Standing Committee on Occupational Exposure Threshold for Blast Overpressure and Process of Determination

Committee

Ellen J. MacKenzie

Chair

Ellen MacKenzie, PhD, ScM, is Dean Emeritus of the Johns Hopkins Bloomberg School of Public Health and Bloomberg Distinguished Professor. Before becoming Dean, Dr. MacKenzie held several leadership positions in the School, including as Chair of the School of Public Health's Department of Health Policy and Management. A leading injury prevention and trauma systems expert, Dr. MacKenzie helped shape the field of trauma services and outcomes research. She founded the Major Extremity Trauma Research Consortium, a collaboration of more than 50 U.S. trauma centers and military treatment facilities dedicated to interdisciplinary trials to define best practices for the care of civilian and military trauma patients. Dr. MacKenzie has distinguished herself as an academic leader, always pushing the boundaries of innovative research and the application of that research to programs and policies that make a difference. The Centers for Disease Control and Prevention named Dean MacKenzie one of 20 leaders and visionaries who have had a transformative effect on the field of violence and injury prevention in the past 20 years. She has also received distinguished career awards from the American Academy of Orthopedic Surgeons, the American Heart Association and the American Stroke Association, the American Trauma Society, and the American Public Health Association (Injury Control Section). She is an Honorary Fellow of the American Association for the Surgery of Trauma and in 2018, was elected a member of the National Academy of Medicine. Dr. MacKenzie has served on several NASEM National Research Council committees, most recently on the NASEM Committee on Aligning Investments in Therapeutic Development with Therapeutic Need and the Committee on Accelerating Progress in Traumatic Brain Injury Care and Research.

Erica Bruce

Member

Erica Bruce, PhD, has been on faculty at Baylor University in the Department of Environmental Science, Department of Biology, Institute of Biomedical Studies, and the Institute of Ecological, Earth, and Environmental Science since August of 2008. Dr. Bruce is an Assistant Director of the University Scholars Program at Baylor University. An overarching focus of research performed in her laboratory is answering a variety of complex questions relating to human health using novel approach methodologies with molecular, in vitro and in vivo models and tools (i.e., Protein Multiplexing, Animal Models, Cell Culture, SEM, TEM) as well as in silico methods. Her research investigates several relevant questions relating to hypoxia-related conditions, exposures to drugs, issues related to insult or injury to human systems, cellular mechanisms of toxic action/healing, as well as mechanisms of uptake for nanomedicine. Dr. Bruce has extensive expertise in testing novel therapeutics, designing mechanistic studies for therapeutics, and engineering future generation formularies for therapeutics. Areas of ongoing research includes developing nanomedicine interventions for hypoxia-caused or hypoxia-exacerbated conditions. Specifically, neurodegenerative diseases, traumatic brain injury (TBI), chronic wounds, as well as respiratory conditions and diseases. Dr. Bruce’s work focuses on elucidating toxic/healing mechanisms of action for novel therapeutics, as well as structure-activity modeling for new drug formularies and estimating biological responses from exposures to chemicals and/or pharmaceuticals. The tools used in her research help to bridge the gap between costly, time intensive experiments and relevant biological, toxicological, and pharmacological data obtained from in vitro and in vivo experiments. Dr. Bruce’s team focuses on developing physiologically relevant in vitro models and new approach methodologies (NAMs) that provide meaningful data to help focus in vivo experimentation to reduce animal lives used in research. This allows her and her team to be good stewards of the scientific method by providing technically sound and statistically robust answers to complex human health questions.

Brian Edlow

Member

Brian Edlow, MD, is a critical care neurologist at Massachusetts General Hospital, Vice Chair of Research for Mass General Brigham Neurology, and Associate Professor of Neurology at Harvard Medical School. He leads a research program developing advanced neurotechnologies to detect signs of consciousness, predict recovery trajectories, and promote healing after traumatic brain injury. Since 2010, Dr. Edlow's work has been continuously supported by the NIH, Department of Defense, Special Operations Command, and leading foundations. His contributions have been recognized with the NIH Director's New Innovator Award (2019), the American Neurological Association's Derek Denny-Brown Young Neurological Scholar Award (2022), the Chen Institute MGH Research Scholar Award (2023), and the Navy SEAL Foundation Scientific Achievement Award (2024). Dr. Edlow has shaped the national landscape of traumatic brain injury research through leadership roles including the NINDS Board of Scientific Counselors, the Neurocritical Care Society's Curing Coma Campaign Scientific Advisory Board, and as Chair of a Department of Defense traumatic brain injury study section. He also serves on the Editorial Board of the Journal of Neurotrauma. Committed to training the next generation of leaders in traumatic brain injury research, Dr. Edlow has mentored trainees who secured numerous federal and foundation grants and advanced to faculty positions at premier academic institutions worldwide. He also serves on the boards of two philanthropic organizations supporting the Special Operations Forces community: the Invisible Wounds Foundation and Special Operations Forces to School of Medicine.

