few years. The rapid technology development has made it possible to design air quality sensors at lower cost.

This first part of a two-part panel series will focus on the impact of new instrumentation and air quality sensors on the activities of air monitoring networks. It will address the following topics:

1) Air monitoring activities in Québec
2) Is it time to disrupt ambient air monitoring methods?
3) Real-time air quality monitoring through portable microsensing units: benefits and challenges of this technology
4) Examples of PM sensor monitoring in France

Panelists:
• Antony Laberge: Ministère de l’Environnement et de la Lutte Contre les Changements Climatiques
• Bruno Couty: Consul-air
• Denis Lalonde: BBA
• Pascal Kaluzny: Groupe Tera

GHG, Mercury and Ammonia Control Technologies
Track: AQCT
Room: 301B
6/25/2019, 1:30 PM
Platform – TCC: AAC
Chair: Paul Farber, P. Farber & Associates, LLC

1:30 PM
Emission Control of Halogenated Anesthetic Gases in Hospital Air Venting
Paper # 594179
Mina Mehrata: Class 1 Inc.; Carol Moralejo, William Anderson: University of Waterloo

1:50 PM
Development of an Innovative Mercury Control System for a Sewage Sludge Incinerator
Paper # 600795
Frank Sapienza: CDM Smith; Hunter Carson: Massachusetts Small Business Development Center

2:10 PM
Reduction of Methane Emissions from an Underground Coal Mine with VAMOX® Regenerative Thermal Oxidation Technology for Carbon Offset Credits on the Cap-and-Trade Market
Paper # 595424
Guy Drouin: Biothermica Technologies Inc.

2:30 PM
Ammonia Removal from Swine Building Exhaust Air with a Biotrickling Filter – Process Control and Nitrogen Valorisation
Paper # 588195
Ariane Lévesque, Matthieu Girard, Stéphane P. Lemay: Research and Development Institute for the Agri-Environment

2:50 PM
Simultaneous Treatment of Greenhouse Gas and Nitrogen Using a Methanotropic Biofilter
Paper # 600476
Julie Doucet, Rino Dubé; Nicolas Turgeon; Paul Lessard: Université Laval

Streamlining Government Business Processes for Environmental Protection
Track: REGU/AQES
Room: 202
6/25/2019, 1:30 PM
Panel – TCC: AAE
Chair: Julia Gamas, U.S. EPA
Vice Chair: Chun Yi Wu, Minnesota Pollution Control Agency

This panel will showcase efforts to streamline air emissions reporting and improve air emissions data collection processes by states and the U.S. EPA. Attendees will learn about efforts conducted by the U.S. EPA and state/local/tribal (SLT) agencies under the E-Enterprise Combined Air Emissions Reporting (CAER) Project. The goal of the CAER project is to streamline the way industry reports air emissions to meet U.S. EPA and SLT program requirements. The “Common Emissions Form” (CEF) and system will be an electronic reporting tool that will allow facilities to report to more than one program with a single data submission. Work towards development of the CEF includes facility and emissions data requirements gathering conducted by Product Design Research and Development Teams composed of staff from the U.S. EPA and states, such as a comparison among the National Emissions Inventory, the Toxics Release Inventory and State Emissions Inventory programs. Some of this work, while of benefit to CAER, also has stand-alone benefits. Finally, many states have developed custom electronic reporting systems with features designed to ease reporting for industry. Highlights of these systems will be showcased.
TECHNICAL SESSIONS – TUESDAY

Panelists:
• Chun Yi Wu: Minnesota Pollution Control Agency
• Julia Gamas: U.S. EPA
• Benjamin Way: Wyoming Department of Environmental Quality
• Stacy Knapp: Maine Department of Environmental Protection

Climate Change, Health, and Local Adaptive Management
Track: CLIM
Room: 205C
6/25/2019, 1:30 PM
Platform – TCC: CCP
Chair: Barbara Tool O’Neil, Adelante Consulting, Inc.
Vice Chair: Michael Conrardy, AECOM

1:30 PM
Think Global Act Local-Using Adaptive Management Through Land Use Law
Paper # 601729
Elizabeth Rubenstein: Klodowski Law

1:50 PM
The Value of Energy Efficiency as a Public Health and Climate Change Mitigation Strategy
Paper # 587047
Cassandra Kubes: American Council for an Energy-Efficient Economy

2:10 PM
Climate Resilience, Adaptation and Mitigation: Québec’s Best Initiatives in Vulnerable Francophone Countries
Paper # 627509
Éric Théroux: Québec Ministère de l’Environnement et de la Lutte Contre les Changements Climatiques

2:30 PM
Car Ownership in Québec & Canada: Trends, Factors & Consequences
Paper #605176
Jerome Lavolette, Catherine Morency: Polytechnique Montréal

2:50 PM
New Metrics for Assessing the Balance and Sustainability of Street Design: A Case Study in Montréal
Paper #605415
Gabriel Lefebvre-Ropars, Catherine Morency: Polytechnique Montréal; Paula Negron-Poblete: Université de Montréal

3:10 PM
Towards Resilience in Large Cities: Evaluating the Cost of Climate Change Adaptation in Québec’s 10 Largest Cities
Paper #999997
Isabelle Charron, Bertrand Montel: Groupe AGÉCO

Climate Change Communication
Track: CLIM
Room: 303A
6/25/2019, 1:30 PM
Panel – TCC: CCP
Chair: C. Flint Webb, Leidos

This panel will discuss how different communities are understanding climate change and how best to communicate with them. In recent years there has been extensive surveying of the climate change issue both in the United States and in Canada. This panel will discuss the results of the surveys and what messages will resonate with different communities. By examining the demographics in different political jurisdictions, it is possible to gauge the opinions of the electorate in those jurisdictions. The panel will also discuss arguments refuting climate change, the fallacies in those arguments, information gathered by A&WMA’s delegates to the 2018 United Nations Climate Change COP 24 in Katowice, Poland with respect to accomplishments under the Paris Accords to date, and how to distinguish between healthy scientific skepticism and flawed scientific arguments.

Panelists:
• C. Flint Webb: Leidos
• H. Christopher Frey: North Carolina State University
• Michael DeBusschere: Kentuckiana Engineering Company

Per and Polyfluoroalkyl Substances (PFAS) - Specific Technical Challenges, Litigation, and Solutions
Track: H&EE
Room: 204B
6/25/2019, 1:30 PM
Panel – TCC: HEE
Chair: Travis Kline, Geosyntec Consultants, Inc.
Vice Chair: Stephen Zemba, Sanborn, Head & Associates, Inc.

This panel will address the predominant sources and routes of exposure associated with adults and children in the general public, communities in close proximity to production areas, and occupational populations, where inhalation may be the primary driver. Methodologies to derive inhalation-based toxicity criteria to allow screening level assessment will be presented, focused on U.S. EPA and ATSDR promulgated standards. With a focus on human health, few PFAS sites have addressed ecological risk. An ecological exposure model for birds and mammals will be discussed as applied to five AFFF impacted sites to clarify exposure pathways and identify key receptors of concern, including site-specific modeling results and prioritization. Soil represents a key reservoir with respect to ongoing sources of contamination in water (through leaching and overland transport of suspended particles). We will discuss soil as a key intermediary source at PFAS sites affected by deposition of airborne emissions from PFAS manufacturing processes, based on leaching and impact to...
underlying groundwater. Considering fate and exposure, the legal landscape is dynamic, complicating data gaps. We will discuss cases involving individuals as well as classes of plaintiffs seeking personal injury damages and health monitoring, water companies seeking protection, as well as municipalities and State environmental and public health agencies.

Panelists:
- Travis Kline: Geosyntec Consultants, Inc.
- Jennifer Arblaster: Geosyntec Consultants, Inc.
- Earl Phillips: Robinson+Cole

Waiting to Exhale: Cannabis in Canada – The Potential Environmental Impacts and the Regulatory Landscape
Track: REGU
Room: 303B
6/25/2019, 1:30 PM
Panel – TCC: REG
Chair: Richard Butler, Willms & Shier Environmental Lawyers LLP
Vice Chair: Rosanna DiLabio, Pinchin Ltd.

The panel will cover these major issues:

Federal / Provincial / Municipal Tension
On October 17, 2018, the Canadian Federal Cannabis Regulation (SOR /2018 – 144) came into force. The Federal laws are heavily weighted toward licensing, production and cultivation requirements, quality and testing requirements, with minimal environmental guidance. The Cannabis Regulation requires cannabis facilities to be equipped with air filtration to “prevent the escape of odours.” Yet odour is more commonly regulated under the Environmental Protection Act (EPA) in Ontario, including considerations of Adverse Effects and the potential requirement of an Environmental Compliance Approval (ECA). Local municipalities will have to address the immediate impacts of additional drain on municipal systems and other local level impacts.

Environmental or Agricultural Treatment
Section 9.1 of the Ontario EPA broadly prohibits the discharge of a contaminant into the natural environment, without a permit, with one exception for “any plant, structure, equipment, apparatus, mechanism or thing used in agriculture.” It remains to be clarified whether cannabis growers would fall within that agricultural exemption. Some producers will use greenhouses, which are believed to be operationally superior. Under the Nutrient Management Act, there are rules about how greenhouse nutrient feedwater is transported and stored, as well as provisions concerning soil sampling and analysis and application limits. How will these apply to cannabis and what agricultural exemption may be available to Licensed Producers?

Panelists:
- Richard Butler: Willms & Shier Environmental Lawyers LLP
- Rosanna DiLabio: Pinchin Ltd.
- Matthew Gardner: Willms & Shier Environmental Lawyers LLP

Track: SUST
Room: 301A
6/25/2019, 1:30 PM
Platform – TCC: SRC
Chair: Maggie Clarke: Environmental Consultant
Vice Chair: Chih Chao: Cantech Environmental Services

1:30 PM
Sustainable Waste Plastics Management – Approaches and International Practices
Paper # 601202
Chih Chao: Cantech Environmental Services

1:50 PM
Green Energy Production from Wood Waste with Recovery of Ash to Mitigate Environmental and Human Health Risks: The Case of Chapais Énergie – Nexolia
Paper # 601769
Marc Hébert: Marc Hébert, Expert & Trainer

2:10 PM
Synthetic Anhydrite from AlF3 Production – An Example of Industrial Ecology as Part of the Circular Economy Concept
Paper # 605379
Stéphane Poirier, Jean Lavoie; Marc-André Séguin: Rio Tinto

2:30 PM
Consumption, Climate, Zero Waste, and the New Green Deal
Paper # 999996
Maggie Clarke: Environmental Consultant

2:50 PM
Mineral Carbonation: A Way to Turn Industrial CO2 Emissions Into Value Added Products
Paper # 594505
Louis-César Pasquier, Julien Mocellin, Lan Huong Tran, Diana Aksenova, Guy Mercier, Jean-François Blais: Institut National de la Recherche Scientifique, Eau Terre Environnement

3:10 PM
Higee Scrubber with Green Surfactants for Cooking-Oil Fume Purification: PM and VOCs Pollutant Profile
Paper # 611107
Min-Hao Yuan: Department of Occupational Safety and Health, China Medical University, China; Yi-Hung Chen: National Taipei University of Technology, Taiwan; Ching-Ying Chang, Pei-Ting Hsu: Department of Occupational Safety and Health, China Medical University, China
### TECHNICAL SESSIONS – TUESDAY

**Transportation Air Quality Modeling**  
Track: TRANS/AQMO  
Room: 205A

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<td>6/25/2019, 1:30 PM</td>
<td>Start Emissions in MOVES</td>
<td>Sandeep Puppala, Mei Wu, Helen Ginzburg: WSP</td>
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<td>AERMOD Versus CALINE3 in a Field Evaluation</td>
<td>George Schewe: Trinity Consultants</td>
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<td>Comparing Prediction Trends Among Highway Air Dispersion Models - AERMOD, RLINE, and CALINE3</td>
<td>Michael Claggett, Victoria Martinez; David Kall: U.S. DOT, Federal Highway Administration; George Noel: Volpe Transportation System Center</td>
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<td>Case Studies of Mobile Source Air Toxics Modeling of Highway Projects</td>
<td>Michael Claggett, Victoria Martinez; David Kall: U.S. DOT, Federal Highway Administration; George Noel: Volpe Transportation System Center</td>
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<td>Efficacy of an Engineered Vegetative Buffer on Near-Road Air Quality</td>
<td>Pradeep Prathibha: Washington University at St. Louis; Ray Yeager, Aruni Bhatnagar: University of Louisville; Daniel Fleischer, Brent Bucknum: Hyphae Design Laboratory; Jay Turner: Washington University at St. Louis</td>
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**Solid Waste Generation and Treatment**  
Track: WAST  
Room: 302B

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**Hazardous Materials Treatment and Reuse Process Development**  
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Remote Sensing and Satellite-Based Monitoring
Track: AQMM
Room: 303B
6/25/2019, 4:00 PM
Platform – TCC: AAM
Chair: Rick Osa, ERM
Vice Chair: Allard Martin, National Optics Institute

4:00 PM
Assessment of AOD Product from INSAT-3D Imager
Paper # 594255
Rasma K.: Indian Institute of Technology (IIT) Mumbai, India; Ratish Menon: SCMS Water Institute, Karukutty, India; Harish Gadhavi: Physical Research Laboratory, Ahmedabad, India; Virendra Sethi: IIT Mumbai, India

4:20 PM
Industrial Process Dust Management, a Medium Range Lidar for Fugitive Emissions Quantification
Paper # 606547
Martin Allard: INO; Jonathan Bernier: Rio Tinto

4:40 PM
Thermal Infrared Hyperspectral Imaging for Visualization and Flow Rates Quantification of Methane Releases
Paper # 589877
Boubanga Tombet Stephane, Alexandrine Huot; Frédérick Marcotte, Martin Chamberland, Jean-Philippe Gagnon: Telops

Air Dispersion Modeling Case Studies: AERMOD
Track: AQMO
Room: 302A
6/25/2019, 4:00 PM
Platform – TCC: APM
Chair: Pietro Catizone, Woodard & Curran
Vice-Chair: Jennifer Beaulieu, Woodard & Curran

4:00 PM
Conditions Associated with Peak Observed SO2 Concentrations and AERMOD’s Skill in Simulating These Events
Paper # 593805
Robert Paine, Jeffrey Connors, Christopher Warren, Olga Samani: AECOM

4:20 PM
AERMOD and CALPUFF Dispersion Model Evaluation of Mass Conservation
Paper # 593581
Taylor Roumeliotis: Ramboll; Rakesh Singh: Ramboll

4:40 PM
CALPUFF vs. AERMOD Dispersion Model – A Case Study
Paper # 602480
David Giard: BBA Inc.

TECHNICAL SESSIONS – TUESDAY

1:50 PM
Kinetic Analysis of a Catalytic Hydro-Dechlorination Reaction of Select Poly-Chlorinated Biphenyls (PCBs)
Paper # 601895
Mingming Lu: University of Cincinnati; Yamei Zhou: Beijing Jiaotong University, China; Juan Xu, Kolawole Omoyosi: University of Cincinnati

2:10 PM
The LCL&L Process: A Sustainable Solution for the Treatment and Recycling of Spent Pottlining
Paper # 594432
Laurent Birry, Jean Lavoie: Rio Tinto

Air Quality Monitoring: Challenges and Innovations - Part 2
Track: MINI/AQMM
Room: 206B
6/25/2019, 4:00 PM
Panel – TCC: AAM
Chair: Sonia Melancon, Ville de Montréal
Vice Chair: Antony Laberge, Québec Ministère de l’Environnement et de la Lutte Contre les Changements Climatiques

This second part of a two-panel series will focus on different near-road and urban monitoring projects related to the monitoring of new pollutants. It will address the following topics:

1) Black carbon monitoring in ambient air of Montréal
2) On the use of computational fluid dynamics (CFD) for dispersion modeling of aircraft emissions and their impact on airport-related air quality: Application to the Montréal International Airport;
3) Spatial and temporal variations of tailpipe and non-tailpipe emissions in an urban environment;
4) Cold climate urban air quality in the age of emerging contaminants;
5) Potential and pitfalls of short-term monitoring and artificial intelligence in capturing the spatial distribution of air pollution in dense urban areas.

