California
Department of
Conservation

California Oil & Gas Public Health Rulemaking

Scientific Advisory Panel

Joan
CASEY
PhD

Assistant Professor
Columbia University

Epidemiology

Birth Outcomes

Climate Change and Health

Joan A. Casey received her doctoral degree from the Department of Environmental Health Sciences at Johns Hopkins Bloomberg School of Public Health in 2014. Dr. Casey is an environmental epidemiologist who focuses on environmental health, environmental justice, and sustainability. Her research uses electronic health records and spatial statistics to study the relationship between emerging environmental exposures and population health. She also considers vulnerable populations and the implications of health disparities, particularly in an era of climate change. Dr. Casey investigates a range of exposures including unconventional natural gas and oil development, coal-fired power plants, and concentrated animal feeding operations. Dr. Casey also holds a BS in Biological and Environmental Engineering from Cornell University and an MA in Applied Physiology from Teachers College at Columbia University.

Dominic
DIGIULIO
PhD

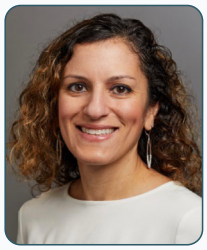
Senior Research Scientist
PSE Healthy Energy

Produced Water Management, Disposal, and Re-use

Subsurface Gas Migration and Wellbore Integrity

Hydrogeological Impacts

Dominic DiGiulio is a senior research scientist at PSE Healthy Energy and an affiliate at the Department of Civil, Environmental, and Architectural Engineering at the University of Colorado. Dr. DiGiulio completed a B.S. in environmental engineering at Temple University, a M.S. in environmental science at Drexel University, and a Ph.D. in soil, water, and environmental science at the University of Arizona. During his 31 years with the U.S. Environmental Protection Agency (EPA), he conducted research on gas flow-based subsurface remediation (soil vacuum extraction, bioventing), groundwater sampling methodology, soil-gas sampling methodology, gas permeability testing, intrusion of subsurface vapors into indoor air (vapor intrusion), subsurface methane and carbon dioxide migration (stray gas), and solute transport of contaminants in soil and groundwater including that associated with hydraulic fracturing and pits used to dispose oil and gas waste. He assisted in development of EPA's original guidance on vapor intrusion and the EPA's Class VI Rule on geologic sequestration of carbon dioxide. While with the EPA, he routinely provided technical assistance to EPA regional offices and assisted in numerous enforcement actions. The focus of his current work is on understanding environmental impact from oil and gas development in the United States and abroad, especially in regard to surface and groundwater resources. He has testified before State oil and gas commissions on proposed regulation, and has testified before Congress on the impact of oil and gas development on water resources.



Nicole
DEZIEL

PhD, MHS

Associate Professor
Yale

Cancer Prevention

Climate Change and Health

Environmental Health Sciences

Water and Energy Resources Study

Nicole Deziel obtained a Master of Industrial Hygiene and Doctorate in Environmental Health from the Johns Hopkins Bloomberg School of Public Health. Her research involves applying statistical models, biomonitoring techniques, and environmental measurements to provide comprehensive and quantitative assessments of exposure to combinations of traditional and emerging environmental contaminants. Her exposure assessment strategies aim to reduce exposure misclassification for epidemiologic studies, advancing understanding of relationships between of exposure to environmental chemicals and risk of cancer and other adverse health outcomes. Dr. Deziel serves as a Principal Investigator (PI) of an inter-disciplinary team of investigators on a project entitled "Drinking water vulnerability and neonatal health outcomes in relation to oil and gas production in the Appalachian Basin." The goal of this 4-year study is to evaluate whether exposure to water contaminants from the process of hydraulic fracturing ("fracking") is associated with adverse human developmental and teratogenic effects. In addition, Dr. Deziel is an Investigator for an NIH project examining how environmental and social stressors jointly contribute to health disparities.

