



## UCI-COEH Symposium Program

University of California, Irvine Research Park Conference Center

5301 California Ave., Suite 120, Irvine, CA 92617

Welcome to the UCI-COEH symposium on occupational and environmental health threats. This 1 and ½ day symposium will be a chance to learn from leading experts about health and environmental hazards associated with transportation! Please see attached for the program and information on our speakers and other relevant information. We hope you enjoy this symposium and gain valuable information that you can take back with you.

# Thursday June 16, 2022

Welcome by Chairs and COEH Director 9-9:10 am

## **“Environmental Justice Challenges of Sustainable Development in High-Traffic Corridors”**

9:10 am – 9:40 am

*Doug Houston PhD, Associate Professor of Urban Planning and Public Policy*

### Learning Objectives:

- Describe potential benefits and environmental impacts for development along transit corridors
- Evaluate the air pollution exposures in transportation microenvironment
- Examine the use of parks to mitigate impacts in high-traffic corridors

## **Keynote Speaker:**

### **“Assessing the impact of cannabis use on driving performance: challenges and recent developments”**

9:40 am – 10:20 am

*Michael J. Kosnett, MD, MPH, FACMT, Associate Clinical Professor, Division of Clinical Pharmacology and Toxicology, Department of Medicine, University of Colorado School of Medicine, and Department of Environmental and Occupational Health, Colorado School of Public Health*

### Learning Objectives:

- Explain how an individual's cannabis use history may influence the extent to which recent use effects driving and workplace performance
- Recognize the limitations of routine drug screening for identification of recent cannabis use in post-crash settings
- Discuss the potential value of blood cannabinoid profiles and new performance measures in identifying recent cannabis use and impairment

**Break 10:20 – 10:35 am**

## **“Psychosocial Work Hazards and CVD risk in Urban Bus Drivers: The LACMTA study”**

10:35 am -11:05 am

*Marnie Dobson, Ph.D., Assistant Adjunct Professor, Center for Occupational and Environmental Health, University of California, Irvine; Director, Healthy Work Campaign, Center for Social Epidemiology, Los Angeles, CA*

*Peter Schnall, M.D, M.P.H, Clinical Professor Emeritus of Medicine, Division of Occupational and Environmental Medicine, UC Irvine*

### Learning Objectives:

- Identify specific occupational hazards facing urban bus drivers related to psychosocial stressors (sources of workplace stress).
- Describe the research relating transit workers risks for cardiovascular disease and the connections to the psychosocial work environment.
- Discuss about some effective work organization interventions that have improved the work environment, health and safety of bus drivers.

## **“Testimonies on Occupational Safety & Health Challenges of Gig Economy Drivers in Southern California”**

11:05 am – 11:45 am

*Eddie Sanchez, co-director of the Southern California Coalition of Occupational Safety & Health (SoCalCOSH)*

*Panelist:*

*Jesus Garcia, Research and Policy Analyst*

*Reyna Hernandez, Worker Leader in the gig economy organizing*

### Learning Objectives:

- Realize firsthand accounts from gig economy workers on the occupational safety & health hazards they face and their efforts to make improvements
- Review perspectives from worker representatives and advocates regarding local and state policy and advocacy efforts to combat unsafe working conditions for gig economy workers
- Analyze the ways in which the changing economy, technology, pre-existing hazards, and COVID-19 intersect to put workers at further risk for occupational injuries, illness, and fatalities.

**Lunch 11:45 am – 12:20 pm**

**Keynote Speaker:**

**“Aerospace Medicine and Airline Passenger Health”**

12:20 pm – 1:00 pm

*Robert Orford MD, CM, MS, MPH, FACOEM, FAsMA, FACP, FRCP, FRS*

Learning Objectives:

- Summarize the physical and physiological effects of changes in cabin air pressure with increasing altitude
- Recognize common symptoms of hypoxia among pilots and aircrew
- Describe physiological changes associated with acceleration and disorientation during flight
- Arrange oxygen supply for airline passengers with cardiorespiratory conditions
- Explain the contents of the airline Emergency Medical Kit

**“Reproductive Hazards of Space Travel”**

1:00 pm – 1:30 pm

*Ulrike Luderer, MD, PhD, MPH, Professor, DEOH, Director, Center for Occupational and Environmental Health (COEH)*

Learning Objectives:

- Recognize the hazards of space travel to the male and female reproductive systems and the implications these have to general health.
- Distinguish mechanisms for differential susceptibility of the ovaries and the testes to space radiation exposure.
- Identify differences between radiation exposures in deep space and radiation exposures that occur on Earth or in low Earth orbit.