Panelists:
- Sonia Melancon: Ville De Montréal
- Parisa Ariya: McGill University
- Marianne Hatzopoulou, Laura Minet: University of Toronto
- Mohamed Chouak: Mechanical Engineering Department, École de Technologie Supérieure
- Cheol Jeong: University of Toronto

46   Final Program
TECHNICAL SESSIONS – TUESDAY

5:00 PM
An AERMOD Case Study for Capped and Horizontal Point Sources
Paper # 599123
Anthony Schroeder: Trinity Consultants

5:20 PM
Modelling Emission Sources at Canadian Mines Using CALPUFF and AERMOD
Paper # 629331
Piotr Staniaszek, Chenxing (Ann) Teng: WSP; Randall Rudolph: Millennium EMS Solutions Ltd.

Diesel-Free By ‘33: Ending Diesel Pollution in the San Francisco Bay Area
Track: CLIM/TRAN
Room: 303A
6/25/2019, 4:00 PM
Panel – TCC: CCP
Chair: Abby Young, Bay Area Air Quality Management District
Vice Chair: Lisa Fasano, Bay Area Air Quality Management District

Diesel particulate matter is a significant contributor to health impacts from air pollution, especially for disadvantaged communities living near freeways and industrial areas. It is also a significant contributor to climate change. This panel will present the Bay Area Air Quality Management District’s region-wide strategy for eliminating diesel pollution in the San Francisco Bay Area within 15 years. Panelists will discuss the state of diesel pollution and resulting health impacts in the region, and the Air District’s comprehensive response. Speakers will address different elements of the Air District’s Diesel-Free By ‘33 initiative, including pathways and timelines to cost-effectively transition to zero-emission technologies by 2033. Key components of the initiative include incentive and financing strategies, and a political commitment by mayors and industry leaders to eliminate diesel use in their communities.

Panelists:
- Lisa Fasano: Bay Area Air Quality Management District
- Karen Schkolnick: Bay Area Air Quality Management District
- Phil Martien: Bay Area Air Quality Management District
- Abby Young: Bay Area Air Quality Management District

Health Benefits of Emissions Reductions
Track: H&EE
Room: 205C
6/25/2019, 4:00 PM
Platform – TCC: HEE
Chair: Jim Morrow, J. W. Morrow
Vice Chair: David McCready, EnviroCalc Consulting

4:00 PM
Air Quality and Health Benefits from Potential Coal Power Plant Closures in Texas
Paper # 586920
Brian Strasert: GSI Environmental; Daniel Cohan: Rice University

4:20 PM
Potential Health Benefits of Reducing Transport Emissions in Five Cities in Mexico’s Bajío Region
Paper # 595420

5:00 PM
Development and Application of a Modelling System on Human Health Impact Evaluation by Change in Emissions: Part 1 — Model Development
Paper # 599337
Rakesh Singh, Michael Jammer: Ramboll

5:20 PM
Development and Application of a Modelling System on Human Health Impact Evaluation by Change in Emissions: Part 2 — Model Application
Paper # 600527
Michael Jammer, Rakesh Singh: Ramboll

Power Industry Technology—Innovation, Challenges and Benefits
Track: POWR
Room: 302B
6/25/2019, 4:00 PM
Platform – TCC: PWR
Chair: John Kinsman, Edison Electric Institute
Vice Chair: Jordan Haywood, Siemens Energy, Inc.

4:00 PM
The U.S. Electric Power Sector — Changes in State and Federal Requirements, Fuels and Technologies Used, Air Emissions, and Customer Preferences
Paper # 602044
John Kinsman: Edison Electric Institute

4:20 PM
Forward to a Resilient Grid
Paper # 581424
Mark Sankey: Mark R. Sankey & Associates LLC

4:40 PM
Combined Cycle Gas Turbine Startup Emissions
Paper # 593571
Jordan Haywood: Siemens Energy, Inc.
5:00 PM  
Greenhouse Gas Emissions Reduction: Natural Gas Conversion & Carbon Capture Technologies  
Paper # 593499  
Amber Isaac, Leah Blinn: Civil & Environmental Consultants, Inc.

5:20 PM  
Comparative Life-Cycle Assessment of Carbon Capture Technologies  
Paper # 592835  

5:40 PM  
Using Modular DSI and ACI Systems for Low Cost Air Pollution Control  
Paper # 999993  
Jon Norman: United Conveyor Corporation

Air Legislation, Regulation, & Policy Developments  
Track: REGU  
Room: 202

6/25/2019, 4:00 PM  
Panel – TCC: REG  
Chair: Paul Siebert, Weston Solutions, Inc.

Updates on the development and implementation of air quality regulations, particularly emission regulations, promulgated under the U.S. and Canadian air quality legislation will be presented and discussed. Standards development of particular interest includes new source performance standards under Section 111, emission guidelines under Section 111(d), and maximum achievable control technology (MACT) standards under Section 112 of the Clean Air Act. The current state of standards development and the current schedule for developing and proposing standards will be discussed as well as the implementation of promulgated standards and revisions. Recent court rulings and cases will also be addressed. U.S. EPA’s required evaluations of the residual risks remaining after the application of MACT standards, as required by Section 112(f) of the Clean Air Act, will also be noted. State emission standards, often developed from U.S. EPA’s Control Techniques Guidelines (CTGs), may also be covered. This panel session will present views of U.S. EPA; Environment Canada; State, Provincial and local agencies; industry; and environmental advocates on the status, directions and expectations regarding new source performance standards (NSPS) under 40 CFR 60 and MACT standards under 40 CFR 63, as well as criteria pollutant and air toxics regulations of other jurisdictions - local, state, and national. Representatives of U.S. EPA, state and Canadian environmental agencies, industry and, if available, environmental advocacy groups will present and discuss the status of these standards, with particular emphasis on the more current regulations. The panel may address the progress and problems with implementation of the promulgated standards and the status and results of court decisions.

Panelists:  
- Darcie Smith: U.S. EPA  
- Jennifer Kerr: Environment and Climate Change Canada  
- TBD: 3M Company (Invited)  
- TBD: Québec Ministère de l’Environnement et de la Lutte Contre les Changements Climatiques (Invited)

Not in My Backyard: Legal Issues in Finding Common Ground for the Approval of Major Resource Projects  
Track: REGU  
Room: 205B

6/25/2019, 4:00 PM  
Panel – TCC: EPE  
Chair: Selina Lee-Andersen, McCarthy Tétrault LLP

With increasing environmental awareness and public participation in regulatory review processes, developing a major resource project in North America can be a daunting prospect for any project developer. Many projects already face complex environmental and regulatory issues, so stakeholder concerns can add an extra layer of complexity to permitting processes. Whether proponents are looking to develop mines, pipelines, port infrastructure or energy projects, the development of major projects can attract negative attention and act as a legal lightning rod not only in relation to the immediate project, but also as a forum for airing past grievances and other areas of disagreement with proponents or regulators. Environmental assessment and other permitting processes often seem to be less than adequate for resolving stakeholder conflicts, thus increasing the chances for negative media attention, project delays, and court action. As a result, federal and provincial governments are looking to bring greater certainty into regulatory approval processes. This session will consider proposed changes to the Canadian federal environmental assessment process (Bill C-69) and prospects for dispute resolution under the new regime, as well as provincial approaches to approving major projects and managing stakeholder conflicts. This session will also look at various case studies to identify the types of issues that stakeholders have raised within the context of major projects, as well as how the duty to consult Indigenous communities in Canada can impact regulatory processes. Finally, the session will consider strategies and best practices for reducing user conflicts and mitigating legal risk.

Panelists:  
- Selina Lee-Andersen: McCarthy Tétrault LLP  
- Dominique Amyot-Bilodeau: McCarthy Tétrault LLP  
- Industry representative invited
TECHNICAL SESSIONS – TUESDAY

Track: SUST
Room: 301A

6/25/2019, 4:00 PM
Platform – TCC: SRC
Chair: Chih Chao, Cantech Environmental Services
Vice Chair: Maggie Clarke, Environmental Consultant

4:00 PM
Toward Greener Sludge Combustion: GHG Reduction, Ash & Nutrient Recovery and Policies: The Case of Montréal, Longueuil and Québec City
Paper # 601012
Marc Hébert: Mark Hébert, Expert & Trainer

4:20 PM
New Options for Water Desalination
Paper # 573598
R. Ryan Dupont: Utah State University; Lou Theodore: Theodore Tutorials

4:40 PM
A Waste Minimization Approach to Reuse Spent Coffee Grounds
Paper # 601880
Mingming Lu, Yanmei Zhou, Suhas Srivastava: University of Cincinnati

5:00 PM
Benefits and Cost Implications of Anaerobic-Aerobic Sequential Treatment of Waste in Developing Countries: The Case of Lebanon
Paper # 596161
Charbel Abou Khalil: New Jersey Institute of Technology; Jessica Bou Nassar: McGill University; Claudette El Hajj, Khalil Khalil, Sophia Ghanimeh: Notre Dame University - Louaize, Lebanon

5:20 PM
The Modern Wildfire Situation: Seeking Solutions through the Smoke
Paper # 573040
Christopher Jones: University of Arizona

Electric Vehicles: Effects on the Environment
Track: TRAN
Room: 205A

6/25/2019, 4:00 PM
Platform – TCC: PLU
Chair: Gurdas Sandhu, U.S. EPA
Vice Chair: George Noel, Volpe Transportation System Center

4:00 PM
Human Health Impact Evaluation Associated with Deployment of Electric Vehicles in Canada
Paper # 599980
Rakesh Singh, Michael Jammer; Hajar Pourbafrani: Ramboll

4:20 PM
Environment and Climate Change – Canada’s Electric Vehicle Testing in a Canadian Climate
Paper # 605566
Aaron Loiselle-Lapointe: Environment and Climate Change Canada

4:40 PM
Impact of the Deployment of Electric Vehicles on Population Exposure to Air Pollution
Paper # 601742
Laura Minet, Yijun Gai, An Wang, Daniel Posen, Marianne Hatzopoulou: University of Toronto

5:00 PM
Advances and Barriers to the Adoption of Heavy Duty Truck Electrification
Paper # 602143
Heidi Rous, Jeff Caton, Tim Witwer: ESA

5:20 PM
Transportation Electrification in Québec: Significant Progress and Moving Toward Our Targets
Paper # 629302
Arthur Billette: Transports Québec

5:40 PM
Reducing Emissions from the Transportation Sector through the Regulation of the Zero-Emission Vehicles Offer
Paper # 627508
Marilou Gosselin: Québec Ministère de l’Environnement et de la Lutte contre les Changements Climatiques

Per- and Polyfluoroalkyl Substances (PFAS) and Other Emerging Contaminants in Waste Management
Track: WAST/H&EE
Room: 204B

6/25/2019, 4:00 PM
Platform – TCC: WMR/WMB
Chair: Chris Lutes, Jacobs
Vice Chair: Melanie Sattler, University of Texas at Arlington

4:00 PM
PFAS Cycling Between Landfills and Wastewater Treatment Plants
Paper # 601793
Stephen Zemba, Harrison Roakes: Sanborn, Head & Associates
PFAS Regulation Is Coming... Are You Ready?  A Lawyer’s View of the Evolving Regulatory Landscape of PFAS, Including U.S. Standards, Rules, and Litigation
Paper # 601989
Christopher Rich: Perkins Coie LLP

The Next Frontier on PFAS Contamination: Sediment, Surface Water and Fish Tissue
Paper # 589398
Harry Behzadi: SGS

Multimedia Transport of PFAS: Air Emissions to Groundwater – A Case Study
Paper # 600585
Eric Edwalds: Barr Engineering Co.

PFAS Fate and Transport – Considering Soil as a Potential Reservoir for PFAS in the Environment
Paper # 601867

Case Study on Atmospheric Deposition of GenX
Paper # 645782
Michael Pjetraj, Michael Abraczinskas: North Carolina Department of Environmental Quality - Division of Air Quality

How Does It Work? – Control Devices
Track: YPRO/AQCT
Room: 301B
6/25/2019, 4:00 PM
Panel – TCC: AAC
Chair: Jen Moore, 3M Company
Vice Chair: Paul Algu, RTP Environmental Associates, Inc.

This panel will provide both a general overview of emission control technologies currently available as well as a more in-depth review of several specific pollutant control strategies for particulate matter, volatile organic compounds, sulfur dioxide, and other pollutants. This session will discuss thermal oxidizers, biofilters, carbon adsorbers, baghouses, and wet scrubbers. The presenters will discuss emission control equipment design and operation requirements and will give an overview of the industry or processes where it is commonly used. Panelist will also review of the regulatory drivers requiring the control or proposed regulations in the pipeline. This is a great introductory panel presentation for all attendees but is focused on reaching the student/young professional attendee. The attendee should walk away with a general understanding of emission control options available today for use in various applications with a focus on the criteria pollutants.

Panelists and Topics:
- André DuPont, Chemical Engineer
- Bill Norge, 3M Company
- Bill Mullin, BIOREM Technologies Inc.
- Lauren Dickerson, Barr Engineering Company
**TECHNICAL SESSIONS – WEDNESDAY**

