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**APPLYING 21ST CENTURY TOXICOLOGY TO GREEN CHEMICAL AND MATERIAL DESIGN**

**SEPTEMBER 20-21, 2011**

**WASHINGTON, D.C.**

**SPEAKERS and PANELISTS/MODERATORS BIOS**

## SPEAKERS

**Paul Anastas**, Ph.D. is the Assistant Administrator for EPA's Office of Research and Development (ORD) and the Science Advisor to the Agency. Known widely as the "Father of Green Chemistry" for his groundbreaking research on the design, manufacture, and use of minimally-toxic, environmentally-friendly chemicals, Dr. Anastas has an extensive record of leadership in government, academia, and the private sector. At the time he was nominated by President Obama to lead ORD, Dr. Anastas was the Director of the Center for Green Chemistry and Green Engineering, and the inaugural Teresa and H. John Heinz III Professor in the Practice of Chemistry for the Environment at Yale University's School of Forestry and Environmental Studies. Prior to joining the Yale faculty, Dr. Anastas was the founding Director of the Green Chemistry Institute, headquartered at the American Chemical Society in Washington, D.C. From 1999 to 2004 he worked at the White House Office of Science and Technology Policy, concluding his service there as the assistant director for the environment. Dr. Anastas began his career as a staff chemist at EPA, where he rose to the positions of chief of the Industrial Chemistry Branch, and director of the U.S. Green Chemistry Program. It was during his work at EPA that Dr. Anastas coined the term "green chemistry." Trained as a synthetic organic chemist, Dr. Anastas' research interests have focused on the design of safer chemicals, bio-based polymers, and new methodologies of chemical synthesis that are more efficient and less hazardous to the environment. A leading writer on the subjects of sustainability, green chemistry, and green engineering, he has published ten books, including "Benign by Design," Designing Safer Polymers," "Green Engineering" and his seminal work with co-author John Warner, "Green Chemistry: Theory and Practice." Dr. Anastas has been recognized for his pioneering work with a host of awards and accolades including the Vice President's Hammer Award, the Joseph Seifter Award for Scientific Excellence, the Nolan Sommer Award for Distinguished Contributions to Chemistry, the Greek Chemical Society Award for Contributions to Chemistry, the Inaugural Canadian Green Chemistry Award, a Scientific American 50 Award for Policy Innovation, the John Jeyes Award from the Royal Society of Chemistry, and an Annual Leadership in Science Award from the Council of Scientific Society Presidents. He was a Special Professor at the University of Nottingham and an Honorary Professor at Queens University in Belfast where he was also was awarded an Honorary Doctorate. Dr. Anastas earned his B.S. from the University of Massachusetts at Boston and his M.A. and Ph.D. in chemistry from Brandeis University.

**Cal Baier-Anderson**, Ph.D. is a Toxicologist with the US Environmental Protection Agency, Design for the Environment (DfE) Program. DfE works in partnership with industry, environmental groups, and academia to reduce risk to human health and the environment through the use of inherently safer chemicals. In this capacity she conducts alternatives assessments to identify inherently safer chemicals for informed substitution, considered to be a critical component of EPA’s green chemistry and sustainability efforts. Prior to this position, she served as a health scientist with the Environmental

Defense Fund and a part-time Assistant Professor in the Department of Epidemiology and Preventive Medicine at the University of Maryland, Baltimore. Cal earned a Ph.D. in Toxicology in 1999 from the University of Maryland, Baltimore, after which she served as a technical advisor to communities living adjacent to hazardous waste sites through EPA-funded community assistance programs. Additional work experience includes risk assessment and risk communication consulting.

**Ed Carney,** Ph.D. is an Associate Fellow at The Dow Chemical Company, where he has worked since 1992. For most of his Dow career, Ed headed the Developmental & Reproductive Toxicology group, but in 2010 took on leadership of Dow's newly formed Predictive Toxicology Center. He has extensive experience in regulatory toxicity testing as well as mechanistic toxicology research, with over 75 publications to date in areas such as *in vitro* alternatives, developmental toxicokinetics and chemical mixtures. Ed also is involved with many external organizations, including the US EPA Board of Scientific Counselors, the Teratology Society (VP), Society of Toxicology (President of Reproductive & Developmental Toxicology Specialty Section), Toxicology Forum, ILSI-HESI, the Humane Society's Human Toxicology Project Consortium, University of Michigan (adjunct faculty) and University of Surrey (lecturer). Ed also has served on the National Toxicology Program Board of Scientific Counselors. Before joining Dow, he conducted postdoctoral research in developmental biology at Mount Sinai Hospital in Toronto. He holds a PhD in Reproductive Physiology from Cornell University.