**Break 1:30 – 1:45 pm**

## **"Fuel cell research center" with Q&A**

1:45 pm – 2:15 pm

*Jack Brouwer, PhD., Professor: Mechanical and Aerospace Engineering, Civil and Environmental Engineering, Chemical and Biomolecular Engineering, UC Irvine; Director: National Fuel Cell Research Center, Advanced Power, and Energy Program*

### Learning Objectives:

- Identify the features of hydrogen and related fuel cell and electrolysis technologies that make them useful and important for introducing high levels of renewable sun and wind power into utility grid networks.
- Determine whether transportation applications of various types in light-duty, medium-duty, and heavy-duty sectors can be made to be 100% zero emissions without hydrogen and fuel cell technology.
- Describe difficult to electrify applications and the potential for electrochemical conversion and hydrogen technologies to decarbonize and depollute these applications.
- Explain the fundamental differences between traditional combustion-based fossil fuel conversion systems and renewable electrochemical conversion systems that result in a very different future energy economy.

## **“Contribution of Non-Tailpipe Vehicle Emissions to Air Pollution and Health”**

2:15 pm -2:45 pm

*Michael Kleinman, PhD, Professor, Occupational and Environmental Medicine, School of Medicine, University of California, Irvine, Co-Director of the Air Pollution Health Effects Laboratory*

### Learning Objectives:

- Describe the constituents of non-tailpipe emission particles.
- Discuss relative contribution to motor vehicle emissions.
- Explain some potential health effects of exposure.

## **Panel with Drs. Kosnett, Orford, Luderer, Kleinman, Dobson, Schnall Q&A**

2:45 pm – 3:30 pm

# Friday June 17, 2021

Chair/Director remarks 9:00 am - 9:10 am

## "Air Quality and Mobile Source Emissions in Southern California"

9:10 am – 9:40 am

*Aaron Katzenstein, PhD, Deputy Executive Officer, Technology Advancement Office, South Coast AQMD*

### Learning Objectives:

- Describe air pollution in Southern California
- Recognize new technologies, policies, and regulations to help with air pollutions and GHG sources
- List sources of air toxics in Southern California

## "Modeling the fate and transport of exhaled droplets in supermarkets and passenger cars - implications for SARS-CoV-2"

9:40 am - 10:10 am

*Sanika Nishandar, 4th year PhD candidate in the mechanical engineering department at UC Riverside*

### Learning Objectives:

- Realize viral RNA is not evenly spread across the exhaled droplet distribution as a result of differences in droplet formation mechanisms
- Describe how exhaled droplets evaporate quickly leaving residual droplet nuclei
- Explain that the fate of exhaled droplets combined with viral RNA distributions helps to explain the apparent importance of inhalation exposures in SARS-CoV-2 transmission, and the lower transmissibility for surface contact observed in the pandemic

**Break 10:10 am – 10:20 am**

**“Crude oil spills: exposures and health impacts to clean up workers and impacted communities: state of science 2022”**

10:20 am – 11:00 am

*M. Joseph Fedoruk, MD, CIH, DABT, FACMT, COEH Occupational and Environmental Medicine Clinic Medical Director*

Learning Objectives:

- Describe the composition of crude oil, and the resultant chemical exposures that can occur as a result of accidental releases to clean up workers, response volunteers and general communities impacted by the spill.
- Outline key findings from major scientific studies that have assessed crude oil related health impacts in cleanup workers, volunteers, and surrounding communities. Describe potential areas for future research.
- Describe approaches for conducting medical evaluations to assess possible health effects from accidental releases of crude oil including biomonitoring.

**Community:**

**“Active Transportation”**

11:00 am – 11:30 am

*Kristopher Fortin, Project Director, Santa Ana Active Streets*

*Peter Garcia, Policy Advocate, Santa Ana Active Streets*

Learning Objectives:

- Describe relevant transportation background and policies that have shaped the areas roads
- Explain inequities created by current policies, specifically around traffic violence and displacement/dispossession
- Discuss long term problems of current transportation policies

**Panel with Ms. Nishandar, Dr. Fedoruk, Mr. Fortin and Mr. Garcia for Q&A**

11:30 am – 12:15pm

**Closing remarks** 12:15 pm

\*Subject to change

UCI-COEH Annual Symposia are planned and implemented through a joint providership with the Southern California Education and Research Center (SCERC). This 1 ½ day symposium will provide the following 6 continuing education credits for occupational health professionals through the Southern California Education and Research Center: ABIH, BCSP, BRN, CME, REHS. Please see registration desk to claim CE credits.