Stephen
FOSTER

PhD

Principal
Geosyntec Consultants

Cancer Prevention

Environmental Health

Air Quality

Stephen Foster is a human health risk assessment specialist with over 34 years of professional experience in the environmental consulting industry preparing and supporting multi-pathway, multi-chemical risk assessments under CERCLA, RCRA, and state-led programs, and for air quality projects. He has directed human health assessments for state and federal environmental protection agencies and industry. Dr. Foster has prepared risk assessments and evaluated potential health effects of oil and natural gas operations associated with new oil and gas extraction techniques for state health departments and potentially affected communities. He assisted with the communication of complicated scientific and technical issues related to chemical mixtures and petroleum related chemicals for a variety of clients. Mr. Foster has a bachelor's in chemistry from Sussex University (England) and Ph.D. in synthetic organic chemistry from Imperial College of Science and Technology, England. He completed his Post-Doctoral Fellowship in biochemistry and toxicology at the University of Wisconsin, Madison and in cancer research at the Harvard School of Public Health. He also worked in the Harvard School of Law's Program on Negotiation in Scientific Dispute Resolution.

Gretchen
GOLDMAN

PhD, MS

Research Director
Union of Concerned Scientists

Air Quality

Environmental Impacts

Environmental Justice

Scientific Integrity

Gretchen Goldman is the research director for the Center for Science and Democracy at the Union of Concerned Scientists. In her role, Dr. Goldman leads research efforts on the role of science in public policy, focusing on topics ranging from scientific integrity in government decision-making, to political interference in science-based standards on hydraulic fracturing, climate change, and chemicals. Dr. Goldman came to UCS from the Georgia Institute of Technology, where she was a postdoctoral research fellow working on statistical modeling of urban air pollution for use in epidemiologic studies of acute human health effects. Dr. Goldman has testified before Congress and currently serves on the 500 Women Scientists Leadership Board and the Air and Climate Public Advisory Committee for the Metropolitan Washington Council of Governments. She also serves on the UNESCO/AAAS Consultation Group on the US science ecosystem. Her words and voice have appeared in Science, Nature, The New York Times, The Washington Post, CNN, NPR and the BBC. She holds a Ph.D. and M.S. in environmental engineering from the Georgia Institute of Technology, and a B.S. in atmospheric science from Cornell University.

Jo Kay
GHOSH

PhD, MPH

Director of Community Air Programs/Health Effects Officer
SCAQMD

Epidemiology

Air Quality

Birth Outcomes

Jo Kay Ghosh is the Director of Community Air Programs/Health Effects Officer at the South Coast Air Quality Management District (SCAQMD). She earned her doctorate in Epidemiology from the UCLA School of Public Health, with her work on air pollution and birth outcomes. She also conducted post-doctoral research at the USC Department of Preventive Medicine, examining the effects of air pollution on cancer risk and examining the health effects of air pollution in the Los Angeles area, and has several publications in this field. She previously worked at the Los Angeles County Department of Public Health in the Communicable Disease Control and Prevention Division, where she managed the Epidemiology and Research Unit of the Tuberculosis Control Program.

Robert
HARRISON

MD, MPH

Clinical Professor
UCSF

Environmental Injuries and Illnesses

Medical Monitoring

Disease Outbreaks

Robert Harrison has been on the faculty at the University of California, San Francisco (UCSF) in the Division of Occupational and Environmental Medicine since 1984. He established the UCSF Occupational Health Services where he has diagnosed and treated thousands of work and environmental injuries and illnesses. He has designed and implemented numerous medical monitoring programs for workplace exposures, and has consulted widely with employers, health care professionals, and labor organizations on the prevention of work-related injuries and illnesses. Dr. Harrison has led many work and environmental investigations of disease outbreaks. He has served as a technical and scientific consultant to Federal OSHA and CDC/NIOSH, and was a member of the California Occupational Safety and Health Standards Board. He is currently the Director of the NIOSH-funded Occupational Health Internship Program, and Associate Director of the UCSF Occupational and Environmental Medicine Residency Program. His research interests include the collection and analyses of California and national data on the incidence of work-related injuries and illnesses. Dr. Harrison has authored or co-authored more than 50 peer-reviewed journal articles, and more than 40 book chapters/contributed articles/ letters to the editor. He is the co-editor of the most recent edition of the textbook, Occupational and Environmental Medicine (McGraw-Hill Education, New York, NY, 2014).