**Wednesday, June 26, 2019**

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<th>Time</th>
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<th>Track</th>
<th>Session</th>
<th>Room</th>
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<tr>
<td><strong>Wed AM1</strong></td>
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<tr>
<td>8:00 am – 9:40 am</td>
<td>Carbon Pricing in the U.S. and Canada: Successes and Key Program Features</td>
<td>MINI/CLIM</td>
<td>panel</td>
<td>206 B</td>
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<tr>
<td>8:00 am – 9:40 am</td>
<td>Dry Sorbent Injection for effective SO2 and HCl emissions control</td>
<td>AQCT</td>
<td>panel</td>
<td>301 A</td>
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<tr>
<td>8:00 am – 9:40 am</td>
<td>Air Quality Sensing: Designs and Validations - Part 1</td>
<td>AQMM</td>
<td>platform</td>
<td>303 B</td>
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<tr>
<td>8:00 am – 9:40 am</td>
<td>IMPROVE Network and Dust Issues</td>
<td>AQMM</td>
<td>platform</td>
<td>301 B</td>
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<tr>
<td>8:00 am – 9:40 am</td>
<td>Air Dispersion Modeling Case Studies: CFD and Photochemical Grid Modeling</td>
<td>AQMO/TRAN</td>
<td>platform</td>
<td>205 C</td>
</tr>
<tr>
<td>8:00 am – 9:40 am</td>
<td>Risk Assessment/Management: Methods, Techniques and Recent Experience</td>
<td>H&amp;EE</td>
<td>platform</td>
<td>302 A</td>
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<tr>
<td>8:00 am – 9:40 am</td>
<td>Cross-Functional Panel Discussion on the Treatment of Confidential Information in Regulatory Submittals</td>
<td>REGU</td>
<td>panel</td>
<td>202</td>
</tr>
<tr>
<td>8:00 am – 9:40 am</td>
<td>Permitting Case Studies</td>
<td>REGU</td>
<td>platform</td>
<td>303 A</td>
</tr>
<tr>
<td>8:00 am – 9:40 am</td>
<td>Zero Waste: Sustainability issues and Practical Approach</td>
<td>SUST</td>
<td>panel</td>
<td>302 B</td>
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<tr>
<td>8:00 am – 9:40 am</td>
<td>Transportation Emissions</td>
<td>TRAN/AQMO</td>
<td>platform</td>
<td>205 A</td>
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<tr>
<td>8:00 am – 9:40 am</td>
<td>Bio Fuel from Waste and Waste Composting</td>
<td>WAST</td>
<td>platform</td>
<td>205 B</td>
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<tr>
<td>8:00 am – 9:40 am</td>
<td>Prediction, Measurement and Management of Multimedia Environmental Fate of PFAS and Emerging Contaminants from Source Facilities</td>
<td>WAST</td>
<td>panel</td>
<td>204 B</td>
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<tr>
<td><strong>9:40 am – 10:10 am</strong></td>
<td>Session Break</td>
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<tr>
<td><strong>Wed AM2</strong></td>
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<tr>
<td>10:10 am – 11:50 am</td>
<td>Answering Critical Challenges Facing our Planet in Air Quality by Using NASA’s Current &amp; Future Earth Observing Satellites</td>
<td>MINI/AQMM</td>
<td>panel</td>
<td>206 B</td>
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<tr>
<td>10:10 am – 11:50 am</td>
<td>SOx, VOC, and Toxic Gas Control Technologies – Part 1</td>
<td>AQCT</td>
<td>platform</td>
<td>301 A</td>
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<tr>
<td>10:10 am – 11:50 am</td>
<td>Air Quality Sensing: Designs and Validations – Part 2</td>
<td>AQMM</td>
<td>platform</td>
<td>303 B</td>
</tr>
<tr>
<td>10:10 am – 11:50 am</td>
<td>Regional Haze and Nitrogen</td>
<td>AQMM</td>
<td>platform</td>
<td>303 B</td>
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<tr>
<td>10:10 am – 11:50 am</td>
<td>Air Monitoring Methods, Data, and Uncertainties</td>
<td>AQMM</td>
<td>platform</td>
<td>303 A</td>
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<tr>
<td>10:10 am – 11:50 am</td>
<td>Greenhouse Gas Inventories</td>
<td>CLIM</td>
<td>platform</td>
<td>205 A</td>
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<tr>
<td>10:10 am – 11:50 am</td>
<td>Air Permitting Problems and Solutions</td>
<td>REGU</td>
<td>panel</td>
<td>202</td>
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<tr>
<td>10:10 am – 11:50 am</td>
<td>Corporate Implementation of Sustainability: Ethics, Methods, Metrics, Reporting, and Measured Benefits - Case Studies</td>
<td>SUST</td>
<td>platform</td>
<td>302 B</td>
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<tr>
<td>10:10 am – 11:50 am</td>
<td>Renewable Natural Gas: Opportunities for Waste Management</td>
<td>WAST/SUST</td>
<td>panel</td>
<td>205 B</td>
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<tr>
<td>10:10 am – 11:50 am</td>
<td>How Does It Work? Environmental Regulations in the United States and Canada</td>
<td>YPRO/REGU</td>
<td>panel</td>
<td>204 B</td>
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<tr>
<td><strong>11:55 am – 1:15 pm</strong></td>
<td>Technical Coordinating Committee Meetings See page 25</td>
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<tr>
<td><strong>Wed PM1</strong></td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>Air Pollutant/Greenhouse Gas Emissions Initiatives</td>
<td>MINI/CLIM</td>
<td>platform</td>
<td>206 B</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>SOx, VOC, and Toxic Gas Control Technologies - Part 2</td>
<td>AQCT</td>
<td>platform</td>
<td>301 A</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>Emissions for Point and Area Sources</td>
<td>AQES</td>
<td>platform</td>
<td>303 A</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>Next Generation of Air Monitoring Tools for Fugitive, Fenceline, and Area Source Applications</td>
<td>AQMM</td>
<td>platform</td>
<td>303 B</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>Downscaling Global Climate Models to Use in Local Adaptation Planning</td>
<td>CLIM</td>
<td>panel</td>
<td>205 A</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>Environmental Monitoring in the Oil Sands</td>
<td>O&amp;GS</td>
<td>panel</td>
<td>301 B</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>Economics, Partnerships &amp; Environmental Leadership</td>
<td>REGU</td>
<td>platform</td>
<td>205 C</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>Modeling Issues in PSD/Nonattainment/Minor NSR Permitting</td>
<td>REGU/AQMO</td>
<td>panel</td>
<td>202</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>Sustainability Tracking, Metrics, Initiatives, and Analytics</td>
<td>SUST</td>
<td>platform</td>
<td>302 B</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>Community Noise and Transportation Emissions</td>
<td>TRAN</td>
<td>platform</td>
<td>302 A</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>Waste Management and International Perspectives</td>
<td>WAST</td>
<td>platform</td>
<td>205 B</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>Case Studies in Air Dispersion Modeling for Young Professionals</td>
<td>YPRO/AQMO</td>
<td>panel</td>
<td>204 B</td>
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<tr>
<td><strong>3:10 pm – 3:30 pm</strong></td>
<td>Session Break</td>
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<td><strong>Weds PM2</strong></td>
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<td>3:30 pm – 5:30 pm</td>
<td>Québec and California Cap and Trade Update and Expectations for Post 2020</td>
<td>MINI/CLIM</td>
<td>panel</td>
<td>206 B</td>
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<tr>
<td>3:30 pm – 5:30 pm</td>
<td>PM Control Technologies</td>
<td>AQCT</td>
<td>platform</td>
<td>301 A</td>
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<tr>
<td>3:30 pm – 5:30 pm</td>
<td>Challenges in Emission Inventory Development</td>
<td>AQES</td>
<td>platform</td>
<td>303 A</td>
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<tr>
<td>3:30 pm – 5:30 pm</td>
<td>Air Quality Measurements and Monitoring in China</td>
<td>AQMM</td>
<td>platform</td>
<td>303 B</td>
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<tr>
<td>3:30 pm – 5:30 pm</td>
<td>Smoke and Prescribed Burning Air Quality Issues</td>
<td>AQMM/AQES</td>
<td>platform</td>
<td>302 A</td>
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<tr>
<td>3:30 pm – 5:30 pm</td>
<td>Greenhouse Gas Modeling</td>
<td>CLIM</td>
<td>platform</td>
<td>205 A</td>
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<tr>
<td>3:30 pm – 5:30 pm</td>
<td>Methane Emission Management in the Oil and Gas Industry</td>
<td>O&amp;GS</td>
<td>panel</td>
<td>301 B</td>
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<tr>
<td>3:30 pm – 5:30 pm</td>
<td>Regulatory Developments</td>
<td>REGU</td>
<td>platform</td>
<td>202</td>
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<tr>
<td>3:30 pm – 5:30 pm</td>
<td>Waste Management, Beneficial Use, and Energy Recovery</td>
<td>WAST/SUST</td>
<td>platform</td>
<td>302 B</td>
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<tr>
<td>3:30 pm – 5:30 pm</td>
<td>How Does It Work? - Industries</td>
<td>YPRO/INDU</td>
<td>panel</td>
<td>204 B</td>
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<tr>
<td><strong>5:30 pm – 6:30 pm</strong></td>
<td>Reception in Exhibit Hall</td>
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Carbon Pricing in the U.S. and Canada: Successes and Key Program Features
Track: MINI/CLIM
Room: 206B
6/26/2019, 8:00 AM
Panel – TCC: CCP
Chair: Cassandra Kubes, American Council for an Energy-Efficient Economy

Efforts to put a price on greenhouse gas (GHG) emissions are increasing, with 57 carbon taxes and cap-and-trade programs currently implemented or scheduled for implementation worldwide. This panel will provide an overview of carbon pricing programs in effect in the U.S. and Canada, highlighting successes and key program features. Panelists will describe how programs invest proceeds to further reduce emissions, explain the role of carbon offsets, and highlight how these programs focus on emissions from the transportation sector. In recent years, GHG emissions from the transportation sector surpassed the electricity sector in the U.S., presenting an opportunity to find innovative strategies to further reduce transportation emissions. Presenters will incorporate findings from recent analyses that describe program impacts to date, including reduced emissions and improved public health.

Panelists:
- Michael Conrardy: AECOM
- Pierre Langlois: Econoler
- James Bradbury: Georgetown Climate Center (invited)
- Mike Taylor: Emission Advisors, Inc.

Dry Sorbent Injection for Effective SO₂ and HCl Emissions Control
Track: AQCT
Room: 301A
6/26/2019, 8:00 AM
Panel – TCC: AAC
Chair: Michael Atwell, Solvay Chemicals, Inc.
Vice Chair: Jordi Lopez Launes, Solvay Chemicals, Inc.

Dry Sorbent Injection (DSI) with sodium sorbents provides effective SO₂ and HCl removal to comply with stricter air quality regulations. Removal rates in excess of 90% are often achievable on installations with a baghouse and retrofits can be implemented with small footprints and minimal downtime. Solvay has extensive experience in testing and implementing DSI systems in North America and worldwide. This panel will illustrate successful collaboration examples amongst the different service providers involved in a DSI project. Solvay has accumulated over 30 years of DSI and sodium sorbent expertise in end use applications such as power generation, industrial boilers, waste-to-energy, metal processing, glass, cement and chemical industries. Other firms that partner with implementing DSI include STM EcoSystems, specializing in acid gas and heavy metals removal systems with equipment perfectly adapted to sodium sorbents; Hatch, which supplies engineering and operational services and specializes in

Air Quality Sensing: Designs and Validations – Part 1
Track: AQMM
Room: 303B
6/26/2019, 8:00 AM
Platform – TCC: AAM
Chair: Rick Osa, ERM
Vice Chair: Gregg Thomas, City of Denver

8:00 AM
The Use of Small Sensors to Augment Future Air Quality Services Within the Meteorological Service of Canada
Paper # 590560
Keith Jones, Corinne Schiller, Matthew Parsons, Lucy Chisholm: Environment and Climate Change Canada

8:20 AM
Comparisons of PM2.5 Measured from Air Sensors, FRM and FEM
Paper # 592280
Pei yu Lu, Chungsying Lu: National Chiao Tung University, Taiwan

8:40 AM
Air Monitoring Micro-Stations for Low Cost and Low Footprint Ambient Monitoring in Community Levels and Remote Locations
Paper # 593487
Quamrul Huda: Alberta Environment and Parks; Ken Hidalgo, Qikai Lu: University of Alberta; Marty Collins: Alberta Environment and Parks; Alberto Cevallos, Masum Hossain: University of Alberta

9:00 AM
Data Quality Control System—The Key to Sensor Application in Air Quality Monitoring Network
Paper # 600915
Yi Li: SailBri Cooper Inc.
9:20 AM
Low Cost PM2.5 Sensor Evaluation in Denver, CO
Paper # 601869
Gregg Thomas, Michael Ogletree, City of Denver

IMPROVE Network and Dust Issues
Track: AQMM
Room: 301B

6/26/2019, 8:00 AM
Platform – TCC: APV
Chair: Kip Carrico, New Mexico Institute of Mining and Technology
Vice Chair: Bret Schichtel, Air Resource Division, National Park Service

8:00 AM
Reconstructing Light Extinction from Aerosol Measurements: Evaluation of the Second IMPROVE Equation
Paper # 598118
Bret Schichtel, Anthony Prenni: National Park Service; Jenny Hand, William Malm, Scott Copeland: Colorado State University

8:20 AM
Temporal Trends in the Difference Between Gravimetric and Reconstructed Fine Mass in the IMPROVE Network
Paper # 595717
Jenny Hand: Colorado State University; Anthony Prenni, Bret Schichtel: National Park Service; William Malm: Colorado State University; Judith Chow: Desert Research Institute

8:40 AM
Reinterpreting Thermal Optical Reflectance Measurements — The Mystery of Increasing ROC Values
Paper # 595731
William Malm: Colorado State University

9:00 AM
Estimation of Brown Carbon Concentrations for Two Years of IMPROVE and CSN Aerosol Samples
Paper # 609053
Mark Green, Judith Chow, John Watson, Xiaoliang Wang, Steven Gronstal, Antony Chen: Desert Research Institute

9:20 AM
Silencing the Wind Blown Dust and Restoring the Rancho Seco Landscape in the Mojave Desert
Paper # 601344
Rob Farber: Atmospheric Clarity

Air Dispersion Modeling Case Studies: CFD and Photochemical Grid Modeling
Track: AQMO/TRAN
Room: 205C

6/26/2019, 8:00 AM
Platform – TCC: APM
Chair: Bob Paine, AECOM
Vice Chair: Sergio Guerra, CPP Wind Engineering

8:00 AM
High Resolution Operational On-Line Modeling System for Accidental Emissions
Paper # 607150
Didier Buty: Aria Technologies, France; Marc Chiappero, Samya Pinheiro, Larissa Zanutto: Aria, Brazil

8:20 AM
Influence of Site Arrangement and Green Belt on Industrial Wind Erosion: A Case Study of Storage Piles and Surrounding Areas in Open Yards
Paper # 590764
Bruno Furieri: Federal University of Espirito Santo, Brazil; Jean-Luc Harion: IMT Ville Douai, France; Neyval C. Reis, Davi Montecelli, João Bosco Silva, Jennifer Coronel, Everton Xavier, Aderley Rodriguez, Jane M. Santos: Arcelor Mittal, Brazil

8:40 AM
Comparisons of Forward-in-time and Backward-in-time Lagrangian Stochastic Dispersion Models for Micro-Scale Atmospheric Dispersion
Paper # 601246
Sheng Li, Ke Du: University of Calgary

9:00 AM
The Hamilton Airshed Challenge
Paper # 599361
Janya Kelly, Anthony Ciccone, Katherine Armstrong: Golder Associates Ltd.

9:20 AM
Operational Two-Way Coupled Air Quality Modeling System for Coastal Environments: Phase 1 Concept Development and Benchmarking
Paper # 601777
Matthew Jones, Michael Newman: Woodard & Curran
In the course of preparing and submitting mandatory documentation to environmental agencies, industry is frequently required to include information which that company may consider to be confidential business information (CBI), and frequently this topic is a source of confusion and debate between industry and the regulatory community. The procedures that establish protections for CBI can vary significantly based upon jurisdiction, which can frequently cause the potential for improper characterization of data as CBI by industry, disagreement over which information may be protected as confidential, and/or the release of critical CBI to the general public, including a company’s competitors. This panel brings together panelists representing various perspectives on the topic, beginning with an overview of the legal structure that establishes these standards in the U.S., followed by discussion by leaders from industry and the regulatory community, offering their perspectives on how this topic impacts them and why it’s important. The panel will delve into the importance to industry for maintaining CBI as confidential all while balancing the need of regulatory agencies and the public at large to have access to needed information when reviewing regulatory submittals such as permit applications and routine reports. Finally, a panelist will provide an overview of the treatment of CBI in regulatory submittals in Canada to provide a compare and contrast with its treatment in the United States.

Panelists:
- Adam Driscoll: 3M Company
- Jon Bloomburg: The Environmental Law Group, Ltd.
- Brian Bunger: Bay Area Air Quality Management District
- John Ferguson: GHD

Permitting Case Studies
Track: REGU
Room: 303A
6/26/2019, 8:00 AM
Platform – TCC: REG
Chair: Paul Siebert, Weston Solutions, Inc.

8:00 AM
Navigating Through an Engine Generator Permit Assessment in a Non-Attainment Area in Houston, Texas
Paper # 601242
Christopher Campbell, Cynthia Hibbard: CDM Smith

8:20 AM
Permitting Flexibility for a Transloading Facility
Paper # 602408
Kevin Eldridge: ERM
9:00 AM
The Unique Air Permitting Challenges of Data Centers: Three Case Studies Examining Regional Differences in Air Quality Regulations
Paper # 601688
Stephanie Friel: Langan Engineering and Environmental Services

Zero Waste: Sustainability Issues and Practical Approach
Track: SUST
Room: 302B
6/26/2019, 8:00 AM
Panel – TCC: SRC
Chair: Chih Chao, Cantech Environmental Services
Vice Chair: Maggie Clarke, Environmental Consultant

To achieve local or regional sustainability, one approach towards waste management is to drive for zero waste goal, which entails elimination of waste and maximization of resource efficiency. This however requires a fundamental change in our mindset, that is: waste is simply a misallocated resource and there is no such thing as a waste. A paradigm shift is also needed in the implementation system, that is: advancing from waste management to resource circulation. This panel will address the sustainability issues associated with zero waste system. Approaches of various practitioners will be shared, with a view of exchanging viewpoints and suggestions towards reaching a better understanding of the implication and implementation of zero waste system. Chih Chao will introduce the zero-waste approach and address the necessary and sufficient conditions for implementing zero waste systems. A sustainability index incorporating the economic, environmental and social indicators will be presented, to illustrate the evaluation method and its usefulness in planning the targeted zero waste system. Maggie Clarke will present an overview of the role of zero waste in the New Green Deal, with consumption and climate implications. Stéphane Poirier will share industry’s approach to industrial ecology practice, as part of the circular economy concept. Charles Tremblay will review a clean technology approach to converting waste to value-added biofuel and renewable chemicals. Marc Hébert will then comment from the CCME perspective, highlighting an integrated approach to beneficial use of sludge, biosolid and wood wastes, in an economically and environmentally sustainable manner.