**David Dix**, Ph.D. is Deputy Director of the U.S. Environmental Protection Agency's National Center for Computational Toxicology where he is leading the development of high throughput decision support tools for screening and assessing chemical exposure, hazard and risk. He is also an Adjunct Associate Professor in the Department of Environmental Sciences and Engineering at the University of North Carolina at Chapel Hill. He has published over 100 articles, reviews, reports and book chapters, serves on several Editorial Boards, and has given numerous national and international presentations on EPA research.

**Helen Holder**, M.S. is the corporate material selection manager at Hewlett-Packard Co. (HP), where she evaluates and qualifies materials for use in products. Helen received her Bachelor of Science degree from the Massachusetts Institute of Technology and received her Master of Science degree from the University of California, Berkeley, where she was an HP resident fellow.

**Sharon Munn**, Ph.D., a regulatory toxicologist has spent most of her career working on risk assessment of chemical substances. She is currently working on new approaches to risk assessment within the Systems Toxicology Unit of the Institute for Health and Consumer Protection, located in Ispra, Italy. The Institute is part of the European Commission's Joint Research Centre (JRC) which provides science-based advice to the European Commission in support of policy and regulatory decision making. She has devoted the last two years to coordinating the Institute's activities on development of alternatives to animal testing, within the Institute's European Centre for the Validation of Alternative Methods. This followed a two year secondment to the European Chemicals Agency (ECHA) in Helsinki to set up the new Agency and serve as the first Chair of the Committee for Risk Assessment. Prior to this she spent 12 years in the JRC's European Chemicals Bureau (ECB) supporting the implementation of the Existing Substances Regulation and the development of the new REACH regulation. Whilst at ECB her particular focus was on the further development of methodologies for the assessment of the impact on human health of chemical substances, including the development of guidance for conducting a chemical safety assessment as required under REACH**.**

**Rusell Naven,** Ph.D. is Principal Scientist of the Compound Safety Prediction at Pfizer. Dr. Naven received his PhD in organic chemistry from the University Of Nottingham in the UK, after which he joined AstraZeneca where he designed and synthesized novel drugs in the areas of oncology and inflammation. Russ then joined Lhasa Limited where he researched mechanistic structure-activity relationships in various toxicological endpoints, including Ames mutagenicity, chromosome damage and non-genotoxic

carcinogenicity. As a computational toxicologist at Pfizer, Russ' primary role is to advise project teams on the safety risks associated with their chemical series, enabling them to choose candidate compounds with the highest chance of success. He also provides subject matter expertise in the in silico prediction and mechanistic interpretation of mutagenic activity and is also applying SAR methodology to the design of in silico models for the early identification of mitochondrial and cellular toxicity.

**Thomas Osimitz**, Ph.D. has more than 25 years of experience in safety assessment and product development. He is founder and President of Science Strategies, LLC a consulting firm that helps companies of all sizes to negotiate the turbulent intersection of science and policy through strategic application of good science. Previously Vice-President for Global Safety Assessment and Regulatory Affairs and Sustainable Product Innovation for S.C. Johnson and Son, Dr. Osimitz has led corporate global regulatory, environmental, and safety assessment efforts for a wide range of consumer and institutional products. He has directed scientific programs of groups developing scientific information to assess environmental and human safety. Scientifically, he was recently Co-Chair of the USEPA's Endocrine Disruptor Methods Validation Advisory Committee (EDMVAC). He also served on the USEPA's Endocrine Disruptor Screening and Testing Advisory Committee (EDSTAC) that developed the road map for the testing of chemicals for the potential to cause endocrine disorders. Dr. Osimitz has a B.S. in Biology from the University of Minnesota, and a Ph.D. in Toxicology from The University of Michigan. He is Board-Certified in Toxicology by the American Board of Toxicology.

**Robert Tanguay**, Ph.D. is a Distinguished Professor in the Department of Environmental and Molecular Toxicology and the Director of the Sinnhuber Aquatic Research Laboratory. He received his PhD in Biochemistry from the University of California-Riverside (1995) and postdoctoral training in developmental toxicology from the University of Wisconsin-Madison (1996-1999). Over the past several years he has exploited the molecular and genetic advantages of zebrafish to define the molecular mechanism by which chemicals, drugs and nanoparticles interact with and adversely affect vertebrate development and function. His group has demonstrated that zebrafish provide an ideal discovery platform for rapid throughput in vivo assessments and for identifying the gene products that underlie the phenotypic responses to environmental insults.