## **Speakers:**

### **Doug Houston, PhD**

Dr. Houston is an Associate Professor in the Urban Planning and Public Policy Department, UC Irvine. His research investigates how urban development patterns intersect with neighborhood livability and environmental quality. These themes are evident in three overarching and interrelated areas of my empirical work: environmental disparities and injustice, time-activity and air pollution exposure monitoring in low SES communities of color, and knowledge and perceptions of environmental hazards. His scholarship contributes to several literatures – transportation and environmental planning, environmental health science, public health, and geography – and expands each by helping explain how places and policies influence people, behavior, and community health.

His work has received support from the California Air Resources Board, the California Department of Transportation, the California Endowment, the University of California Transportation Center, and the University of California Multi-Campus Research Program. A large portion of his research focuses on examining environmental and social justice concerns for low-socioeconomic status (SES) communities of color in southern California.

### **Michael J. Kosnett, MD, MPH, FACMT**

Dr. Kosnett is an Associate Clinical Professor in the Division of Clinical Pharmacology and Toxicology at the University of Colorado School of Medicine, an Associate Adjunct Professor in the Department of Environmental and Occupational Health at the Colorado School of Public Health, and an Attending Physician at Rocky Mountain Poison and Drug Safety. He is board certified in internal medicine, occupational medicine, and medical toxicology. Dr. Kosnett has held numerous leadership positions and national appointments as a medical toxicologist, including service as President of the American College of Medical Toxicology (ACMT), member of the Committee on Toxicology of the National Academies of Sciences, Engineering and Medicine (NASEM) and member of the NIOSH Board of Scientific Counselors. In 2016, he was recipient of ACMT's career achievement award.



Dr. Kosnett has been extensively engaged in research and public health issues related to cannabis. He worked with stakeholders in Colorado to design and implement the first regulations nationwide requiring that cannabis products be sold in child-resistant packaging. He has served on Colorado work groups on the dosage equivalency of cannabis products and their packaging and labeling requirements, and he has been a technical consultant to the state regarding the pharmacology of cannabinoids. In April 2017, Dr. Kosnett began work as Co-Principal Investigator on a three-year Colorado funded research project using a driving simulator entitled “Comparative Assessment of Driving Impairment in Occasional versus Heavy Marijuana Users.” Dr. Kosnett is currently a Co-Investigator on a five-year R01 grant from the National Institute on Drug Abuse to a team at the Colorado School of Public Health that continues its multi-faceted investigation of the impact of cannabis use on driving and workplace performance.

## **Marnie Dobson, PhD**

Dr. Marnie Dobson is an Adjunct Assistant Professor at the University of California, Irvine, Center for Occupational and Environmental Health and the Associate Director of the Center for Social Epidemiology, a non-profit organization. She received her Ph.D. in medical sociology and for the past 15 years has specialized in occupational health and work stress research with various working populations. Currently, she is the Director of the Healthy Work Campaign, a public health campaign, sponsored by the Center for Social Epidemiology, focused on raising awareness in the U.S. about the health impacts of work stress. She has collaborated with other researchers in the development of the Healthy Work Survey and other intervention tools to guide organizations in preventing occupational diseases caused by stress and addressing work organization change.

## **Peter Schnall, MD, MPH**

Dr. Peter Schnall is the Co-Director of the Healthy Work Campaign, as well as the Founder and Director of the Center for Social Epidemiology. An epidemiologist, Peter has studied the impact of working conditions on the development of hypertension among workers for over 30 years, as well promoting increasing awareness among students, colleagues and the public of the important role psychosocial work stressors play in the development of chronic mental and physical illnesses.

Dr. Schnall leads the academic interdisciplinary research team that includes himself, Drs. BongKyoo Choi, Marnie Dobson, Viviola Gomez-Ortiz, Arturo Juárez-García, Paul Landsbergis and Ellen Rosskam. His role as Co-Director of the Healthy Work Campaign includes supervising the HWC in collaboration with the HWC team, developing contacts and relationships with potential HWC partners, and as a writer of web pages, blogs, and other materials to promote the Campaign.