Panelists:
• Chih Chao: Cantech Environmental Services
• Maggie Clarke: Environmental Consultant
• Stéphane Poirier: Rio Tinto
• Charles Tremblay: Enerkem
• Marc Hébert: Marc Hébert, Expert & Trainer

8:00 AM
The Urban Passenger Transportation Life Cycle Inventory for Comparison Across Modes Model (Transportlifecamm)
Paper # 602039
Alma Hernandez-Ruiz, Melanie Sattler: University of Texas at Arlington

8:20 AM
Comparison of Real-World Emissions of LDGVs of Different Vehicle Emission Standards on Both Mountainous and Level Roads in China
Paper # 572637
Lanyi Zhang, Rongzu Qiu: Fujian Agriculture and Forestry University, China; Jane Lin: University of Illinois at Chicago

8:40 AM
Beyond Safety: Utilizing SHRP2 NDS Data to Model Vehicular Emissions From Passenger Cars at Work Zones Using Vehicle Specific Power and Operating Mode Distribution Approach
Paper # 602096
Georges Bou-Saab: HMMH, Inc.; Shauna Hallmark, Omar Smadi: Institute for Transportation at Iowa State University

9:00 AM
Evaluating Emission Factors of Diesel, Gasoline, and Liquefied Petroleum Gas (LPG) Vehicles in a Tunnel Study by Receptor Modeling Analysis
Paper # 594138
Lung-Wen Antony Chen: University of Nevada, Las Vegas; Xiaoliang Wang, Judith Chow, John Watson: Desert Research Institute; Kin-Fai Ho: Chinese University of Hong Kong, Hong Kong; S.C. Frank Lee: The Hong Kong Polytechnic University, Hong Kong; Steven Sai Hang Ho: Desert Research Institute

Bio Fuel from Waste and Waste Composting
Track: WAST
Room: 205B
6/26/2019, 8:00 AM
Platform – TCC: WMB
Chair: David Greene, SCS Engineers
Vice Chair: Melanie Sattler, University of Texas at Arlington
8:00 AM
Creating Carbon Neutral Energy Products from Construction & Demolition Wood
Paper # 611510
Brian Bobbie, Andrew White: Char Technologies Ltd.

8:20 AM
Air Pollutant Emissions and Regulatory Implications of a Biorefinery Producing Raw Bio-Oil
Paper # 591298
Arpit Bhatt, Yimin Zhang: National Renewable Energy Laboratory

8:40 AM
Predicting Bioenergy Potential from Vinasse Digestion: The VUMP Model (Vinasse Utilization for Methane Production)
Paper # 590580
Melanie Sattler: University of Texas at Arlington; Lucina Kuusisto: Texas A&M University-Commerce; Victoria Chen: University of Texas at Arlington

9:00 AM
Permitting Composting Facilities to Meet Air Quality Standards and Waste Management Goals
Paper # 601115
John Koehler: Yorke Engineering LLC

9:20 AM
Mechanobiological Treatment of Household Waste for Small and Medium-Sized Municipalities: Results of a Pilot Project
Paper # 599870
Yves Bernard: Centre de Recherche Industrielle du Québec (CRIQ)

9:30 AM
Panel – TCC: WMR
Chair: Michael Pjetraj, North Carolina Department of Environmental Quality
Vice Chair: Carol Kemker, U.S. EPA

This panel session will include presentations/discussions on the PFAS experiences of three U.S. state regulatory agencies and a U.S. EPA regional office. Specifically, the speakers will discuss how their agencies are working to identify sources of PFAS, quantify emissions, and characterize fate and transport of the substances. The panel will examine sampling initiatives across multiple media; the approach on deciding which locations to sample and how initial investigations spread out as more locations were identified. The panel will discuss the stack testing performed to identify current PFAS emissions from the air source and then general observations about level and type of PFAS found at each of the “typical” locations (i.e. non-air, landfills, waste sites, biosolids, etc). The panel will share experiences on the use of drones to help identify locations of venting of groundwater to surface water. The results of air emissions deposition modeling and rainwater analysis will be presented. Mitigation of contamination and alternative sources of drinking water for affected communities will be explored. Details of the U.S. EPA’s PFAS Action Plan that lists several key points for which the U.S. EPA and states should focus efforts and communicate risk will be discussed.

Panelists:
- Michael Pjetraj: North Carolina Department of Environmental Quality - Division of Air Quality
- Carol Kemker: U.S. EPA
- Cathy Beaehm: New Hampshire Department of Environmental Services
- Gerald Tierman: Michigan Department of Environment, Great Lakes, and Energy

Answering Critical Challenges Facing our Planet in Air Quality by Using NASA’s Current & Future Earth Observing Satellites
Track: MINI/AQMM
Room: 206B
6/26/2019, 10:10 AM
Panel – TCC: AAM
Chair: Sue Estes, NASA/UAH
Helena Chapman, NASA Applied Sciences Program

This session brings together satellite data providers and data users to identify climate and environmental data and products, and to share ideas about maximizing the use of satellite data for societal benefit. The satellite data has real value in producing an Air Quality Index that actually protects the public from harm by allowing them to make decisions that protect their health and wellbeing. The area addresses issues of toxic and pathogenic exposure and health-related hazards and their effects for risk characterization and mitigation. The NASA Applied Sciences Program (ASP) within its Public Health and Air Quality (PHAQ) focus area, sponsors satellite data applications across a wide spectrum of areas including environmental health; infectious disease; air quality standards, policies, and regulations. PHAQ encourages the use of Earth observations in air quality management and public health by periodically issuing calls for proposals to academia, public and private sectors, and emphasizing partnerships between scientists and communities of application such as managers, policy and decision makers. As part of NASA’s (PHAQ) focus area we will have presentations from members of the Health and Air Quality Applied Sciences Team (HAQAST), who use NASA satellite data to help solve real-world public health and air quality problems – and diverse: they work all around the world on issues from wildfire smoke to diesel emissions. Also included will be a panel talk discussing polar orbiting and geosynchronous missions planned within the
next decade that will enable better measurements of aerosol transport, sources and sinks and their impact on PM2.5.

Panelists:
- John Haynes: NASA
- Gregory Osterman: NASA Jet Propulsion Laboratory
- Ali Omar: NASA Langley Science Directorate

SOx, VOC, and Toxic Gas Control Technologies – Part 1
Track: AQCT
Room: 301A
6/26/2019, 10:10 AM
Platform – TCC: AAC
Chair: Herek Ciack, University of Michigan

10:10 AM
Thermophilic Treatment of Acetaldehyde Emission in a Biotrickling Filter
Paper # 595578
Ashraf Aly Hassan: United Arab Emirates University, UAE; Christopher Duerschner; Mitham Al-Faliti, Bruce Dvorak: University of Nebraska-Lincoln

10:30 AM
Development of a Standard Methodology to Inspect Tanks Using Optical Gas Imaging Technology
Paper # 601768

10:50 AM
Consequences of Using Pseudo-Science to Determine Pseudo-Parameters for Flares
Paper # 588571
Michael Zelensky: Alberta Energy Regulator; Brian Zelt: Zelt PSI

Regional Haze and Nitrogen
Track: AQMM
Room: 301B
6/26/2019, 10:10 AM
Platform – TCC: APV
Chair: Kip Carrico, New Mexico Institute of Mining and Technology
Vice Chair: Bret Schichtel, National Park Service

10:10 AM
Air Quality Sensing: Designs and Validations – Part 2
Track: AQMM
Room: 303B
6/26/2019, 10:10 AM
Platform – TCC: AAM
Chair: Patrick Clark, Montrose Environmental Group

10:10 AM
Using Low Cost VOC Sensor Networks and Predicative Algorithms to Mitigate Pollution Risks to the Community
Paper # 601748
Patrick Clark, Austin Heitmann: Montrose Environmental Group

10:30 AM
Testing and Validation of Mobile Air Quality Monitor for Sensing and Delineating VOC Emissions
Paper # 599728
Govind Thakor, Piaoyu Hu, Radu Motisan, Yi Wai Chiang, Rafael Santos: University of Guelph

10:50 AM
A Low-Cost Optical Detection System for Methane and Odors
Paper # 601314
Anna Scott, Yan Azdoud: Troposphere Monitoring

11:10 AM
Remote Vapor Intrusion Air Sampling Using SGS-Smart Sense
Paper # 589409
Harry Behzadi: SGS

11:30 AM
Next Generation Monitoring and Downsizing
Paper # 601958
Andy Tolley: American Ecotech
10:30 AM
Loch Vale, CO Wet Reactive Nitrogen Deposition Long Term Trends and Uncertainty
Paper # 597947
Bret Schichtel, Kristi Morris, Kristi Gebhart, Jim Cheatham, John Vimont: National Park Service; Robert Larson: Wisconsin State Laboratory of Hygiene

10:50 AM
Urban and Remote Coarse Aerosol Mass Across the United States
Paper # 595730
Jenny Hand: Colorado State University; Bret Schichtel: National Park Service; Thomas Gill: University of Texas at El Paso

11:10 AM
Looking Ahead to the Second Decadal Review for the Regional Haze Rule
Paper # 593802
Robert Paine: AECOM

11:30 AM
Single-Source Visibility Ranking and Modeling Techniques for Regional Haze Sips
Paper # 602065
Ralph Morris: Ramboll

Air Monitoring Methods, Data, and Uncertainties
Track: AQMM
Room: 303A
6/26/2019, 10:10 AM
Platform – TCC: CCI
Chair: Charles Odame-Ankrah, Global Analyzer Systems, Ltd.

10:10 AM
Reliability of Ambient Data in Regulatory Decision Making and Compliance
Paper # 601040
Dennis Fudge: Saskatchewan Ministry of Environment

10:30 AM
Compelling Evidence of Nitrogen Dioxide Monitoring Errors with Heated Metal Converters from Several Comparison Field Studies with Stable and Linear Photolytic Converters
Paper # 603050
Charles Odame-Ankrah, Kelly Pickrell: Global Analyzer Systems Ltd.
This panel will discuss permitting issues and permit conditions that are prone to problems from various industry, government, and environmentalist perspectives. Air pollutant emission sources are generally required to obtain construction and operating permits from state, provincial or local air quality agencies, or directly from the U.S. EPA or Environment Canada. Generally, the issuing agency will provide an opportunity for a facility to review and comment on draft permit conditions. Taking advantage of that opportunity is essential to ensure the best permit that can be obtained. Particular permit conditions that may present problems are: inflexible conditions that do not provide for real world variations; emission limitations that cannot be routinely or consistently achieved in practice; monitoring, recordkeeping, and reporting conditions that require excessive effort; and stack testing requirements that are of questionable value yet costly. These and others may require substantial effort, yet produce little environmental benefit. On the other hand, permitting agencies and environmental advocacy groups may perceive different problems with permit conditions. The panel will discuss alternative conditions and other remedies for problem permit conditions. Although modification of permit conditions is within the exclusive purview of the permitting agency, these personnel may have little familiarity with local issues or the difficulty of complying with some permit conditions. Facility personnel should strive to explain inherent difficulties and costs with some permit conditions, so they can be changed when in draft or final form. Similarly, the public should take advantage of opportunities to inquire and comment on a proposed permit based on their familiarity with the locality or specific issues.

Panelists:
- Gunnder (Gary) Saini: RTP Environmental Associates, Inc.
- Kevin Eldridge: ERM
- Jane Gilbert: Maine Department of Environmental Protection
- Jennifer Kerr: Environment and Climate Change Canada
- Cathy Beahm: New Hampshire Department of Environmental Services
- TBD: Québec Ministère de l’Environnement et de la Lutte Contre les Changements Climatiques (Invited)
- Tom Rolfson: Power Engineers, Inc.
- Blake Boling: Boeing (Invited)
upcoming projects. We will also discuss important policy drivers that has supported growth of this industry. For example, RNG is considered an advanced biofuel under the Renewable Fuel Standard program, with the bulk of production qualifying as cellulosic biofuel. This has provided incentives to produce and increasingly use RNG as a transportation fuel. In addition, several states have passed or are considering legislation to provide incentives for RNG production and use.

Panelists:
- Representative from DTE Energy (Invited)
- Brad DeMaeyer: Enbridge Gas Inc.
- Sandra Franco: Coalition for Renewable Natural Gas
- Pat Foody: Advanced Biofuels, Iogen Corporation

How Does It Work? Environmental Regulations in the United States and Canada
Track: YPRO/REGU
Room: 204B

6/26/2019, 10:10 AM
Panel – TCC: REG
Chair: Elizabeth Rubenstein, Klodowski Law
Vice Chair: Jen Moore, 3M Company

This panel discussion will include a broad comparison of how the environmental regulations in the United States and Canada handle air quality challenges, and how each country manages these challenges. A Canadian panelist will discuss the relationship between the different Canadian provinces, Environment and Climate Change Canada, and parliament, while a United States panelist will discuss the relationship between government, the Environmental Protection Agency, and state agencies. Panelists representing United States and Canadian industries will also share perspectives on how these regulations are implemented. Examples of how both countries manage air quality challenges will include: when permits are required, what are the major regulations, when air dispersion modeling is required, how greenhouse gases and climate change is regulated (e.g. Paris Agreement), and other topics. This panel will be a great introductory presentation for all attendees but is focused on reaching the student/young professional attendee.

Panelists:
- Brian Bunger: Bay Area Air Quality Management District
- Adam Driscoll: 3M Company
- Matt Gardner: Willms & Shier Environmental Lawyers LLP
- Robert Mugo: Barr Engineering Company

Air Pollutant/Greenhouse Gas Emissions Initiatives
Track: MINI/CLIM
Room: 206B

6/26/2019, 1:30 PM
Platform – TCC: AAC
Chair: Charles Baukal, John Zink Company, LLC

Modeling VOC Adsorption on Beaded Activated Carbon in a Multistage Counterflow Fluidized Bed Adsorber
Paper # 593691

Treatment of Gaseous Effluents Emitted from Tire Manufacturing Industry: Robustness of Biofilters
Paper # 599295
Luc Malhautier, Janick Rocher: IMT Mines Alès, France; Olivia Gouello, Luc Jobert, Claire Moura,; Yann Gauthier, Aline Bertin: Michelin, France; Jean-François Després: Olentica, France; Jean-Louis Fanlo: IMT Mines Alès, France
2:10 PM
Development of an Innovative Biofilter Based on Industrial Ecology Concepts
Paper # 601455
Alexandre Pilote, Nicolas Turgeon: Centre de Recherche Industrielle du Québec (CRIQ); Benoit Fiset, Isabelle Bouvier, Eric Caputo: Sanimax

2:30 PM
Paper # 601763
Christopher Muller, Chris Moon, William England, James Joseph, Justin Kinney: Purafil, Inc.

