

Assessing and Improving Strategies for Preventing, Countering, and Responding to Weapons of Mass Destruction Terrorism: Chemical Threats

Committee

Timothy J. Shepodd

Chair

Timothy Shepodd (Chair) is a Senior Manager, Mission Engineering Sciences at Sandia National Laboratories. Dr. Shepodd has been at Sandia for over 34 years working on various aspects of national security, including chemical munition destruction/neutralization, explosives chemistry, controlled substance synthesis, materials science for nuclear deterrence, and special communications. He participated in or chaired various committees chartered by the Program Executive Office for Assembled Chemical Weapons Alternatives while the final United States chemical weapons destruction plants were designed and built. Dr. Shepodd holds three R&D 100 awards and 38 patents, including one for the explosive destruction system used extensively to neutralize chemical munitions. He received a Ph.D. in chemistry from the California Institute of Technology and received his live chemical weapons training in the United Kingdom at the Porton Down facility.

Margaret E. Kosal

Vice Chair

Margaret E. Kosal (Vice-Chair) is an Associate Professor in the Sam Nunn School of International Affairs at Georgia Institute of Technology. Her research explores the relationships among technology, strategy, and governance. She focuses on two areas that often intersect: reducing the threat of weapons of mass destruction and understanding the geopolitics of emerging technologies. Dr. Kosal is the co-founder of a sensor company, where she led research and development of medical, biological, chemical sensors and explosives detection systems. Dr. Kosal previously has served as a Senior Advisor to the Chief of Staff of the U.S. Army, as Science and Technology Advisor within the Office of the Secretary of Defense, and as an Associate to the National Intelligence Council. She is the recipient of multiple awards including the Office of the Secretary of Defense Award for Excellence. Her numerous publications include "Nanotechnology for Chemical and Biological Defense," the first and most rigorous to consider how nanotechnology may enable or be adapted for defensive purposes, along with potential misuse and proliferation risks. In 2017, she was appointed the Editor-in-Chief of the Cambridge University Press journal, *Politics and the Life Sciences*. Since 2014, she has served in an uncompensated advisory role for the Department of Defense's Homeland Defense & Security Information Analysis Center. Formally trained as an experimental scientist, Dr. Kosal earned a Ph.D. in chemistry from the University of Illinois at Urbana-Champaign.

Starting in June 2022, she also holds an appointment as Senior Fellow at the Department of Energy's Savannah River National Laboratory.

Gary A. Ackerman

Member

Gary Ackerman is an Associate Professor in the College of Emergency Preparedness, Homeland Security and Cybersecurity at the University at Albany, State University of New York. In addition, he is Associate Dean for Research in the College, and the founding director of the Center for Advanced Red Teaming. Previously, Dr. Ackerman held the posts of Research Director and then Director of the Unconventional Weapons and Technology Division at the National Consortium for the Study of Terrorism and Responses to Terrorism. He has also served as the Director of the Weapons of Mass Destruction Terrorism Research Program at the Center for Nonproliferation Studies in Monterey, California. Dr. Ackerman's research focuses on assessing emerging threats and understanding how terrorists and other adversaries make tactical, operational, and strategic decisions, especially how they innovate in their use of weapons and tactics. Much of his work in this area is centered on the motivations and capabilities for non-state actors to acquire and use chemical, biological, radiological, and nuclear weapons. Dr. Ackerman is the co-editor of *Jihadists and Weapons of Mass Destruction* and author of over seventy publications. He has also testified on terrorist motivations for using nuclear weapons before the Senate Committee on Homeland Security, and is a periodic consultant for the U.S. Government on counterterrorism issues. He served as a consultant to Emergent Biosolutions in 2018 and received compensation for these services. Dr. Ackerman completed his Ph.D. in war studies at King's College in London.

Philipp C. Bleek

Member

Philipp C. Bleek is an Associate Professor in the Nonproliferation and Terrorism Studies Program, faculty affiliate at both the James Martin Center for Nonproliferation Studies and Center on Terrorism, Extremism, and Counterterrorism, and Coordinator of the Cyber Collaborative, all at the Middlebury Institute of International Studies at Monterey. He previously served as Senior Advisor to the Assistant Secretary of Defense for Nuclear, Chemical and Biological Defense Programs in the U.S. Department of Defense. Dr. Bleek works on the causes, consequences, and amelioration of chemical, biological, radiological, and nuclear weapons threats, posed by both states and non-state actors, at the intersection of academia, non-governmental organizations, and government. Dr. Bleek has held fellowships at the Harvard Kennedy School's Belfer Center for Science and International Affairs, Council on Foreign Relations, Center for Strategic and International Studies, and Center for a New American Security, among others. In addition to his current faculty position, he has taught at Georgetown University and in the Department of Defense Senior Leader Development Program. He is a former Term Member of the Council on Foreign Relations and a Fellow of the Truman National Security Project. Dr. Bleek holds a Ph.D. in government, with a concentration in international relations, from Georgetown University; a Master of Public Policy, with a concentration in international policy and economic development, from the Harvard Kennedy School; and a B.A. in public and international affairs from Princeton University.