Jessica M. Gill

Member

Jessica Gill, PhD, MSN, BSN, FAAN, is a Bloomberg Distinguished Professor of Trauma Recovery Biomarkers in the department of neurology at the Johns Hopkins School of Nursing and School of Medicine and a national leader in research on the biological mechanisms of traumatic brain injuries (TBI). She has spent decades investigating differential responses in military personnel, athletes, and other patients who have experienced TBIs and the mechanisms underlying these divergent responses. Specifically, Dr. Gill looks for ways to use biomarkers to identify which patients are at high risk for poor recovery and long-term effects including post-traumatic stress disorder, depression, and post-concussive syndrome, and to develop treatments. After earning her PhD at JHSON, Dr. Gill went to the National Institutes of Health (NIH) to complete a postdoctoral fellowship at the National Institute of Nursing Research that focused on the biological mechanisms of PTSD and depression. At NIH, she also served as a senior investigator and acting deputy scientific director of the National Institute of Nursing Research and as deputy director of the Center for Neuroscience and Regenerative Medicine. Dr. Gill was the first nurse to receive the Lasker Clinical Research Scholar Award, considered the most prestigious research grant given by the NIH. As Bloomberg Distinguished Professor of Trauma Recovery Biomarkers, she holds primary appointments in the Johns Hopkins School of Nursing and the School of Medicine, Department of Neurology.

Catherine Johnson

Member

Catherine Johnson, MEng, PhD, is the Robert H. Quenon Associate Professor of mining and explosives engineering at Missouri University of Science and Technology. She holds a PhD in mining engineering from the University of Kentucky and bachelor's and master's degrees in mining and quarry engineering from the University of Leeds, UK. She is an expert in shock physics and has been studying the effects of blast induced TBI through the VA funded OFBC. She serves as Associate Directors of the PRECISE-TBI Education Core for the VA Interagency Resource Center (I50) to advance rigor, reproducibility, transparency, and translation of preclinical TBI research. She is also the director of the Explosives Research Facility at Missouri University of Science and Technology where she has the full use of multiple blast chambers and research equipment. Dr. Johnson's total collaborative research funding is $11.7M ($3.6M personal effort). She has published 39 peer reviewed journal publications with 2 more accepted or under review, 41 peer reviewed conference proceedings, three book chapters and 32 other conference presentations and posters. She has graduated with six PhD and four MS students, and her current research group consists of ten PhD and one MS student. She has taught mining and explosives engineering courses including Principles of Mining Engineering, Mining Industry Economics, Explosives Handling and Safety, Theory of High Explosives, and Scientific Instrumentation for High Explosives and Blasting. She is also the vice chair of the program committee for the International Society of Explosives Engineers, where she won the President's award in 2018. Also in 2018, Catherine was named an inaugural member of the University of Missouri System Presidential Engagement Fellows. She is the 2019, 2020, 2021, 2023 recipient of the mining engineering department research award, and the 2020, 2022 recipient of the department teaching award. In 2021 Catherine was named a dean's scholar in the College of Engineering and Computing as well as a recipient of the 2020-2021 university research award. In 2023 Catherine was named the Missouri S&T woman of the year for her service as a role model for S&T students, and contributions to the university through research, scholarship, teaching and service.

Michael Larrañaga

Member

Michael Larrañaga, PE, CIH, FAIHA, is President and Managing Principal, R.E.M. Risk Consultants and Editor-in-Chief of the Journal of Occupational and Environmental Hygiene. He is a fire, risk, and process safety professional with over 20 years of experience. Michael has carried his passion to a variety of sectors, including petrochemical, pipeline transportation, energy, academics, healthcare, pharmaceutical, consulting, chemical manufacturing, government, research, mining, smelting, construction, and semiconductor; He has worked in the United States, Canada, Europe, Mexico, South America, and China. Michael has served on the Board of Scientific Counselors for the National Institute for Occupational Safety and Health and as a member of the Department of Homeland Security First Responders Advisory Group. Michael has led a corporate-wide Risk-Based Process Safety and Risk Management Plan assessment for all of global semi-conductor's sites worldwide. Michael served as an investigator at an explosion at a propellant and primary explosive manufacturing complex, investigating all fire-safety and human systems related to the incident and served as the lead human factors investigator of a catastrophic crane collapse and resulting fire in a nuclear power plant. Michael led a two-year investigation of the BP/Macondo well blowout to identify human factors that contributed to the incident. Michael completed the first ever risk-based network analysis of the U.S. crude oil pipeline infrastructure, which identified Probable Maximum Loss Risk (PML-Risk) associated with various failures within the pipeline network. Michael was previously Professor and Department Head of the School of Fire Protection and Safety at Oklahoma State University where he taught courses and conducted research in Fire Dynamics, Fire Suppression and Detection Systems, Fire Safety Hazard Recognition, Fire Investigation, Process Safety, Inspection-Testing-Maintenance of Fire Protection Systems, and Homeland Security. Michael is a Certified Industrial Hygienist, Certified Safety Professional, Certified Fire and Explosion Investigator, and Professional Engineer.