2:50 PM
Comparative Study on Leak Detection Capabilities of Two Recognized Methods (U.S. EPA M21 and Optical Gas Imaging [OGI]) in LDAR Program
Paper # 601762
Alexandre Saulnier: SNC-Lavalin, Inc.; Larry Smet: Ontario Ministry of the Environment, Conservation and Parks

Emissions for Point and Area Sources
Track: AQES
Room: 303A

6/26/2019, 1:30 PM
Platform – TCC: AAE
Chair: Juan Carlos Ramirez-Dorronsoro, Ball State University
Vice Chair: Shamia Hoque, University of South Carolina

1:30 PM
Development of an On-Site Method to Measure Fugitive Greenhouse Gas (GHG) Emissions from Covered Pig Manure Storage Pits
Paper # 599822
Ariane Lévesque, Matthieu Girard, Jérémie Gravel: Research and Development Institute for the Agri-Environment (IRDA)

1:50 PM
Measurement of PM10/2.5 Emissions from Refinery Sources Using Other Test Method 37 (OTM-37) Dilution Sampling
Paper # 595216
Glenn England: Ramboll; Triana Fleming, Beverly Coleman, Weston Beck: Chevron; Jim Barufaldi, David Elam: TRC Solutions

2:10 PM
Characterization of GHG Fugitive Emissions from an Oil Sands Tailings Pond in Northern Alberta - Air Emissions Studies Session
Paper # 595744
Long Fu: Government of Alberta; Quamrul Huda, Lucas Zhang, Zheng Yang, Nick Veriotes: Alberta Environment and Parks

2:30 PM
Source Emissions and Fuel Quality Testing for Biogas, Biomass, and Bioenergy
Paper # 600781
Thomas Dunder: TRC Solutions

2:50 PM
Methane Emissions from Abandoned Oil and Gas Wells: A Case Study in Oil Creek State Park, Pennsylvania
Paper # 601512
Natalie Pekney, Matthew Reeder, James Sames, Gabe DeWitt, Andrew Tinker: National Energy Technology Laboratory

Next Generation of Air Monitoring Tools for Fugitive, Fenceline, and Area Source Applications
Track: AQMM
Room: 303B

6/26/2019, 1:30 PM
Platform – TCC: AAM
Chair: Ingrid George, U.S. EPA
Vice Chair: Dominic Lortie, Centre d’Expertise en Analyse Environnementale du Québec

1:30 PM
Field Demonstration of the VOC Emissions Tracker (VET) to Detect Fugitive Air Toxic Emissions in Dallas, TX
Paper # 593578
Ingrid George, Eben Thoma, Duvall Rachelle, Michael Miller, Mark Sather, Parikshit Deshmukh, Jacob Canlser: U.S. EPA

1:50 PM
Case Studies: Strategic Air Quality Monitoring at Manufacturing Facilities
Paper # 601539
Chris Nelson: 3M Company

2:10 PM
A New Plug-In Hybrid Electric TAGA Mobile Laboratory to Analyze Ambient Air In Real-Time In Québec
Paper # 601695
Dominic Lortie, Patrick Avon, Marco Li Fraine, Louis Martel, Danielle Richoz, Christophe Romiguère: TAGA Mobile Laboratory, Centre d’Expertise en Analyse Environnementale du Québec

2:30 PM
Drone-Assisted Detection of Radioactive Sources: An Innovative and Safe Solution
Paper # 601718
Dominic Lortie: Centre d’Expertise en Analyse Environnementale du Québec; Patrick Chatelle: Dronexperts; Nicolas Turgeon: Centre de Recherche Industrielle du Québec (CRIQ); Marco Li Fraine: Centre d’Expertise en Analyse Environnementale du Québec; Alexandre Pilote: CRIQ; Danielle Richoz, Christophe Romiguère: Centre d’Expertise en Analyse Environnementale du Québec
Downscaling Global Climate Models to Use in Local Adaptation Planning

Track: CLIM
Room: 205A

6/26/2019, 1:30 PM
Panel – TCC: CCI
Chair: Michael Hendrix, LSA Associates

Global climate models have relatively coarse spatial resolution. A single grid-cell of a global climate model can cover the distance from San Francisco to Sacramento. There is a lot of variation between San Francisco and Sacramento that impacts the localized climate conditions including topography and distance from the ocean which effect surface air temperatures, precipitation levels and type of precipitation. If you want to know how temperatures or precipitation might change on finer spatial scales, you need to downscale the climate model output. California through collaborative efforts of the California Governor’s Office of Planning and Research (OPR), the California Energy Commission (CEC) and the Scripps Institution of Oceanography at the University of California, San Diego (UCSD) completed a statistical downscaling of four global climate models for the State in a process called Localized Constructed Analogs (LOCA). The LOCA method is a statistical scheme that produces downscaled estimates suitable for hydrological simulations using a multi-scale spatial matching scheme to pick appropriate analog days from observations. This panel presentation will provide an overview of the LOCA downscaled climate modeling system used in California in the development of the CalAdapt Tools. CalAdapt is a web based GIS toolset that provides local planning departments throughout California local climate change forecasts (2050 and 2100) to use in determining climate risks and developing adaptation plans. The panel discuss how the City of Corona, California used the CalAdapt toolkit to determine climate risks and develop an adaption plan.

Panelists:
- Michael Hendrix: LSA Associates
- Michael McCormick: California Governor’s Office of Planning and Research
- Joanne Coletta: City of Corona, CA

Environmental Monitoring in the Oil Sands

Track: O&GS
Room: 301B

6/26/2019, 1:30 PM
Panel – TCC: PIM
Chair: Ole Mrklas, Canada’s Oil Sands Innovation Alliance
Vice Chair: Randall Rudolph, Millennium EMS Solutions Ltd.

Canada's Oil Sands Innovation Alliance (COSIA) is an alliance of oil sands producers focused on accelerating the pace of improvement in environmental performance in Canada’s oil sands through collaborative action and innovation. COSIA collaborates and innovates and its vision is to enable responsible and sustainable growth of Canada's oil sands while delivering accelerated improvement in environmental performance through collaborative action and innovation. COSIA brings together leading thinkers from industry, government, academia and the wider public to improve measurement, accountability and environmental performance in the oil sands in five priority areas. These environmental priority areas are oil sands monitoring, greenhouse gases, land, water and tailings. This session will be focused on recent projects in the oil sands undertaken to clarify current understanding of environmental issues and monitoring.

Panelists:
- Ole Mrklas: COSIA
- Randall Rudolph: Millennium EMS Solutions Ltd.
- Cameron McNaughton: Golder Associates
- Monique Dube: University of Saskatchewan
- Joy Romero: Clean Resource Innovation Network
- Francoise Robe: RWDI

Economics, Partnerships & Environmental Leadership

Track: REGU
Room: 205C

6/26/2019, 1:30 PM
Platform – TCC: EPE
Chair: Jim Ryckman, AFLCMC/WNVC
Vice Chair: Jason Krawczyk, ERM

1:30 PM
ABIH and IPEP: Economics, Partnership, and Environmental Leadership in the Service of Environmental and Human Health

Paper # 602092
Diana Kobus: Institute of Professional Environmental Practice (IPEP); Ulric Chung: American Board of Industrial Hygiene and IPEP

1:50 PM
Financial Foundation to Building a Healthy Breathing Environment

Paper # 601845
Leonid Bak: Bay Area Air Quality Management District

2:10 PM
Québec’s Industrial Release Reduction Program: A Progressive Intervention Strategy

Paper # 605903
Jany McKinnon, Irina Constantinescu: Québec Ministère de l’Environnement et de la Lutte Contre les Changements Climatiques

2:30 PM
Economics Analysis for Industrial Wastewater Services for Air Force Plant 6 at Marietta, GA

Paper # 595292
Morris Demitry, Shreyas Balaram, Arshima Rieara: U.S. Air Force
Modeling Issues in PSD/Nonattainment/Minor NSR Permitting
Track: REGU/AQMO
Room: 202
6/26/2019, 1:30 PM
Platform – TCC: REG
Chair: Gurinder Saini, RTP Environmental Associates, Inc.
Vice Chair: Raj Rao, U.S. EPA

Ambient air quality dispersion modeling is used for issuance of prevention of significant deterioration (PSD) permits. However, modeling is also sometimes used in issuance of minor NSR permits as well as, in some situations, nonattainment major NSR permits. U.S. EPA has been working on addressing concerns raised by the regulated community regarding dispersion modeling through additional guidance and rulemaking. The experts on this panel will discuss the permitting implications of ozone and PM2.5 precursors and other modeling issues. The panel will also outline recent developments in the air dispersion modeling universe, including, what is considered ambient air, latest model developments, etc. The panelists will outline the difficulties involved in assessing the impacts of precursor emission changes on attainment strategies. This will be discussed from both a national and state level and both technical and legal issues will be identified.

Panelists:
- Gurinder (Gary) Saini: RTP Environmental Associates, Inc.
- Raj Rao: U.S. EPA
- Eric Hiser: Jorden, Hiser & Joy
- Gale Hoffnagle: TRC Environmental Corporation

Sustainability Tracking, Metrics, Initiatives, and Analytics
Track: SUST
Room: 302B
6/26/2019, 1:30 PM
Platform – TCC: SUS
Chair: Ram Ramanan, Desert Research Institute
Vice Chair: Georges Bou-Saab, Iowa State University

1:30 PM
Fair Trade and Neutralisation Process
Paper # 600657
Lilia Righi: IAE Nice, Université Cote D’azur, France

1:50 PM
Sustainability Analytics — The Critical Link Between Sustainability and Business Strategy
Paper # 625052
Ram Ramanan

2:10 PM
Life Cycle Assessment of Large Wind Turbines in the U.S.: A Texas Case Study
Paper # 590575
Melanie Satller, Ali Al-Saleh: University of Texas at Arlington

2:30 PM
Lifecycle Environmental Impact of a High-Speed Rail System in the I-45 Corridor
Paper # 602006
Jesuina Chipindula, Venkata Botlaguduru, Doen Choe, Raghava Kommalapati, Hongbo Du: Prairie View A&M University

Community Noise and Transportation Emissions
Track: TRAN
Room: 302A
6/26/2019, 1:30 PM
Platform – TCC: CNV
Chair: Dominic Scarano, HMMH, Inc.

1:30 PM
Environmental Noise: Modelling Techniques to Quiet your Acoustic Troubles
Paper # 595561
Derek Flake: Aercoustics Engineering Limited

1:50 PM
Noise Survey Program to Reduce the Potential Impact on the Community Surrounding a Large Oil Refinery
Paper # 601634

2:10 PM
Climate Change Effects on the Suez Canal Area After Completion of the New Development Project
Paper # 590833
Mounir Wahba Labib: National Academy of Science, Egypt; Alan Gertler: Desert Research Institute

2:30 PM
Current and Future CAC and GHG Emission Rates for Offroad Sources: Ships, Locomotives, Cargo Equipment - Existing Data Sources and Challenges for Emissions Inventory Development
Paper # 595361
Bryan McEwen: SNC Lavalin Incv
TECHNICAL SESSIONS – WEDNESDAY

Waste Management and International Perspectives
Track: WAST
Room: 205B
6/26/2019, 1:30 PM
Platform – TCC: WMB
Chair: Melanie Sattler, University of Texas at Arlington
Vice Chair: David Greene, SCS Engineers

1:30 PM
Sustainability of Small-Scale Waste Treatment Units for Refugee Camps
Paper # 596150
Charbel Abou Khalil: New Jersey Institute of Technology; Marc Aoun, Sophia Ghanimeh: Notre Dame University-Louaize (NDU), Lebanon

1:50 PM
Reciclo Organicos: Canada’s Support to Chile to Mitigate Greenhouse Gas Emissions from the Municipal Solid Waste Sector
Paper # 576397
Arvind Chandrasekar: Arcadis Canada Inc.

2:10 PM
Comparing Odour Emissions from Collection of Different Types of Municipal Solid Wastes in Montréal
Paper # 614953
Martin Héroux: Ville de Montréal; Laurent Spreutels, Robert Legros: CRVMR - Polytechnique Montréal

Case Studies in Air Dispersion Modeling for Young Professionals
Track: YPRO/AQMO
Room: 204B
6/26/2019, 1:30 PM
Panel – TCC: APM
Chair: Paul Algu, RTP Environmental Associates, Inc.
Vice Chair: Jen Moore, 3M Company

Atmospheric dispersion modeling is a useful skill used for understanding how air pollutants disperse in the atmosphere but only a limited number of students and young professionals are exposed to it. This panel session will focus on the application of air modeling used in the real world by showcasing various case studies on air modeling. The panel will be geared towards young professionals and will teach by example the various ways air modeling can be used and applied to real-life situations and projects. The panelists will include representatives from several industries who have used modeling as part of a project they completed at their workplace. The panel will conclude with open discussions and Q&A which will provide students and YPs to interact with the panel members.

Panelists:
- Eric Edwalds: Barr Engineering Company
- Kristen Fritchman: Civil and Environmental Consultants, Inc.
- Sergio Guerra: GHD
- Natalie Jones: Golder Associates

Québec and California Cap and Trade Update and Expectations for Post 2020
Track: MINI/CLIM
Room: 206B
6/26/2019, 3:30 PM
Panel – TCC: CCP
Chair: Mike Taylor, Emission Advisors, Inc.
Vice Chair: Harish Rao, Rao Consulting Services Inc.

There are several regulatory changes anticipated post 2020 to both the Québec and California Cap and Trade Markets with its associated interest in upcoming key dates and in the finalization of amendments to those programs. This panel will discuss the programmatic changes in both jurisdictions along with a discussion of expected market and pricing impacts related to the post 2020 changes. The panel speakers will provide an overview of the historical pricing of carbon and the key changes to the program since inception. The panel will also discuss the expected costs for affected facilities in California and Québec to comply with the respective programs, and the trading strategies that are available to market participants to reduce cost of compliance. Case studies of companies’ outcomes from evaluating and using different strategies will be used to demonstrate reductions in carbon compliance costs under the Carbon Cap and Trade Program. The discussion will also focus region-wide compacts, including the fallout and consequences of Ontario leaving the program in 2018 as well as the possibilities and effects of other provinces and states joining the program.

Panelists:
- Onil Bergeron: Québec Ministère de l’Environnement et de la Lutte Contre les Changements Climatiques
- Mike Taylor: Emission Advisors, Inc.
- Frédéric Picard: Rio Tinto
- Jean Nolet: Coop Carbone

PM Control Technologies
Track: AQCT
Room: 301A
6/26/2019, 3:30 PM
Platform – TCC: AAC
Chair: Minh Pham, South Coast Air Quality Management District

3:30 PM
Eliminating Bag Failure Problems in Baghouses
Paper # 593271
John McKenna: ETS, Inc.; Lou Theodore: Theodore Tutorials; Marc McKenna: ETS, Inc.
**TECHNICAL SESSIONS – WEDNESDAY**

3:50 PM  
**PM Control Technologies: A Recommended Approach for the Best Results**  
Paper # 602625  
Hugues Châteauneuf: BBA

4:10 PM  
**Multipollutant Air Pollution Control for Glass Manufacturing Facilities**  
Paper # 587250  
Minh Pham, Monica Fernandez-Neild, Stephen Jiang: South Coast Air Quality Management District

4:30 PM  
**Removal of Cooking Fume Emissions from Kitchens by Using the Combination of Negative Air Ionizer and Active Carbon Adsorbent Made of Recycled Rice Straw**  
Paper # 600303  
Wei-Wen Huang, Kuo-Pin Yu, Xuan En Yang: National Yang-Ming University; Kun-Yi Lin: National Chung Hsing University; Chien Su: National Yang-Ming University

4:50 PM  
**Non-Thermal Plasma Inactivation of Porcine Reproductive and Respiratory Syndrome (PRRS) Virus in Hog Barn Ventilation Air**  
Paper # 634418  
Herek Clack, Tian Xia: University of Michigan; Eric Lee: Illinois Institute of Technology; Zijie Lin: University of Michigan; Kevin Melotti, Mitchell Rohde: Quantum Signal; Dale Rozeboom: Michigan State University

**Challenges in Emission Inventory Development**  
Track: AQES  
Room: 303A

6/26/2019, 3:30 PM  
**Platform – TCC: AAE**

**Chair:** Juan Carlos Ramirez-Dorronsoro, Ball State University  
**Vice Chair:** Shamia Hoque, South Carolina State University

3:30 PM  
**Tracking Canadian Mercury Emissions from Products Containing Mercury**  
Paper # 603371  
Brittany Sullivan, Duane Smith: Environment and Climate Change Canada

3:50 PM  
**Choosing Data Sources for Relevant, Complete, Consistent, Transparent, and Accurate Reporting**  
Paper # 600432  
Kerry Weichsel: Civil & Environmental Consultants, Inc.