**Mark E. Thompson**, Ph.D. received a BS degree in chemistry from Duke University in 1977 and a PhD in organic chemistry from Yale University in 1981. He joined the Biochemicals Department of E.I. du Pont de Nemours and Company in Wilmington, Delaware, where he carried out research in agricultural chemistry from 1981 until 1987. After spending a few years working on patent interferences, Mark became a Research Manager in 1990 and led four different chemistry and biology R&D groups over the ensuing seven years in both the Agricultural Products and Lycra® business units. A two-year assignment in Operations was followed by a return to Crop Protection R&D in 1999, where Mark co-led a major reengineering of the Discovery Research process. He became the Head of Crop Protection's Discovery Research division in 2006 and is currently the Director of DuPont's Haskell Global Centers for Health and Environmental Sciences. Mark holds 20 patents and has authored a number of publications, book chapters, presentations, and invited talks.

**Alex Tropsha,** Ph.D. is K.H. Lee Distinguished Professor and Associate Dean for Research at the Eshelman School of Pharmacy, UNC-Chapel Hill. He received PhD in Chemical Enzymology in 1986 from Moscow State University, Russia. He immigrated to the United States in 1989 and has been affiliated with UNC-Chapel Hill since then rising over the years from postdoc to Assistant, Associate, Full, and Endowed Professor. His research interests are in the areas of Computer-Assisted Drug Design, Computational Toxicology, Cheminformatics, and Structural Bioinformatics. His has authored or co-authored more than 140 peer-reviewed research papers, reviews and book chapters and co-edited two monographs. His research is supported by multiple grants from the NIH, NSF, EPA, and private

companies. He is a member of editorial boards of several scientific journals and an elected member of the Board and vice-chair of the international Cheminformatics and QSAR Society.

**Adelina Voutchkova,** Ph.D. is an associate research scientist at the Center for Green Chemistry & Green Engineering at Yale University until the end of the year, when she will start her independent career at George Washington University in DC. She received her Ph.D. in organometallic catalysis from the group of Bob Crabtree at Yale, prior to which she completed her undergraduate work in Middlebury College, working with Prof. Sunhee Choi on the mechanism of DNA binding of Platinum anticancer compounds. Her current research focuses on understanding how to rationally design commercial chemicals with minimal acute and chronic toxicity while maintaining the functional properties. This is being accomplished through the application of tools from medicinal and computational chemistry.

**PANELISTS/MODERATORS**

**Richard A. Denison,** Ph.D. is a senior scientist at the Environmental Defense Fund. Dr. Denison has 25 years of experience in the environmental arena, specializing in chemicals policy and hazard, exposure, and risk assessment and management for industrial chemicals and nanomaterials. He currently serves on the Green Ribbon Science Panel for California's Green Chemistry Initiative. Until recently, Dr. Denison was a member of the National Pollution Prevention and Toxics Advisory Committee, which advised EPA's toxics office. He is a member of the NRC Board on Environmental Studies and Toxicology. Previously, Dr. Denison was an analyst and assistant project director in the Oceans and Environment Program, Office of Technology Assessment, United States Congress. Dr. Denison received his Ph.D. in Molecular Biophysics and Biochemistry from Yale University.

**Kate Z. Guyton**, Ph.D. DABT is a Toxicologist in the National Center for Environmental Assessment in the Office of Research and Development at the US Environmental Protection Agency. As part of her responsibilities, Dr. Guyton contributes expertise in carcinogenesis mechanisms to US EPA's human health risk assessments of prevalent environmental contaminants (including tetrachloroethylene, trichloroethylene, chloroform, and phthalates). Additionally, Dr. Guyton is leading several projects to advance approaches for assessing chemical risk, to reflect scientific developments in disease causation, chemical mechanisms, and testing methods. Prior to joining EPA in 2005, Dr. Guyton worked at CCS Associates (8 years) supporting the National Cancer Institute. Her work concerned the screening, prevention, treatment and imaging of cancer in at-risk populations. Dr. Guyton earned a PhD in Toxicological Sciences from the Johns Hopkins School of Hygiene & Public Health in chemical carcinogenesis in 1993. Her postdoctoral research at the National Institutes of Health explored mechanisms of aging and cancer. Dr. Guyton has been certified as a Diplomate of the American Board of Toxicology since 1998. She has authored more than 40 scientific articles and book chapters in her areas of expertise.