Richard Neitzel

Member

Richard Neitzel, MS, PhD, CIH, FAIHA, is Professor of Environmental Health Sciences, Professor of Global Public Health, and Director of the Center for Occupational Health and Safety Engineering at the University of Michigan. Neitzel is an exposure scientist whose research focuses on the characterization of exposures to noise, heavy metals and other ototoxins, psychosocial stressors, and injury risk factors, as well as a range of adverse health effects associated with these exposures. His work, and the work of his team in the UM Exposure Research lab, takes place in occupational and community settings both domestically and abroad. He is particularly interested in incorporating new methodologies and exposure sensing technologies into research, and also has a strong interest in translating his research findings into occupational and public health practice. He is the Director of the UM Center for Occupational Health and Safety Engineering and the UM Industrial Hygiene program.

Mary Jo Pugh

Member

Mary Jo Pugh, RN, PhD, is a retired Air Force nurse and Professor, Department of Medicine, Division of Epidemiology at the University of Utah School of Medicine. She is an investigator at the Informatics, Decision-Enhancement and Analytic Sciences Center of Innovation (IDEAS COIN) and the VA Salt Lake City where she leads the COIN focus area that aims to identify and mitigate health risks in Veterans across periods of vulnerability. Integrating her training as a Veteran, a nurse and a developmental psychologist, she has developed an epidemiological research program to examine the long-term sequelae and outcomes of military exposures. Early in her career she focused on outcomes associated with suboptimal quality of care in older Veterans. Over the past decade she has targeted her work using VA data to identify phenotypes in populations with complex comorbidity such as those with traumatic brain injury (TBI) and complex multi-symptom illness in Gulf War era Veterans. Dr. Pugh's current work related to TBI includes longitudinal observational and prospective studies to identify the emergence of distinct neurodegenerative conditions such as cognitive impairment and epilepsy, and clusters of multimorbidity that may have similar or networked biological underpinnings. Her longitudinal observational studies of approximately 2.6 million Veterans currently link Department of Defense (DoD) combat theatre and health system data with VA health system data, and will further link with DoD serum repository data. These studies aim to understand which individuals are at highest risk of neurodegeneration, mental health conditions, and deficits in functional outcomes after mild TBI. They also investigate the possibility of using personalized medicine to address treatment choices. The next steps of this line of inquiry will use deep learning models to identify optimal treatment pathways for specific phenotypes to inform treatment guidelines for mild TBI in the context of multimorbidity. Dr. Pugh is the author or co-author of over two hundred seventy five peer reviewed publications and book chapters, and numerous presentations at national and international scientific meetings. Her work is funded by VA Health Services Research and Development in addition to VA Rehabilitation Research and Development, the Department of Defense, and the National Institutes of Health. She regularly serves as a reviewer for national funding agencies including the National Institutes of Health, Department of Defense and VA, where she serves as chair for the HSR&D career development award panel. She also serves as a peer reviewer for scientific publications submitted to prominent scientific journals, including the Journal of the American Medical Association, Neurology, Medical Care, Journal of Head Trauma Rehabilitation, Journal of Neurotrauma, Brain Injury, Epilepsia, Epilepsy and Behavior and many others. Dr. Pugh received a Bachelor of Arts degree in Nursing from the College of Saint Scholastica after which she entered the Air Force. Upon her medical retirement she earned a masters degree in Education from Boston University and masters and doctoral degrees in Psychology at the Catholic University of America.