4:10 PM  
**Adding Particulate Matter to EPA’s eGRID Database**  
Paper # 600932  
David Cooley: ABT Associates; Travis Johnson: U.S. EPA; Marissa Hoer; Jonathan Dorn: ABT Associates

4:30 PM  
**Estimating Volatile Organic Compound Emissions at a Wastewater Treatment Plant Using U.S. EPA’s WATER9 Model**  
Paper # 601619  
Disha Shah, Amit Sen: CDM Smith

**Air Quality Measurements and Monitoring in China**  
Track: AQMM  
Room: 303B

6/26/2019, 3:30 PM  
**Platform – TCC: AAM**

**Chair:** Junji Cao, Institute of Earth Environment, CAS, China  
**Vice Chair:** Mark Green, Desert Research Institute

3:30 PM  
**Status and Control of Particulate Air Pollution in Fenwei Basin, China**  
Paper # 590935  
Junji Cao, Long Cui: Key Lab of Aerosol Chemistry and Physics, Chinese Academy of Sciences, China; Shun-Cheng Lee: The Hong Kong Polytechnic University, Kowloon, Hong Kong

3:50 PM  
**Characterization of Chemical Composition and Source of Atmospheric Aerosol Particles in Fenwei Basin, China**  
Paper # 592210  
Yuemei Han, Qiyuan Wang, Zhiyu Li: Institute of Earth Environment, Chinese Academy of Sciences, China; Zhiyu Li, S. X. Liu, Junji Cao: Key Laboratory of Aerosol Chemistry and Physics, SKLLQG, Institute of Earth Environment, Chinese Academy of Sciences, China

4:10 PM  
**Decreasing Trend of Carbonaceous Aerosols Over China from 2003 to 2013**  
Paper # 592267  
Yan Cheng: Xi’an Jiaotong University, China; Junji Cao: Institute of Earth Environment, Chinese Academy of Sciences, China

4:30 PM  
**Examining Efficacy of Mitigation Policies in Reduction of Source Emissions on Air Quality During Group of Twenty Summit in Hangzhou**  
Paper # 589849  
Ke Chen, Honghui Xu: University of Nottingham Ningbo, China; Sailesh Behera: Shiv Nadar University, India; Jun He, Sarah Metcalfe, Bencan Tang: University of Nottingham Ningbo, China
Ambient Ammonia and its Relationship with Ammonium Aerosol Chemical Property During Winter in Beijing, China
Paper # 600930
Zhao Yang Meng: Chinese Academy of Meteorological Sciences, China; Renjian Zhang: Institute of Atmospheric Physics, Chinese Academy of Sciences, China; Lingyan Wu, Xiaofang Jia; Hongbin Cheng: Chinese Academy of Meteorological Sciences, China

Smoke and Prescribed Burning Air Quality Issues
Track: AQMM
Room: 302A
6/26/2019, 3:30 PM
Platform – TCC: APV
Chair: Kip Carrico, New Mexico Institute of Mining and Technology
Vice Chair: Bret Schichtel, National Park Service

Study of the Extent of Contribution of Regional Stubble Burning to the Air Pollution in Delhi-National Capital Region
Paper # 594032
Rasma K.: Indian Institute of Technology (IIT) Mumbai, India; Ratish Menon: SCMS School of Engineering and Technology, Karukutty, India; Rakesh Kumar: National Environmental Engineering Research Institute, Nagpur, India; Harish Gadhavi: Physical Research Laboratory, Ahmedabad, India; Virendra Sethi: IIT Mumbai, India

Emission Inventory of Biomass Burning from GFAS V3 Using SMOKE, the Case of 2014
Paper # 600991
Ernesto Pino: Universidad De Santiago De Chile; Francisco Cereceda-Balic: Dept. of Chemistry and Centre For Environmental Technologies, Universidad Técnica Federico Santa María, Chile; Luis A. Díaz-Robles, Francisco Cubillos: Universidad De Santiago De Chile; Samuel Carrasco: Pontificia Universidad Católica De Valparaiso, Chile

Connections Between Prescribed Fire, Air Quality, and Communities in the Southeastern U.S.
Paper # 601332
Fernando Garcia-Menendez, Sadia Afirn: North Carolina State University

Investigation of Multi-Wavelength Light Absorption of Black and Brown Carbon in Southeast Tibetan Plateau
Paper # 590355
Zhuzi Zhao: Jiangsu University of Technology, China; Junji Cao, Jiamao Zhou: Key Laboratory for Aerosol Chemistry and Physics, Institute of Earth Environment, Chinese Academy of Sciences, China

4:50 PM
Smoke Aerosol Optical Properties: Hygroscopic Response and Key Physicochemical Properties of Biomass Smoke from Southwestern U.S. Fuels
Paper # 601722
Christian Carrico, Jared Lam: New Mexico Institute of Mining and Technology; Tyler Capek, Claudio Mazzoleni: Michigan Technological University; Allison Aiken, Manvendra Dubey: Los Alamos National Laboratory; Timothy Onasch, Andrew Freedman: Aerodyne Research Inc.

Greenhouse Gas Modeling
Track: CLIM
Room: 205A
6/26/2019, 3:30 PM
Platform - TCC: CCI
Chair: Joshua Fu, University of Tennessee Knoxville & Oak Ridge National Laboratory
Vice Chair: Jason Krawczyk, ERM

Time Series Concentration Profiles of Ambient Carbon Dioxide at Locations in Alberta and Relations to Anthropogenic Activities
Paper # 597710
Quamrul Huda: Alberta Environment and Parks; Arturo Sanchez-Azofeifa: University of Alberta

Long-Time Atmospheric Monitoring Data, Snow Albedo and Black Carbon in Snow Measured in Portillo, Los Andes Mountains, Chile
Paper # 601770
Francisco Cereceda-Balic: Department of Chemistry and Centre for Environmental Technologies, Universidad Técnica Federico Santa María, Chile; Víctor Vidal: Universidad Técnica Federico Santa María – Centre For Environmental Technologies (CE-TAM-UTFSM), Chile; Hans Moosmüller: Desert Research Institute; Magín Lapuerta: Universidad de Castilla-La Mancha, Spain

Status of Renewable Energy Projects in Egypt
Paper # 591325
Mounir Wahba Labib: National Academy of Science, Egypt; Yasser Saad Mohamed: Climate and Environment Protection Foundation, Egypt; Alan Gertler: Desert Research Institute
4:30 PM
Assessment of the Social and Economic Impacts Due to Climate Change in Egypt
Paper # 591361
Mounir Wahba Labib: National Academy of Science, Egypt; Yasser Saad Mohamed: Climate and Environment Protection Foundation, Egypt; Alan Gertler, Desert Research Institute

Methane Emission Management in the Oil and Gas Industry
Track: O&GS
Room: 301B
6/26/2019, 3:30 PM
Platform - TCC: PIM
Chair: Randall Rudolph, Millennium EMS Solutions Ltd.
Vice Chair: Soheil Asgarpour, Petroleum Technology Alliance Canada (PTAC)

It is no surprise that various issues within the oil and gas sector have kept stakeholders at relative odds. But for Canada to position itself as a global powerhouse, provinces must work together to achieve the same goals of an economic and holistic energy industry. People prefer oil from locally-sourced and trusted sites. They also want to respect the land this oil originates from and not sacrifice sustainability for convenience.

Good news! There are already innovative and thoughtful initiatives already happening in Western Canada. We have proven that together we can combat climate change and lessen liabilities while controlling costs and growing the economy.

This session focuses on current issues impacting methane emission management in oil and gas and implementing projects that contribute to achieving Canadian – and global – goals in reducing methane emissions.

Panelists:
- Randall Rudolph: Millennium EMS Solutions Ltd.
- Soheil Asgarpour: President, PTAC
- Wayne Hillier: Canadian Association of Petroleum Producers
- Gerald Palanca: Alberta Energy Regulator
- Cooper Robinson: Cap-op Energy
- Marc Godin: PTAC

Regulatory Developments
Track: REGU
Room: 202
6/26/2019, 3:30 PM
Platform - TCC: REG
Chair: Dave Jordan, ERM

3:30 PM
Developments in United States Clean Air Act Regulatory Policies
Paper # 601745
Todd Palmer: Michael Best & Friedrich LLP

3:50 PM
Opportunities and Risks of Recent Changes to EPA Permitting Rules and Policy
Paper # 598060
Clara Poffenberger: CPELP LLC

4:10 PM
A Perspective on the Development of Programs to Control Stationary Source Nitrogen Oxide Emissions in the Eastern U.S.
Paper # 592932
Susan Wierman: Johns Hopkins University; William O’Sullivan: New Jersey Department of Environmental Protection

Waste Management, Beneficial Use, and Energy Recovery
Track: WAST/SUST
Room: 302B
6/26/2019, 3:30 PM
Platform - TCC: WAST/SUST
Chair: David Greene, SCS Engineers
Vice Chair: Lee Lundberg, Bedrock Enterprises, Inc.

3:30 PM
Disposal and Reuse of Nonwoven Fabric Material
Paper # 591189
Jane Gilbert, Lynn Muzzey: Maine Department of Environmental Protection

3:50 PM
The Enerkem Story: A State-of-the-Art Clean Technology Developed in Québec
Paper # 578030
Denis Arquin, David McConnell: Enerkem

4:10 PM
A Solution for Multi-Component, Laminated and Dirty Mixed Waste Plastics (Surface-Flash-Cracking)
Paper # 595618
Louis Bertrand: Sweet Gazoil Inc.
How Does It Work? Industries
Track: YPRO/INDU
Room: 204B
6/26/2019, 3:30 PM
Panel - TCC: PIM
Chair: Jen Moore, 3M Company
Vice Chair: Paul Algu, RTP Environmental Associates, Inc.

This panel will provide an overview of different types of industries and the environmental impacts and challenges they face. Each industry representative will provide an overview of the industry and/or process and will explain how their processes work. They will discuss emission sources that are common to their industry and will review what regulatory challenges are unique to their operations. Finally, each representative will give a brief look at the future of their industry and what challenges they see in the future. Industries covered during this session include aluminum smelting, polymers, shipping, and explosive/energetic waste treatment. All presenters will follow the same agenda, allowing attendees to make comparisons across industries. This is a great introductory panel presentation for all attendees but is focused on reaching the student/young professional attendee.

Panelists:
- Alexandre Dubreuil: Alcoa
- Bob Hayes: El Dorado Engineering
- Najat Kamal: PolyOne
- Kim Marcus: ERM
- Pascal Rhéaume: WSP
## TECHNICAL SESSIONS – THURSDAY

### Thursday, June 27 2019

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Track</th>
<th>Session</th>
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<tbody>
<tr>
<td>8:00 am – 10:30 am</td>
<td>Critical Review</td>
<td>MINI/CLIM</td>
<td>panel</td>
<td>202</td>
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<tr>
<td><strong>Thu AM2</strong></td>
<td>Adaption to Climate Change and Litigation Risks</td>
<td>AQCT panel</td>
<td>302B</td>
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<tr>
<td>9:40 am – 11:40 am</td>
<td>Beyond Design: Industry’s Perspective on Selecting the Right VOC Control Technology</td>
<td>AQCT panel</td>
<td>302B</td>
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<tr>
<td>9:40 am – 11:40 am</td>
<td>Elemental, Ionic, and Organic Analysis for Air Measurement Applications</td>
<td>AQMM platform</td>
<td>303A</td>
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<tr>
<td>9:40 am – 11:40 am</td>
<td>Air Dispersion Modeling for Regulatory Requirements</td>
<td>AQMO platform</td>
<td>204B</td>
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<tr>
<td>9:40 am – 11:40 am</td>
<td>Bioaerosols and Transmission of Human and Animal Pathogens</td>
<td>H&amp;EE panel</td>
<td>301B</td>
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<tr>
<td>9:40 am – 11:40 am</td>
<td>Health Effects &amp; Exposure - Part 1</td>
<td>H&amp;EE platform</td>
<td>303A</td>
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<tr>
<td>9:40 am – 11:40 am</td>
<td>Odor Detection, Control and Management - Part 1</td>
<td>H&amp;EE platform</td>
<td>302A</td>
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<tr>
<td>9:40 am – 11:40 am</td>
<td>Nanomaterials and Nanotechnology-based Products: Occupational and Consumer Safety, Management and Regulation</td>
<td>NANO panel</td>
<td>205B</td>
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<tr>
<td>9:40 am – 11:40 am</td>
<td>New Source Review (NSR) Issues and Recent Developments</td>
<td>REGU panel</td>
<td>303B</td>
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<tr>
<td>9:40 am – 11:40 am</td>
<td>Industrial Air Quality Compliance</td>
<td>REGU/INDU platform</td>
<td>301A</td>
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<tr>
<td>9:40 am – 11:40 am</td>
<td>Waste to Energy and International Perspectives</td>
<td>WAST platform</td>
<td>205A</td>
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<tr>
<td>11:50 pm – 1:20 pm</td>
<td>Honors &amp; Awards Luncheon and Ceremony</td>
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<tr>
<td><strong>Thu PM1</strong></td>
<td>Perspectives on EPA Priorities for 2019-2020</td>
<td>MINI/REGU panel</td>
<td>206B</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>Quantifying VOC Emissions from the Marijuana Industry and Modeling Regional Ozone Impacts</td>
<td>AQES panel</td>
<td>301A</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>Personal and Indoor AQ Monitoring</td>
<td>AQMM platform</td>
<td>303A</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>Photochemistry</td>
<td>AQMM platform</td>
<td>205C</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>Innovative AERMOD Applications &amp; Meteorology</td>
<td>AQMO platform</td>
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<td>1:30 pm – 3:10 pm</td>
<td>Carbon Offsets, Prices and Trading</td>
<td>CLIM platform</td>
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<td>1:30 pm – 3:10 pm</td>
<td>Challenges and Opportunities in Delivering Environmental Education</td>
<td>EDUC panel</td>
<td>205A</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>Health Effects &amp; Exposure - Part 2</td>
<td>H&amp;EE platform</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>Odor Detection, Control and Management - Part 2</td>
<td>H&amp;EE platform</td>
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<td>1:30 pm – 3:10 pm</td>
<td>Hot Topics in the Chemicals and Refining Industries</td>
<td>INDU platform</td>
<td>302B</td>
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<tr>
<td>1:30 pm – 3:10 pm</td>
<td>Nanotechnology Research Advances</td>
<td>NANO platform</td>
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<td>1:30 pm – 3:10 pm</td>
<td>BACT Development and Implementation</td>
<td>REGU panel</td>
<td>303B</td>
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<td>3:10 pm – 3:20 pm</td>
<td>Session Break</td>
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<td>3:20 pm – 4:20 pm</td>
<td>2019 Non-ACE Programming Task Force (PRG) Meeting</td>
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<td>3:30 pm – 4:20 pm</td>
<td>Coordinating Committee Meeting (NAN)</td>
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<td>4:30 pm – 5:30 pm</td>
<td>2020 ACE Planning and Technical Council Wrap-Up Meeting</td>
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<td>Air Quality - Control Technology</td>
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<td>Air Quality - Emissions Studies</td>
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<td>Air Quality - Measurements and Monitoring</td>
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<td>Health and Environmental Effects</td>
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<td>INDU</td>
<td>Industry, General Manufacturing and Mining</td>
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<td>MINI</td>
<td>Mini-Symposium: Facing Environmental Challenges</td>
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<td>NANO</td>
<td>Nanoparticles</td>
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<td>Regulatory and Legal</td>
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<td>Transportation</td>
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<td>WAST</td>
<td>Waste Management</td>
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<td>YPRO</td>
<td>Young Professionals</td>
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</table>
Adaptation to Climate Change and Litigation
Track: MINI/CLIM
Room: 202
6/27/2019, 9:40 AM
Panel – TCC: LHC/CCP
Chair: Jean Luc Allard, SNC Lavalin

Climate is changing and is likely to continue to do so at an accelerated rate that will lead to extremes in temperature, sea level, droughts, extreme precipitation, heat waves and wildfires. Current infrastructure criteria design have evolved over the last decades. However, extreme events seem to evolve much more rapidly than design criteria used by engineering firms. This panel will cover several problematic areas related to climate change and specifically: Are engineering firms at risk to be sued for only using the existing infrastructure design codes and guidelines, knowing that historical climatic data are no longer representative of the future climate? The panel will also cover recent climate change litigation cases.

Panelists:
- David Lapp: Engineers Canada
- Selina Lee-Andersen: McCarthy Tetrault
- André Durocher: Fasken Martineau
- Jennifer Hernandez: Holland & Knight LLP
- Michael Gerrard: Columbia Law School

Beyond Design: Industry’s Perspective on Selecting the Right VOC Control Technology
Track: AQCT
Room: 302B
6/27/2019, 9:40 AM
Panel – TCC: AAC
Chair: Jen Moore, 3M Company

While equipment vendors and consultants are knowledgeable about the design and performance capabilities of VOC emission control technology, the industries that use them are responsible for their ongoing maintenance, and operating challenges and costs. This panel will review the basics differences between thermal oxidizers, carbon adsorbers, solvent recovery units, and biofilters. Panelists will follow the same outline for each control technology and will discuss how each control technology works, the capabilities and limitations of each type, the circumstances or conditions when one would use them, and the operation and maintenance requirements for each control technology. Several case studies will also be discussed to illustrate the benefits and challenges associated with each type of VOC control technology. Audience members will leave the presentation having a better understanding of how VOC emission control technologies work, their operational capabilities, operational limitations, and under what circumstances they should be selected.