Jill
JOHNSTON
PhD, MPH

Assistant Professor
USC

Contaminant Exposure and Health Outcomes

Hazardous Waste

Environmental Justice

Jill Johnston is an Assistant Professor at the University of Southern California (USC) in the Division of Environmental Health, Department of Preventive Medicine of the Keck School of Medicine of USC and the USC Spatial Sciences Institute. She also serves as Director of Community Engagement in the Division of Environmental Health at University of Southern California. Broadly, her research focuses on addressing unequal exposures to harmful contaminants that affect the health of working poor and communities of color. Dr. Johnston previously worked as a community organizer on issues of environmental and economic justice in South Texas. Dr. Johnston received her Ph.D. in environmental sciences and engineering from the University of North Carolina at Chapel Hill, where she studied hazardous waste sites and industrial animal production. Currently, she engages in collaborations with grassroots organizations to conduct community-engaged action-oriented research at USC to support environmental justice.

Kenneth
KLOC
PhD, MPH

Toxicologist
CalEPA

Toxicology

Risk Assessment

Oil and Gas

Kenneth (Ken) Kloc is a staff toxicologist with the CalEPA Office of Environmental Health Hazard Assessment. Since joining OEHHA in 2012, he has been the scientific lead for a variety of toxicity and risk assessments related to fuel production and use in California. His main work has focused on characterizing the health hazards arising from oil and gas production (including well stimulation treatment and the use of oil production water for crop irrigation), the presence of trace toxic constituents in biogases, and air emissions from vehicles using alternative fuels. Dr. Kloc has expertise in toxicological modeling (including physiologically-based toxicokinetic analysis) and has designed quantitative hazard-ranking methods to support OEHHA's risk evaluations. He has provided risk assessment advice to scientists and technical staff from CalEPA's other boards and departments, the California Natural Resources Agency, the California Public Utilities Commission, the California Council for Science and Technology, and Lawrence Berkeley National Laboratory.

Lisa
MCKENZIE
PhD, MPH

Assistant Professor
Colorado School of Public Health

Epidemiology

Birth Outcomes

Cancer

Risk Assessment

Lisa McKenzie is an Assistant Professor at the Colorado School of Public Health (Colorado SPH) in the Department of Environmental and Occupational Health on the University of Colorado Denver's Anschutz Medical Campus. Dr. McKenzie's research focuses on the impacts of environmental stressors and interventions on health outcomes. Her research has contributed to the understanding of how exposures resulting from the development of oil and gas resources affect the public's health. Her studies are among the first on this topic to appear in the published literature. As a recognized national expert on the public health impact of oil and gas development, she has served on and participated in, by invitation, numerous national boards and workshops concerning the public health implications of oil and gas development. The United States Congress, the Colorado Legislature, and the Denver Metropolitan Regional Air Quality Council have invited Dr. McKenzie to testify on her research findings. Dr. McKenzie received a BA degree in chemistry from the University of Colorado Boulder, a PhD in environmental chemistry from the University of Montana Missoula, and a MPH in epidemiology from the University of Colorado Denver. She did her postdoctoral training with the Sherwood Rowland group at the University of California Irvine. Dr. McKenzie spent 15 years as a senior chemist and human health risk assessor in the private sector before joining the Colorado School of Public Health.

Thomas
MCKONE
PhD

Retired Affiliate
Lawrence Berkeley National Laboratory

Environmental Impacts

Toxicology

Energy, Industrial, and Agricultural Systems

Thomas McKone is Professor Emeritus in the School of Public Health at the University of California, Berkeley and a Retired Affiliate at the Lawrence Berkeley National Laboratory (LBNL). His research career focused on the health and environmental impacts of energy, industrial, and agricultural systems. He has served on the US EPA Science Advisory Board and on more than a dozen National Academy of Science, Engineering, and Medicine (NASEM) committees and its Board on Environmental Studies and Toxicology. His research has supported regulatory actions of the California Air Resources Board, the California Office of Health Hazard Assessment, and the California Department of Public Health. He has been on consultant committees for the World Health Organization, the Organization for Economic Cooperation and Development (OECD), the International Atomic Energy Agency, and the UN Food and Agriculture Organization. He received a PhD in Engineering from UCLA in 1981.