Jonathan M. Samet

Member

Jonathan Samet, MS, MD, a pulmonary physician and epidemiologist, is the past dean of the Colorado School of Public Health and Professor of Epidemiology and Occupational and Environmental Health. Previously, Dr. Samet held leadership positions at the University of Southern California, the Johns Hopkins Bloomberg School of Public Health, and the University of New Mexico. Dr. Samet received a Bachelor's degree in Chemistry and Physics from Harvard College, an MD degree from the University of Rochester's School of Medicine and Dentistry, and a Master of Science degree in Epidemiology from the Harvard School of Public Health. His research focuses on the health risks of inhaled pollutants—particles and ozone in outdoor air and indoor pollutants including secondhand smoke and radon. He has also investigated the occurrence and causes of cancer and respiratory diseases, emphasizing the risks of active and passive smoking. For several decades, he has been involved in global health, focusing on tobacco control, air pollution, and chronic disease prevention. Dr. Samet has served on and chaired numerous committees of the National Research Council and Institute of Medicine, also chairing the Clean Air Scientific Advisory Committee of the U.S. EPA and the FDA's Tobacco Products Scientific Advisory Committee. Dr. Samet has served as editor and author for Reports of the Surgeon General on Smoking and Health since 1984, receiving the Surgeon General's Medallion in 1990 and 2006 for these contributions. He was the Senior Scientific Editor for the 50th Anniversary 2014 report. He was elected to the National Academy of Medicine (Institute of Medicine) of the National Academies of Sciences in 1997 and received the David M. Rall Medal for his contributions in 2015.

Christopher Smalt

Member

Christopher J. Smalt, MS, PhD, is a technical staff member in the Human Health and Performance Systems Group at MIT Lincoln Laboratory. His work focuses on human health and performance, including in noise and blast injury, hearing loss, physiological signal processing, neurological computational modeling, cognitive fatigue, augmented and virtual reality. He and a team at the Laboratory have developed on-body and in-ear noise monitoring technologies suitable for industrial and tactical environments. Prior to joining the Laboratory in 2013, he was a doctoral student in the Department of Electrical and Computer Engineering at Purdue University. There he modeled efferent feedback mechanisms in the auditory pathway and studied adaptation to an acoustic simulation of cochlear implants through fMRI imaging, supported in part by a Predoctoral Fellowship Training Grant from the National Institutes for Health/National Institute on Deafness and Other Disorders. He holds a bachelor's degree in computer engineering from Clarkson University and earned both master's and doctoral degrees in electrical engineering from Purdue University. He also studied trumpet performance at the Crane School of Music at State University of New York Potsdam and is a member of the Longwood Symphony Orchestra in Boston, which raises money for local medical charities.

Douglas Smith

Member

Douglas H. Smith, MD, is the Robert A. Groff Endowed Professor of Teaching and Research in Neurosurgery and Director of the Center for Brain Injury and Repair at the University of Pennsylvania. He is recognized as one of the foremost experts on concussion and more severe forms of traumatic brain injury (TBI). His international leadership includes currently serving as President of the National Neurotrauma Society and as the Scientific Director of the Big 10/ Ivy league Collaboration on Concussion. He also serves as a member of the Scientific Advisory Boards of the US National Football League (NFL), the National Collegiate Athletic Association (NCAA)-DoD consortium on concussion and the International Concussion Society. Furthermore, Dr. Smith serves as an inaugural trustee of the Mind Your Brain Foundation, a non-profit organization dedicated to outreach and education of TBI survivors and caregivers. Dr. Smith's contributions include the discovery of the underlying cause of concussion symptoms as well as approaches for its diagnosis and treatment. Specifically, his group identified that physical and functional damage to nerve fibers (axons) due to concussion disrupts electrical signaling through brain networks and that blood biomarkers of axonal damage can be used to predict the length of recovery. In addition, his group was the first to discover mechanisms of concussion and more severe traumatic brain injury that trigger progressive neurodegeneration, including chronic traumatic encephalopathy and Alzheimer’s disease. Dr. Smith’s work attracted attention of the U.S. State Department who asked him to assemble a team of experts to investigate mysterious neurological deficits affecting members of the US embassy in Cuba. Their findings led to a newly discovered disorder, “Havana Syndrome.” His collective efforts are represented in over 300 published scientific reports that are among the most highly cited in the field.

James Stone

Member

James R. Stone, MD, PhD, is a physician-scientist and Professor of Radiology and Medical Imaging at the University of Virginia School of Medicine, where he serves as Vice Chair for Research and holds a secondary appointment in Neurological Surgery. His work centers on the neurobiological effects of blast exposure and traumatic brain injury, with a particular focus on military populations exposed to operational and training-related blast environments. His research program integrates advanced neuroimaging, translational neuroscience, and clinical and operational data to identify sensitive imaging biomarkers and characterize the structural, vascular, and physiological consequences of brain injury. Dr. Stone leads multidisciplinary, federally funded research efforts in collaboration with academic institutions, military research laboratories, and government agencies, including longstanding work with the Naval Medical Research Command. He has also contributed to international collaborations through NATO’s Human Factors and Medicine Research Task Groups, helping to develop evidence-based guidelines and research priorities related to repetitive blast exposure. His work emphasizes rigorous, harmonized, and collaborative approaches to improve diagnosis, monitoring, and prevention of blast-related neurological injury, while advancing translational impact and mentoring the next generation of physician-scientists.