Panelists:
- Jen Moore: 3M Company
- Bill Norge: 3M Company

Elemental, Ionic, and Organic Analysis for Air Measurement Applications
Track: AQMM
Room: 203
6/27/2019, 9:40 AM
Platform - TCC: AAM
Chair: Rodolfo Sosa Echeverria: Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México, Ciudad de México, México

9:40 AM
Source Apportionment Related to Trace Elements In PM2.5 In Concón, Chile, City Placed Near to an Oil Refinery Plant.
Paper # 592338
Víctor Vidal, Katalina Gonzalez, Selma Cea: Universidad Técnica Federico Santa Maria - Centre for Environmental Technologies (CETAM-UTFSM), Chile; Luis A. Diaz-Robles: Universidad de Santiago de Chile; Eduardo Pinilla: University of Extremadura (UNEX), Spain; Francisco Cereceda-Balic: Dept. of Chemistry and Centre for Environmental Technologies, CETAM-UTFSM, Chile

10:00 AM
Study of Atmospheric Particulate Material By 57Fe Mössbauer and Chemical Mass Balance Measurements
Paper # 601022
José G. da Costa, Jennifer O. Coronel: ArcelorMittal, Brazil; Rogério S. de Queiroz, Tsutomu Morimoto, Morimoto & Queiroz, Air Pollution Consulting Ltd, Brazil; Adriana S. de Albuquerque, Waldemar A. A. Macedo, José D. Ardisson: Centro de Desenvolvimento da Tecnologia Nuclear (CDTN), Brazil; Luis E. Fernandez-Outon: Departamento de Física, Universidade Federal de Minas Gerais, Brazil

10:20 AM
Development of an Inexpensive and Sustainable Trap Method for the Measurement of Atmospheric Halogens
Paper # 601555
Ryan Hall: McGill University; Oleg Nepotchatyk: PO-Laboratories Inc.; Jill Bachelder, Hannah Szeptycki, Parisa Ariya: McGill University

10:40 AM
Chemical Composition of Wet Atmospheric Deposition at the Main Mexican Port Located in the Gulf of Mexico
Paper # 600865
Rodolfo Sosa Echeverria, Ana Luisa Alarcón Jiminez, María del Carmen Torres Barrera, Pablo Sánchez Alvarez, Roberto Morales Yañez, José Hernández Tellez, Humberto Bravo Witt: Centro de Ciencias de la Atmósfera, Universidad Nacional Autónoma de México, Ciudad de México, Mexico; David Gay: University of Wisconsin Madison
TECHNICAL SESSIONS – THURSDAY

Atmospheric Chemistry Measurements
Track: AQMM
Room: 205C
6/27/2019, 9:40 AM
Platform – TCC: APC
Chair: Philip Silva, USDA-ARS Vice Chair: Casey Bray, 3M Company

9:40 AM
An Assessment of Important SPECIATE Profiles in the EPA Emissions Modeling Platform and Current Data Gaps
Paper # 599016

10:00 AM
Black and Organic Carbon Ratio in PM2.5 Using EDGAR Emission Project
Paper # 601489
Ernesto Pino, Luis A. Diaz-Robles, Francisco Cubillos: Universidad de Santiago, Chile; Francisco Cereceda-Balic: Dept. of Chemistry and Centre for Environmental Technologies, Universidad Técnica Federico Santa María, Chile; Samuel Carrasco: Pontificia Universidad Católica de Valparaiso, Chile

10:40 AM
Ammonia, Amine, and Reduced Sulfur Concentrations in and Around Confined Animal Feeding Operations
Paper # 576300
Philip Silva: USDA-ARS

11:00 AM
Sensibility of Modeled Secondary Particulate Formation to Ammonia Background Concentrations
Paper # 602560
Martin Gauthier: RWDI

11:20 AM
MICROECOSYSTEM of Arctic Snow and Frost Flower: The Impact of Pollutants and Bacterial Populations
Paper # 601810
Roya Mortazavi, Said Attiya, Parisa Ariya: McGill University

Air Dispersion Modeling for Regulatory Requirements
Track: AQMO
Room: 204B
6/27/2019, 9:40 AM
Platform – TCC: APM
Chair: Gale Hoffnagle, TRC Environmental Corporation Vice Chair: Dan Dix, Alt4 Inc.

9:40 AM
Modeling Challenges for a Proposed Agricultural Processing Plant: A Case Study
Paper # 601169
Scott Miller: Cornerstone Environmental Group, LLC

10:00 AM
Nitrogen Dioxide Modeling Challenges and Solutions
Paper # 610710
Anna Henolson: Trinity Consultants

10:20 AM
Screening Air Dispersion Modeling Approach: Prop 65 Community Exposure Assessment For Industrial Emitters
Paper # 595253
Jennifer Bare, Rachel Novick, Joshua Maskrey, Ken Unice: Cardno Chemrisk

10:40 AM
Use of SCICHEM to Model an Anhydrous Ammonia Release for Risk Management Program Compliance
Paper # 599144
Travis Hicks: Southern Company

11:00 AM
Use of Thermal Satellite Imagery to Determine Urban Characteristics of Highly Industrial Areas
Paper # 599865
Laura Warren, Robert Paine: AECOM

Bioaerosols and Transmission of Human and Animal Pathogens
Track: H&EE
Room: 301B
6/27/2019, 9:40 AM
Panel – TCC: HEE
Chair: Matthieu Girard, Research and Development Institute for the Agri-Environment (IRDA) Vice Chair: Caroline Duchaine, Université Laval

The transmission of infectious microbes via bioaerosols is of great concern to both human and animal health. Gaps in data and methodological heterogeneity also plague many related studies which hinder our understanding of respiratory pathogen transmission as well as the application of mitigation techniques.

In recent years, new developments have enabled progress in this domain, and one of the major turning points has been the recognition that cross-disciplinary collaborations across spheres of human and animal health, microbiology, biophysics, engineering, aerobiology, infection control, public health, occupational health and industrial hygiene are essential. The Canadian Infectious Bioaerosol Network (CANIBAN) initiative was launched to focus on critical questions about infectious diseases dispersed by bioaerosolization of microorganisms. This collaborative initiative
allows for significant advances in topics such as bioaerosol behavior, dispersion models, risk assessment, risk/exposure effects and mitigation strategies. The purpose of this panel session is two-fold:

1. Introduce CANIBAN to the broader air quality community in North America and to catalyze further collaborations;
2. Exchange technical and scientific knowledge in respective areas of expertise regarding bioaerosols, disease transmission and mitigation.

Panelists:
- Matthieu Girard: Research and Development Institute for the Agri-Environment (IRDA)
- Caroline Duchaine: Université Laval
- Samira Mubareka: Sunnybrook Health Sciences Centre
- Manuela Villion: Québec Ministère de l’Environnement et de la Lutte Contre les Changements Climatiques
- Christian Klopfenstein: Centre de Développement du Porc du Québec (CDPQ)

Health Effects & Exposure – Part 1
Track: H&EE
Room: 301B

6/27/2019, 9:40 AM
Platform – TCC: HEE
Chair: Jim Morrow, J.W. Morrow
Chair: Suresh Santanam, Syracuse University

9:40 AM
Will California’s Community Air Protection Program (AB 617) Achieve Environmental Justice?: A Predictive Analysis
Paper # 601955
Sarah Patterson, Chris Easter: ESA

10:00 AM
Strengthening “One Health” Collaborations In Air Quality Management
Paper # 600572
Helena Chapman: NASA Applied Sciences Program; Sue Estes: NASA/USRA; John Haynes: NASA

10:20 AM
Communities at Risk from Air Toxics - Deeper Analysis of NATA Results and Tool for a Path Forward
Paper # 600376
Phil Norwood, Jill Mozier, Steve Fudge: SC&A Inc.

10:40 AM
Validation Assessment of a Spatiotemporal Exposure Metric Developed for Use in Epidemiological Studies of Populations Living Near Unconventional Oil & Gas Well Pads
Paper # 600841
Christopher Long, Shuo Zhao, Nicole Briggs: Gradient Corporation

11:00 AM
Using Climate Zones, Architectural Knowledge and Low-Cost Indicators to Build Efficient Vapor Intrusion (VI) Sampling Strategies
Paper # 590659
Christopher Lutes, Chase Holton, Elsy Escobar, Shirley Steinmacher, Loren Lund: Jacobs

11:20 AM
Measuring Physical Activity Induced by Transit
Paper # 602110
Judith Mageau-Béland, Catherine Morency: Polytechnique Montréal

Odor Detection, Control and Management – Part 1
Track: H&EE
Room: 302A

6/27/2019, 9:40 AM
Platform – TCC: ODR
Chair: Denis Choinière, Consumaj Inc.
Vice Chair: Ray Porter, ODOTECH, Inc.

9:40 AM
Cannabis Production Air Quality Issues
Paper # 590065
Robert Kemp: Metro Vancouver

10:00 AM
Cannabis Cultivation as Good Neighbors. A Comprehensive Approach to Odor Management in The Nascent Industry
Paper # 592362
Derek Webb, William Mullin: Biorem Technologies Inc.

10:20 AM
Identification of Malodorous Compounds in the Automotive Interior Material
Paper # 601309
Rui Zeng, Arthu Chan: University of Toronto

10:40 AM
Chemical and Odorous Atmospheric Emissions from the Methanisation Process: Impact of Raw Materials and Operating Conditions
Paper # 597180
Stéphane Cariot: IMT Mines Ales, France; Jean-François Desprès; Olentica, France; Sandrine Bayle, Marion Fages: IMT Mines Ales, France; Mathilde Chaignaud: Olentica, France; Axelle Cadiere: Université de Nîmes, France; Jean-Louis Fanlo: IMT Mines Ales, France
Nanomaterials and Nanotechnology-based Products: Occupational and Consumer Safety, Management and Regulation
Track: NANO
Room: 205B
6/27/2019, 9:40 AM
Platform – TCC: NANO
Chair: Yevgen Nazarenko, McGill University

The panelists will make presentations based on their areas of expertise in nanomaterial application, nanosafety, occupational exposure, and regulation. The panel will present and discuss the uses of nanotechnologies and corresponding safety considerations, the latest research in the field of nano exposure science, engineering controls for prevention of exposure to nanomaterials, needs and objectives stemming from the increasing implementation of nanotechnology in research and industrial processes as well as from introduction of nanotechnology-based materials into consumer products. The panelists will discuss currently available sampling, measurement and analytical techniques and risk assessment strategies, and the use of personal protective equipment. We will talk about the current state of the art and prospects of nanoaerosol analysis and measurement as well as instrumental approaches for assessment of inhalation exposure to airborne nanomaterials from nanotech consumer products. Additional discussion will touch upon measurement and experimental approaches to assessment of inhalation exposure to incidental nanoparticles, which may be released from industrial and other processes. The recent nanotechnology regulatory developments will be summarized, including in the U.S. and Canada, the E.U. and other OECD countries.

Panelists:
• Yevgen Nazarenko: McGill University
• Gediminas Mainelis: Rutgers University
• William C. Looney: AECOM
• Candace S-J Tsai: Colorado State University

New Source Review (NSR): Issues and Recent Developments
Track: REGU
Room: 303B
6/27/2019, 9:40 AM
Panel – TCC: REG
Chair: Gurinder Saini, RTP Environmental Associates, Inc.
Vice Chair: Ken Weiss, ERM

Ambient air quality dispersion modeling is used for issuance of prevention of significant deterioration (PSD) permits. However, modeling is also sometimes used in issuance of minor NSR permits as well as, in some situations, nonattainment major NSR permits. U.S. EPA has been working on addressing concerns raised by the regulated community regarding dispersion modeling through additional guidance and rulemaking.

The experts on this panel will discuss the permitting implications of ozone and PM2.5 precursors and other modeling issues. The panel will also outline recent developments in the air dispersion modeling universe, including, what is considered ambient air, latest model developments, etc.

The panelists will outline the difficulties involved in assessing the impacts of precursor emission changes on attainment strategies. This will be discussed from both a national and state level and both technical and legal issues will be identified.

Panelists:
• Raj Rao: U.S. EPA
• Eric Hiser: JHL Lawyers
• David Jordan: ERM
• Colin Campbell: RTP Environmental Associates, Inc.

Industrial Air Quality Compliance
Track: REGU/INDU
Room: 301A
6/27/2019, 9:40 AM
Platform – TCC: REG
Chair: John Metzger, 3M

9:40 AM
Artificial Intelligence: A Crystal Ball Look at Implications for Clean Air Act Compliance
Paper # 600682
David Rockman: Eckert Seamans Cherin & Mellott

10:00 AM
CAMMS - 3M’s Tool For Managing Environmental Compliance
Paper # 602106
Kelsey Klucas: 3M Company

10:20 AM
Reduced Compliance Burden: Croda Inc. Mill Hall, PA “Once In, Always In” (OIAI) Policy Reversal
Paper # 595217
Cara Fox: All4 LLC; Brady Wassom: Croda Inc

10:40 AM
The Power of Citizen Suits Under the Clean Air Act: An Industry Perspective
Paper # 598054
Clara Poffenberger: CPELP LLC

11:00 AM
Government Advocacy, First Amendment Rights and Climate Change Activism: A Look at the Issues in Exxonmobil v Healy (Massachusetts Attorney General)
Paper # 598836
Clara Poffenberger: CPELP LLC
Perspectives on EPA Priorities for 2019-2020

As U.S. EPA works through the third year of the Trump administration, questions persist over the priorities of U.S. EPA and the path it will pursue over the next two years. The Clean Air Act sets forth specific mandates that the agency must continue to address while it evaluates whether to reverse or revise certain actions from the previous administration. Bill Wehrum, Assistant Administrator for Air and Radiation for U.S. EPA will provide comments on U.S. EPA’s priorities as a part of the keynote address for the conference. This panel will provide an opportunity for key interest groups to discuss pending U.S. EPA rulemaking actions and to discuss U.S. EPA’s stated objectives over the coming months. A representative of state/local air agencies, a representative of electric utilities, an industry representative, and a representative of a public interest group will be provided an opportunity to comment on U.S. EPA’s priorities as a part of this panel.

Panelists:
• David Jordan: ERM
• Jack Broadbent: Bay Area Air Quality Management District
• John Kinsman: Edison Electric Institute
• Martha Roberts: Environmental Defense Fund
• Howard Feldman: American Petroleum Institute

Quantifying VOC Emissions from the Marijuana Industry and Modeling Regional Ozone Impacts

The marijuana industry has air quality impacts beyond just nuisance odors. Studies have found that cannabis plants emit gas phase terpenes that are a type of Volatile Organic Compound (VOC). The industry also uses solvents for extracting concentrates that result in VOC emissions. These VOCs chemically react with nitrogen oxides emissions in the presence of sunlight to form ground level ozone. Ozone is an air pollutant that is harmful to human health and negatively impacts the environment. With the rapid continued growth of the marijuana industry, there is now an unknown industrial-scale area-source of VOCs that can impact ozone formation. In this session, you will learn about this new cutting-edge air quality research, sampling and laboratory analytical methods, ozone modeling, and industry best management practices that can reduce air quality impacts from the marijuana industry.
TECHNICAL SESSIONS – THURSDAY

- CDPHE will talk about the air quality impacts of the marijuana industry from both cultivation and extraction along with industry best management practices that can reduce air emissions. CDPHE will discuss the air quality research study they are currently conducting through the Fall of 2019.
- Desert Research Institute will discuss the laboratory methods used to analyze the air quality samples from the CDPHE study and will also discuss previous research that they have done.
- University of North Carolina will discuss their independent air quality study on marijuana cultivation and the use of a regulatory model to predict the regional impacts on ozone in Denver.

Panelists:
- Kaitlin Urso: Colorado Dept of Public Health and Environment
- Andrey Khlystov: Desert Research Institute
- William Vizuete: University of North Carolina
- Chi-tsan Wang: University of North Carolina at Chapel Hill

Personal and Indoor AQ Monitoring
Track: AQMM
Room: 303A
6/27/2019, 1:30 PM
Platform – TCC: AAM
Chair: Antony Chen, UNLV
Vice Chair: Andre Butler, Mercer University

1:30 PM
Mold Inspections Made Thorough with the Assistance of Highly Trained Dogs
Paper # 589399
Anne O’Donnell: HSST Conseils Inc.