Gary S. Groenewold

Member

Gary S. Groenewold is recently retired from 35 years of service as a chemist at Idaho National Laboratory. During this span, Dr. Groenewold's broad scientific research interests involved investigations of reactivity and measurement of molecular and atomic species of importance in military, nuclear, and industrial enterprises. A significant fraction of his research involved the development of chemical measurement approaches for chemical warfare agents, which enabled improved insight into agent fate and transport in natural and industrial environments. He has authored approximately 150 peer-reviewed publications, many of which address chemical warfare agents. He is a member of the American Chemical Society and the American Society for Mass Spectrometry. Dr. Groenewold has co-authored six National Academies reports in the area of chemical demilitarization and served as the chair of the Chemical Demilitarization Committee. Dr. Groenewold holds a Ph.D. in chemistry from the University of Nebraska.

David J. Kaufman

Member

David J. Kaufman is the Vice President and Director for Safety and Security at CNA. He is responsible for executive management of CNA's work in the areas of public safety, homeland security, emergency management, and public health. From 2009 – 2015, Mr. Kaufman served as the Associate Administrator for Policy, Program Analysis, and International Affairs at the Federal Emergency Management Agency. Mr. Kaufman teaches in Georgetown University's graduate program in Emergency and Disaster Management; lectures for the Naval Postgraduate School's Center for Homeland Defense and Security; and has previously served as a Committee Chair and Roundtable member for the National Academies of Science, Engineering and Medicine. Mr. Kaufman holds a Master of Public Policy degree from the University of Michigan; a B.A. in international relations, political science, and history from the University of Wisconsin-Madison; and is a graduate of the Center for Homeland Defense and Security's Executive Leaders Program.

Kabrena E. Rodda

Member

Kabrena Rodda is a senior scientist at Pacific Northwest National Laboratory, providing strategic direction on research to improve U.S. capabilities against chemical threats. She is a retired U.S. Air Force (USAF) Colonel. During her USAF career, she managed a nonproliferation program and later advised on chemical issues at the National Counterproliferation Center. Dr. Rodda was a United Nations Special Commission inspector and laboratory chief in Iraq in 1995 and 1998 and provided consequence management advice for the 2000 Sydney Olympics. In 2012, she published a book-length policy paper against synthetic drugs titled *Legal Highs: US Policy for the New Pandemic*. In 2017 and 2018, she led chemical threat response workshops at the Organisation for Prohibition of Chemical Weapons (OPCW) and headed the writing team for the American Chemical Society (ACS) policy statement, "Preventing the Reemergence of Chemical Weapons." Dr. Rodda is a recipient of the OPCW Director General's Medal, the Secretary of Energy Appreciation Award, and the Secretary of the USAF Research and Development Award. She is a member of ACS' International Activities Committee, the American Academy of Forensic Science, and the International Society for the Study of Emerging Drugs. She holds a Ph.D. in forensic toxicology; three M.S. degrees in chemistry, project and systems management, and national security studies; and a B.S. in chemistry.

Neera Tewari-Singh

Member

Neera Tewari-Singh is an Assistant Professor at the Department of Pharmacology and Toxicology at Michigan State University. With an extensive background in molecular biology and toxicology, her research focus is on developing medical countermeasures against chemical threats and environmental exposures that can cause harmful effects, chemical emergencies, and mass casualties. Dr. Tewari-Singh is a Principal Investigator in several National Institutes of Health Countermeasures Against Chemical Threats and the Department of Defense programs. She has published her work extensively and received numerous honors and awards, including the Society of Toxicology Association of Scientists of Indian Origin Young Investigator Award, Ocular Toxicology Innovation and Impact Award, and the Dermal Toxicology Best Paper of the Year award. Dr. Tewari-Singh received a Ph.D. from the Jawaharlal Nehru University, New Delhi.

Usha Wright

Member

Usha Wright is President of SHARE Africa, working in rural Kenya, as well as Vice Chair of the Board of Directors at Scenic Hudson, an environmental non-governmental organization. Previously, she served as Senior Vice President, Environmental Safety and Health functions for ITT Corporation and before that, at Ciba Geigy (now Novartis), a pharmaceutical and agricultural manufacturer, and finally as General Counsel and Executive Vice President at an environmental engineering corporation in New York. Ms. Wright has travelled extensively to manufacturing and research sites for the purpose of improving and mitigating environmental and safety risks of diverse operations, working with lawmakers as well as regulators. Her expertise is in chemical safety and related laws, in both domestic and international arenas. Ms. Wright previously served on a National Academies committee focused on the risks and minimizing the potential of diversion of research chemicals for terrorism purposes. She received a J.D. from Rutgers Law School.