## **Eddie Sanchez**

Eddie Sanchez is the co-director of the Southern California Coalition for Occupational Safety and Health (SoCalCOSH). SoCalCOSH advocates for safe, healthy, and secure jobs for all workers, and aims to disrupt the root causes of work-related injuries, illnesses, and fatalities. SoCalCOSH builds worker power through coalition-building, direct action, and education & leadership development. The organization is founded on the principle that workplace injuries, illnesses, and deaths are preventable. Eddie has supported statewide and local efforts to improve worker health and safety from coordinating the California Covid Worker Outreach Project as a regional lead to supporting local picket lines in Southern California.

## **Robert Orford MD, CM, MS, MPH, FACOEM, FAsMA, FACP, FRCP, FRS**

Dr. Orford is a recognized national and international expert in preventive, occupational and aerospace medicine, having developed medical guidelines for airline travel and for healthcare worker health. He served as Deputy Minister responsible for public health and occupational health in Alberta, Canada, followed by a medical career at Mayo Clinic in Rochester, MN, Mayo Clinic Healthcare in London, UK, and at Mayo Clinic Arizona as Chair of the Division of Preventive and Occupational Medicine and Director of the Executive Health Program. He was a pioneer in the use of computer technology in public health, clinical medicine, and telehealth. He served as Medical Consultant and Joint Medical Director for Northwest Airlines and has been a Senior Aviation Medical Examiner for the Federal Aviation Administration and for Civil Aviation Medicine in Canada. He has been President of the International Airline Medical Association, the Arizona Medical Association, and the American College of Occupational and Environmental Medicine. He is Vice President for International Services with the Aerospace Medical Association and incoming Chair of the Scientific Committee for the International Academy of Aviation and Space Medicine. He is a Fellow of the American College of Physicians, the Royal College of Physicians of Canada, the Aerospace Medical Association, the American College of Occupational and Environmental Medicine, the American College of Preventive Medicine, and the Royal Society of Medicine.

## **Ulrike Luderer, MD, PhD, MPH**

Dr. Ulrike Luderer is Professor of Environmental and Occupational Health in the Program in Public Health and Director of the Center for Occupational and Environmental Health at the University of California Irvine. She also holds joint appointments in the Department of Developmental and Cell Biology and the Department of Medicine at UC Irvine. She received a Sc.B. in Biomedical Engineering and A.B. in French from Brown University, Ph.D. in Reproductive Endocrinology and M.D. from Northwestern University, and M.P.H. from the University of Washington, and is board-certified in Occupational and Environmental Medicine. Dr. Luderer's research focuses on the mechanisms by which toxicants and ionizing radiation disrupt ovarian function, accelerate ovarian aging, and cause ovarian cancer in adults and in subsequent generations following exposure during development. Dr. Luderer currently serves on the Scientific Guidance Panel of the California Environmental Contaminant Biomonitoring Program and the California Developmental and Reproductive Toxicant Identification Committee. She previously served as a member of the USEPA Science Advisory Board Environmental Health Committee. She also served on expert panels for the NTP/NIEHS Center for the Evaluation of Risks to Human Reproduction and the National Academy of Sciences and as a member of the NIH Integrative and Clinical Endocrinology and Reproduction Scientific Review Group.

## **Jack Brouwer, PhD**

Prof. Brouwer is an energy system dynamics expert with research interests in renewable energy systems; dynamic simulation and control; energy system thermodynamics, design, and integration; electrochemical conversion devices and systems such as fuel cells, electrolyzers and batteries; hydrogen production, storage and conversion systems; hydrogen transmission, distribution, and dispensing; and electrochemical reactions with concurrent heat, mass and momentum transfer. Prof. Brouwer obtained his M.S. and B.S. in Mechanical Engineering from UCI and his Ph.D. in Mechanical Engineering at MIT.

## **Michael Kleinman, PhD**

Dr. Michael T. Kleinman is an Inhalation Toxicologist, a Professor of Occupational and Environmental Medicine in the Department of Medicine and the Co-Director of the Air Pollution Health Effects Laboratory at the University of California, Irvine (UCI). He was previously an environmental scientist with the U.S. Atomic Energy Commission (AEC) and he later directed the Aerosol Exposure and Analytical Laboratory at Rancho Los Amigos Hospital in Downey, CA. His primary research interest is the study of health effects caused by exposures to inhaled environmental contaminants. He holds a M.S. in Chemistry (Biochemistry) from the Polytechnic Institute of Brooklyn and a Ph.D. in Environmental Health Sciences from New York University. He has published more than 100 articles in peer-reviewed journals dealing with environmental contaminants and their effects on cardiopulmonary and immunological systems and on global and regional distribution of environmental contaminants including heavy metals and radioactive contaminants from nuclear weapons testing and manufacture. He served on two National Research Council committees that examined issues in protecting deployed U.S. Forces from the effects of chemical and biological weapons. Dr. Kleinman was a member of the U.S. EPA Clean Air Scientific Advisory Committee (CASAC) panels, is a member of the USEPA Board of Scientific Counselors and on the California Scientific Review Panel on Toxic Substances. His current research focuses on health effects of inhaled particles and vapors from natural and manmade sources. His recent studies demonstrate that inhalation of combustion-generated particles can promote airway allergies, induce inflammatory responses in the brain, accelerate the development of cardiovascular disease and that these effects may be associated with organic and elemental carbon components of combustion-related ambient aerosols.