1:50 PM
Household Surveys and Low-Cost Measurement of Indoor Air Pollution in the Dominican Republic
Paper # 577504
Andre Butler Ariel Dornisch, Charlotte Dungan, Pace Dillon, Griffin Murphy: Mercer University

2:10 PM
Personal Exposure Monitoring of Airborne Particulate Using a Low-Cost Sensor
Paper # 577487
Andrew Kelley, Andre Butler: Mercer University

Photochemistry
Track: AQMM
Room: 301B
6/27/2019, 1:30 PM
Platform – TCC: APC
Chair: Martin Gauthier, RWDI
Vice Chair: Yevgen Nazarenko, McGill University

1:30 PM
Photochemical Transformations of Vehicle Exhaust Pollutants In Snow
Paper # 602086
Yevgen Nazarenko: McGill University; Pascal Tetrault; Patrice Seers: ETS; Parisa Anya: McGill University

1:50 PM
Photochemical Modelling and Public Health in Peel Region
Paper # 602451
Martin Gauthier: RWDI

2:10 PM
Ambient Volatile Organic Compounds (VOCs) in Two Coastal Cities in Western Canada: Spatiotemporal Variation, Source Apportionment and Health Risk Assessment.
Paper # 601298
Ying Xiong, Ke Du, Zhenyu Xing: University of Calgary

2:30 PM
Meteorological Detrending of Ozone at Three Sites in the Dallas-Fort Worth Area: Application of KZ Filter and Multiple Linear Regression Analysis
Paper # 601995
Poojan Upadhaya: City of Houston; Venkata Botlaguduru, Raghava Kommalapati, Hongbo Du: Prairie View A&M University

2:50 PM
Characterization of VOC Composition, Sources, and Air Quality Impacts in Protected Areas of the Southwestern United States
Paper # 633981
Marwa El-Sayed, Katherine Benedict, Arsineh Hecobian, Yong Zhou: Colorado State University; Anthony Prenni; Kristie Gebhart, Barkley Sive, Bret Schichtel: National Park Service; Jeffrey Collett, Jr.: Colorado State University

Innovative AERMOD Applications & Meteorology
Track: AQMO
Room: 204B
6/27/2019, 1:30 PM
Platform – TCC: APM
Chair: David Long, American Electric Power
Vice Chair: Travis Hicks: Southern Company

1:30 PM
A Case Study Analyzing Updates to the AERSURFACE Tool
Paper # 600798
Michael Hammer, Cristiane Thé, Jesse Thé: Lakes Environmental Software
1:50 PM
Assessing MIFF Meteorological Data Used for AERMOD Modeling in Central Canada.
Paper # 601136
Dennis Fudge: Saskatchewan Ministry of Environment

2:10 PM
The Science Behind the Art of Forecasting Morning Temperature Inversions
Paper # 571601
Anthony Sadar: Allegheny County Health Department

2:30 PM
AERMOD Modeling Using the Interactive Modeling Approach
Paper # 597881
Boris Weisman: Corporate EMC Limited

2:50 PM
Hybrid Modeling Approaches Applied to AERMOD Modeling Analyses
Paper # 601883
Jeffrey Harrington, Elizabeth Hendrick, Sara Woolsey, Daryl Longwel: Tetra Tech Inc.

3:10 PM
Prime2 Building Downwash Enhancements
Paper # 616634
Sergio Guerra: GHD; Ron Petersen: Petersen Research and Consulting, LLC

3:30 PM
Carbon Offsets, Prices and Trading
Track: CLIM
Room: 202
6/27/2019, 1:30 PM
Platform – TCC: Various
Chair: Christina Akly, NextEra Energy Resources, LLC
Vice Chair: Cassandra Drotman, SCS Engineers

1:30 PM
Additionality in Large-Scale U.S. Based Projects – A Success Story
Paper # 607241
Jack Wallace, Brent Boss: Dillon Consulting Limited

1:50 PM
Approaches for Setting Up a Carbon Trading Scheme in Egypt
Paper # 591303
Mounir Wahba Labib: National Academy of Science, Egypt; Yasser Saad Mohamed: Climate and Environment Protection Foundation, Egypt; Alan Gertler: Desert Research Institute

2:10 PM
An Overview of The CARB Offset Program and Offset Protocols
Paper # 590018
Cassandra Drotman, Raymond Huff, Patrick Sullivan: SCS Engineers

2:30 PM
Comparison of Canadian Carbon Pricing Programs and the Impacts on Commuter Costs
Paper # 595392
Deanne Durward, Rakesh Singh: Ramboll

2:50 PM
Québec’s Cap-and-Trade System
Paper # 627600
Onil Bergeron: Québec Ministère de l’Environnement et de la Lutte Contre les Changements Climatiques

Challenges and Opportunities in Delivering Environmental Education
Track: EDUC
Room: 205A
6/27/2019, 1:30 PM
Panel – TCC: Various
Chair: Zaher Hashisho, University of Alberta
Vice Chair: Ashok Kumar, The University of Toledo

Environmental engineering and science is a relatively new and continuously evolving discipline. The wide range of environmental issues witnessed over the past few decades shaped environmental engineering and science into an interdisciplinary field. At the graduate level, students from different educational backgrounds are enrolled in environmental engineering and science programs.

Rapid development in technology (e.g. internet, smart devices, computational power) provide environmental educators opportunities in effective communication and teaching; however, it can also present challenges to navigate rapidly evolving social and technological landscape. Environmental educators now deal, in classrooms, with millennials known for their passion for technology, social networking, collaboration, and innovation. This panel session will cover a variety of topics related to challenges in delivering environmental education including evaluation of student learning outcomes, engaging students, and environmental curricula. Case histories will be discussed to explain the current and future efforts in these areas.

Panelists:
• Zaher Hashisho: University of Alberta
• Ashok Kumar: The University of Toledo
• Melanie Sattler: University of Texas at Arlington
• Kip Carrico: New Mexico Institute of Mining and Technology
TECHNICAL SESSIONS – THURSDAY

Health Effects & Exposure – Part 2
Track: H&EE
Room: 303A
6/27/2019, 1:30 PM
Platform - TCC: HEE
Chair: Jim Morrow, J.W. Morrow
Vice Chair: Matthieu Girard, Research and Development Institute for the Agri-Environment

1:30 PM
Efficiency of a Percolating Biofilter to Reduce Swine Building Bioaerosol Emissions
Paper # 595268
Jonathan Vyskocil: Université Laval; Valérie Létourneau: Centre de Recherche de l’Institut Universitaire de Cardiologie et de Pneumologie de Québec - Université Laval; Matthieu Girard, Ariane Lévesque: Research and Development Institute for the Agri-Environment; Caroline Duchaine: Université Laval

1:50 PM
Composting Recycled Manure Solid: Impact on Bioaerosols In Dairy Farms
Paper # 592556
Karine Duquette-Lozeau: CRIUCPQ-UI; Joanie Lemieux: Université Laval; Valérie Létourneau: Centre De Recherche de l’Institut Universitaire de Cardiologie et de Pneumologie de Québec - Université Laval; Matthieu Girard, Stéphane Godbout: Research and Development Institute for the Agri-Environment; Caroline Duchaine: Université Laval

2:10 PM
Genotoxicity Evaluation of Vehicular Emissions from Diesel and Biodiesel of Different Feedstocks Using Tradescantia as a Biomonitor, HAPs and Carbonyls Characterization
Paper # 600389
Ximena Fadic-Ruiz, Fabian Placencia; Karen Yanez: Universidad Técnica Federico Santa María, Chile; Francisco Cereceda-Balic: Dept. of Chemistry and Centre for Environmental Technologies, Universidad Técnica Federico Santa María, Chile; Magín Lapuerta: Universidad de Castilla-La Mancha, Spain

2:30 PM
Do Indoor Bacteria Represent the Indoor Microbial Characteristic as a ‘Biofingerprint’?
Paper # 601547
Dahae Seong, Shamia Hoque: University of South Carolina

Odor Detection, Control and Management – Part 2
Track: H&EE
Room: 302A
6/27/2019, 1:30 PM
Platform – TCC: ODR
Chair: Ray Porter, ODOTECH, Inc.
Vice Chair: Denis Choinière, Consumaj Inc.
1:30 PM
Better Identify the Molecules Responsible for the Odour in Order to Better Control it – Methodological Aspects
Paper # 598835
Jean-Louis Fanlo, Mathilde Chaingaud, Jean-François Desprès: Olentica; Christophe Renner: Veolia

1:50 PM
The Frailty of Odour Units as a Compliance Measure
Paper # 615858
Angela Wanger, Christopher Scullion: Trinity Consultants

2:10 PM
Odor Nuisance Evaluation in Ambient Air, A New Approach More and More Adopted
Paper # 595359
Elisabeth Lord: Biothermica Technologies Inc.

Hot Topics in the Chemicals and Refining Industries
Track: INDU
Room: 302B
6/27/2019, 1:30 PM
Platform - TCC: PIM
Chair: Karen Brignac, PPM Consultants, Inc.
Vice Chair: Jordan Haywood, Siemens Energy, Inc.

1:30 PM
Fired Heater Control to Reduce NOx
Paper # 605728
Charles Baukal, Wes Bussman: John Zink Hamworthy Combustion

1:50 PM
Light Non-Aqueous Phase Liquid (LNAPL) Site Closure Using Non-Traditional Field Data and Analysis
Paper # 601837
Harrison Roakes Lilly Corenthal, Anne Sheehan, Stephen Zemba: Sanborn, Head & Associates, LLC

2:10 PM
Protecting Confidential Information in The Americas: Differences In Government Collection Authority, Public Access to Information, and Available Privileges
Paper # 598863
Clara Poffenberger: CPELP LLC
TECHNICAL SESSIONS – THURSDAY

2:30 PM
Long-Term Gaseous Air Toxics Measurements at a Petroleum Refinery Fenceline
Paper # 633129
Li Du, Jay Turner: Washington University in St. Louis

2:50 PM
Emissions and Near-Field Dispersion of Air Toxics from Oil and Gas Drilling, Completions, and Production in Colorado: Acute vs. Chronic Exposure Potential
Paper # 633968
Jeffrey Collett, Arsineh Hecobian: Colorado State University; Andrea Clements: U.S. EPA; Kira Shonkwiler: Colorado Department of Public Health and the Environment; Yong Zhou, Landan MacDonald, Brad Wells, Jay Ham, Jeffrey Pierce: Colorado State University; Noel Hilliard; Yury Desyaterik: University of North Carolina; Derek Weber: Lovelace Biomedical

Nanotechnology Research Advances
Track: NANO
Room: 205B
6/27/2019, 1:30 PM
Platform - TCC: NAN
Chair: Yevgen Nazarenko, McGill University
Vice Chair: Tom Morahan, mgroup

1:30 PM
Effects of Carbonization Temperatures of Activated Electrospun Carbon Nanofibers for Carbon Dioxide Adsorption
Paper # 590620
Yu-Chun Chiang, Cheng-Yu Yeh, Chih-Hsien Weng: Department of Mechanical Engineering, Yuan Ze University

1:50 PM
Kaolin-Ironoxide-Hg2Cl2 Nanocomposites for Ice Nucleation and Environmental Remediation
Paper # 598058
Mainak Ganguly, Parisa Ariya: McGill University

2:10 PM
Using Chitosan-TiO2 Composites to Recycle Copper Ions from Water for Antimicrobial Application
Paper # 598755
Chien Su, Kuo-Pin Yu: National Yang-Ming University

2:30 PM
Application of Nano-Silver/Chitosan Composite Sterilization Material for the Removal of Virus Bioaerosols by Using a Modified Virus Sampler
Paper # 601266
Ming-Hsuan Tsai, Kuo-Pin Yu, Yi-Jen Wang, Wan-Tien Shen, Chun-Hsuan Bai, Chien Sue: National Yang-Ming University, Taiwan

BACT Development and Implementation
Track: REGU/AQMO
Room: 303B
6/27/2019, 1:30 PM
Panel – TCC: REG
Chair: Gurinder Saini, RTP Environmental Associates, Inc.
Vice Chair: Colin Campbell, RTP Environmental Associates, Inc.
Best available control technology (BACT) remains a significant component of a PSD permit. Over the years, U.S. EPA and State agencies have issued several BACT determinations for both non-greenhouse gas (GHG) pollutants and GHGs. The panelists will provide an overview of the latest BACT developments and highlight recent BACT determinations issued by the U.S. EPA and State agencies. BACT review typically involves input by the applicant and comments from citizens, U.S. EPA, and other stakeholders. They are also part of significant legal challenges. Recently environmental organization have taken significant interest in BACT determinations for greenhouse gases and other pollutants for various projects. These appeals have been addressed through both the U.S. EPA’s administrative review process as well as the courts. The panelists will address significant BACT determinations, comments, and legal challenges. In addition, the panelists will outline the Part 70 objection procedure and how that process has been used to raise concerns about historical BACT determinations

Panelists:
- Colin Campbell: RTP Environmental Associates, Inc.
- Douglas McWilliams: Squire Patton Boggs
- Daniel Dix: All4
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Today’s air quality programs are often challenged by technical and compliance issues, insufficient staffing, and budget constraints. We know that you need dependable and qualified air quality partners to overcome these hurdles. From the start to finish, you can rely on us to deliver air quality strategies that meet your specific needs and make good business sense.

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For more information, please contact our EHS and Air Quality practice leaders: Karen Arnold (karen.Arnold@arcadis.com) and Linda Kemp (linda.kemp@arcadis.com)
SAVE THE DATES

The Air & Waste Management Association (A&WMA) proudly invites you to San Francisco, CA, June 29 – July 2, 2020 for its 113th Annual Conference and Exhibition (ACE) with the theme “Gateway to Innovation”.

Technical and political challenges often require innovative solutions. California is a global leader in environmental and energy technology and policy, making San Francisco the ideal place for scientists and practitioners from around the world to share ideas and develop solutions for current and future environmental issues.

San Francisco has a history of innovation. In the decades following the 1849 Gold Rush, San Francisco grew rapidly, hosted a world’s fair, became a major military and shipbuilding center during World War II, and was the birthplace of the United Nations. The region became an important commercial and cultural center, as well as headquarters for many major corporations. The advent of the Digital Age in the 1980s sparked a new wave of innovation and rapid growth in semiconductor and computer manufacturing, software and internet services, and social media companies, all of which still thrive in the region today.

It is against this backdrop of innovation that environmental initiatives take place in the Bay Area throughout major industry, the private sector, government, and world-class universities. This environmental leadership will be the foundation of ACE 2020, embracing innovation and forward-looking vision to address the challenges posed by climate change, sustainability, and mitigation of environmental impacts while accommodating growth.

The return of the ACE to the City by the Bay after 36 years is an ideal opportunity for environmental professionals to learn the latest information and solutions to help advance our common goal of making the planet a better place for future generations.

Make your plans to be a part of the culmination of environmental innovation.

In Québec, clean energy, innovation and the green economy are part of our nature

Québec is an innovative society
- A cleantech cluster
- A centre of excellence in ground transportation
- A world hub in artificial intelligence

Québec has efficient green industrial sectors
- Electric transport
  - 5,000 jobs
  - More than 100 organizations, including 60 businesses and 30 research institutions

The environment and clean technologies
- 30,000 jobs
- $10.7 billion in revenues
- More than 1,000 organizations, including 500 businesses and 200 R&D organizations

Renewable electricity
- 24,000 direct jobs
- $4.6 billion in revenues

Québec is a source of clean, renewable energy
- One of the largest producers of hydroelectricity in the world
- 99% of its electricity is clean, renewable and affordable
- Abundant energy to meet our electrification needs

World leader in the fight against climate change, Québec is fertile ground for low-carbon solutions.
Odor and Air Toxics Forecasting

Benefits:

- Single or multiple sources
- Forecasts up to 48 hours ahead
- Conducts source apportionment
- Extensive dashboards and reports
- Protects facilities from expensive tort litigation
- In operation on many sites for the past 15 years without failures
- Employs advance models such as CALPUFF, SCIPUFF/SCICHEM, and AUSTAL

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