Mark
MILLER

MD, MPH

Public Health Medical Officer/ Director
CalEPA

Pediatrics

Pregnancy and Birth Outcomes

Environmental Health

Mark Miller is a Public Health Medical Officer and Director of the Children's Environmental Health Center at California Environmental Protection Agency (CalEPA). He is also the Co-director the Western States Pediatric Environmental Health Specialty Unit (WSPEHSU) and an associate clinical professor at the University of California, San Francisco School of Medicine. He is a Pediatrician and Preventive Medicine specialist with a focus on the toxic effects of environmental chemicals in pregnant women and children. He completed his MD degree and pediatric residency from Michigan State University College of Human Medicine, an MPH in environmental health sciences at U.C. Berkeley, as well as a residency in preventive medicine with the California Department of Health Services. Dr. Miller has worked for more than 20 years to integrate consideration of early life exposures into risk assessment practice. He has published comprehensive reviews on various topics related to children's environmental health and developed educational materials to improve the environmental health literacy of clinicians and the public. He was a primary author of the award winning "Story of Health eBook" and other education materials in children's environmental health that offer continuing education credits from the CDC. For 20 years he has organized annual children's environmental health symposia on emerging issues of concern.

Andrea
POLIDORI

PhD

Advanced Monitoring Technologies Manager
SCAQMD

Air Quality

Remote Sensing Technology of Emissions

Environmental Justice

Andrea Polidori is the Advanced Monitoring Technologies Manager at the South Coast AQMD. His primary responsibilities include the overall management of South Coast AQMD's special monitoring programs. He has been leading the development and implementation of the Air Quality Sensor Performance Evaluation Center (AQ-SPEC), created to conduct comprehensive performance tests of commercially available low-cost air quality sensors. He oversees South Coast AQMD's fence line monitoring program, formed to demonstrate the capabilities of optical remote sensing technology for measuring refinery and other industrial emissions. He is responsible for the implementation of South Coast AQMD's Rule 1180, which mandates the execution of real-time air quality measurements at the fence line of all major refineries in the Los Angeles Basin and in nearby communities. His is also responsible for implementing air monitoring strategies to satisfy the requirements of Assembly Bill (AB) 617, a State Law created to address the disproportionate impacts of air pollution in environmental justice communities.

Co-Principal Investigators

Rachel
MORELLO-FROSCH
PhD, MPH

Professor
UC Berkeley

- Environmental Health Science
- Perinatal Epidemiology
- Environmental Justice
- Community-Based Participatory Research

Rachel Morello-Frosch is Professor in the Department of Environmental Science, Policy and Management and the School of Public Health at UC Berkeley. As an environmental health scientist and epidemiologist, her research examines social determinants of environmental health among diverse communities with a focus on inequality, psychosocial stress and how these factors interact with environmental chemical exposures to produce health inequalities. Her research explores this environmental justice question in the context of exposures to environmental chemicals, ambient air pollution, drinking water contaminants, climate change events, and effects on women's health, perinatal outcomes, and developmental outcomes in children. She uses conventional epidemiological and exposure assessment methods, as well as community-based participatory research approaches in her research. Dr. Morello-Frosch holds a BA in development studies, an MPH in epidemiology and biostatistics and a PhD in environmental health sciences from the University of California, Berkeley.

Seth
B.C. SHONKOFF
PhD, MPH

Executive Director
PSE Healthy Energy

- Environmental Health Science
- Epidemiology
- Air Quality
- Produced Water Handling and Reuse

Seth Shonkoff is the executive director of the energy science and policy research institute, PSE Healthy Energy. He is also a visiting scholar in the Department of Environmental Science, Policy and Management at the University of California, Berkeley and an affiliate in the Environment Energy Technology Area at Lawrence Berkeley National Lab. An environmental and public health scientist by training, he has more than 20 years of experience in water, air, climate, and population health research at the energy interface and has published more than 50 peer-reviewed journal articles and reports. Dr. Shonkoff is a widely recognized expert on the human health and climate dimensions of oil and gas systems. Dr. Shonkoff has testified before congress and other decision-making bodies and has led and co-authored multiple high-profile scientific assessments including the Human Health chapter of The Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) and legislated evaluations of oil and gas development, hydraulic fracturing, produced water management and reuse and underground gas storage facilities in the State of California. Dr. Shonkoff sits on a number of science-policy expert panels. He completed his PhD in the Department of Environmental Science, Policy, and Management and his MPH in epidemiology in the School of Public Health from the University of California, Berkeley.