**Aaron Katzenstein, PhD** Aaron Katzenstein is the Deputy Executive Officer of the Technology Advancement Office at the South Coast Air Quality Management District (South Coast AQMD). South Coast AQMD is the local air pollution regulatory agency for Southern California. In his role he is responsible for overseeing several mobile source emission reduction incentive programs and technology demonstrations. Aaron has been at South Coast AQMD for close to twenty years where he has held several roles working in the laboratory, as the climate and energy supervisor, and management positions within Planning and Science & Technology Advancement. He has been heavily involved in numerous Multiple Air Toxics Exposure Studies, Air Quality Management Plans, policy development, research projects, air quality studies, and technology/infrastructure projects. Aaron holds a doctorate in chemistry from the University of California Irvine where he and degrees in chemistry and physics from the University of Redlands.

## **Sanika Nishandar**

Sanika Nishandar is a 4th year PhD candidate in the mechanical engineering department at UC Riverside under Professor Marko Princevac. Her research explores fluid flows at the environmental scale which include phenomenon such as ignition and spread of wildfires as well as air pollution and control. Her dissertation titled “Environmental applications of fluid dynamics” involves developing computational and experimental fluid dynamics models to understand the compound flows such as propagation of wildfires

and spread of emissions in indoor as well as outdoor environments. She also studies the Her research is aimed at influencing the existing firefighting strategies as well as environmental policies in an effort to reduce the adverse health impact of emissions in the immediate neighborhoods. She holds a Master of Science degree in Mechanical Engineering and also a graduate certificate in Science to Policy (UC Riverside).

## **M. Joseph Fedoruk, MD, CIH, DABT, FACMT**

Dr. Fedoruk is a Clinical Professor of Health Sciences and Medical Director at the UCI Center for Occupational and Environmental Health Clinic Dr. Fedoruk holds subspecialty board certification in Medical Toxicology and primary board certification in Occupational Medicine from the American Board of Preventive Medicine. He is also a Diplomate of the American Board of Toxicology (DABT) and is also certified by the American Board of Industrial Hygiene. Dr. Fedoruk is also a Principal at Exponent a multi-disciplinary engineering and scientific consulting firm

## **Kristopher Fortin**

Kristopher Fortin is a multicounty journalist and active transportation advocate who has been working in urban planning and transportation for the past 10 years. Fortin has worked on the outside as a reporter trying to hold decisionmakers to account and highlighting work by some of the best people trying to bring justice to communities and the built environment. He's also worked on the inside with groups like People for Mobility Justice as an education and outreach specialist, and more recently Santa Ana Active Streets as its project director.

Fortin currently leads fundraising and development of SAAS activities, advocacy strategies, and management of long-term strategy development. Fortin has assisted in developing outreach strategies and carrying out activities for Santa Ana's Central Santa Ana Complete Streets Plan, citywide Active Transportation Plan and education and encouragement activities through the City's Bicycle and Pedestrian Safety Program.

## **Peter Garcia**

Peter is a planner from the public sector with a focus on safe streets advocacy. He has experience in community outreach and engagement, transportation finance policy analysis, and GIS, all with a focus on improving transportation equity. Garcia's approach to transportation planning focuses on how transportation planning and transportation finance policy interact with race, class, and power. His goal for deconstructing transportation's practice is to fully understand how the field affects marginalized groups' mobilities and how it racializes nonwhite bodies. Understanding this, in turn, will allow us to move towards policy and practice that furthers socially just mobilities.

Peter completed his Master's in Urban and Regional Planning at UCLA's Luskin School of Public Affairs, concentrating on transportation policy and planning. Garcia's thesis, a client project produced in coordination with Latino Health Access, used elements of critical race theory to study the pedestrian crash distribution in Orange County. More importantly, it sought to find the policy barriers to implementing pedestrian safety improvements and provided policy recommendations to overcome these barriers.