**James E. (Jim) Hutchison,** Ph.D. earned his B.S. in chemistry from the University of Oregon and his Ph.D. in organic chemistry from Stanford University. He conducted postdoctoral research at the University of North Carolina. He joined the faculty at the University of Oregon (UO) in 1994 where he is currently the Lokey-Harrington Chair in Chemistry. His research interests are in green chemistry, materials chemistry and nanoscience. He led the development of the UO's curriculum in green organic chemistry, launched the university's pioneering Center in Green Nanoscience and is a member of the Governing Board of the ACS Green Chemistry Institute. He founded and now directs the Safer Nanomaterials and Nanomanufacturing Initiative, a virtual center that unites 30 principal investigators across the northwest around the goals of designing greener nanomaterials and nanomanufacturing. He has won a number of awards, including the Alfred P. Sloan Research Fellowship and an NSF-CAREER

award. He is the author of 100 refereed publications and a text book ("Green Organic Chemistry: Strategies, Tools and Laboratory Experiments"). He was a member of the National Research Council Committee on Grand Challenges for Sustainability in the Chemistry Industry and he is currently a member of the NRC Committee to Develop a Research Strategy for Environmental, Health, and Safety Aspects of Engineered Nanomaterials and the NRC Committee on Science for EPA's Future.

**Mark S. Johnson,** Ph.D., is the Program Manager of the Health Effects Research at the U.S. Army Center for Health Promotion and Preventative Medicine, Aberdeen Proving Ground, Maryland. His research includes the evaluation of the toxicity of military unique compounds and development and evaluation of sensitive indicators of stress (e.g., immunotoxicity) for use in field applications and toxicity testing. Other work has included the development of a process to derive toxicity reference values and the development of a process to assess risk via inhalation exposures in non-combat deployed personnel. He has extensive experience in risk assessment and has developed and tested new methods in improving exposure/effects relationships. He has authored over 40 peer-reviewed publications, book chapters, and technical reports. He is a Diplomate of the American Board of Toxicology. Dr. Johnson is the Technical Chairman of the Army Biological Technical Assistance Group (BTAG), steering committee chair of the Joint Army-Navy-NASA-Air Force (JANNAF) Propulsion Committee, Subcommittee on Safety and Environmental Protection, and the chair of the terrestrial toxicity subcommittee of the Biological Fate and Effects Committee of the American Society for Testing and Materials (ASTM).

**Ivan Rusyn,** M.D., Ph.D. is Professor with tenure in the Department of Environmental Sciences and Engineering in the School of Public Health at the University of North Carolina at Chapel Hill. He directs the Laboratory of Environmental Genomics and the Carolina Center for Computational Toxicology in the Gillings School of Global Public Health at UNC. He also serves as Associate Director of the Curriculum in Toxicology and is a member of the Lineberger Comprehensive Cancer Center, Center for Environmental Health and Susceptibility, Bowles Center for Alcohol Studies, and the Carolina Center for Genome Sciences. Dr. Rusyn served on several working groups convened by the National Research Council and the WHO/IARC. Dr. Rusyn's laboratory has an active research portfolio funded by the National Institutes of Health and the US EPA with a focus on the mechanisms of action of environmental toxicants and the genetic determinants of the susceptibility to toxicant- induced injury. The Rusyn lab applies molecular, biochemical, genetic and genomics approaches to understanding the mechanisms of environmental agent-related disease. His studies on health effects of environmental agents resulted in more than 75 peer-reviewed publications. Dr. Rusyn received his M.D. (with honors) from Ukrainian State Medical University in Kiev and his Ph.D. in Toxicology from UNC-Chapel Hill. He also trained at the University of Dusseldorf in Germany and at the Massachusetts Institute of Technology.

**Jennifer Sass,** Ph.D. is Senior Scientist in the Health and Environment program of the NRDC, an environmental non-profit organization, and a Professorial Lecturer at George Washington University, Department of Environmental and Occupational Health. She is an expert in US chemical policy and regulations. Dr. Sass has degrees in Anatomy and Cell Biology from the University of Saskatchewan, Canada, and Toxicology from the University of Maryland. In her work with NRDC she reviews the science underpinning the regulation of toxic chemicals, and advocates for health-protective regulations consistent with the environmental statutes. Dr. Sass publishes in peer-reviewed journals on the regulation of toxic chemicals and emerging contaminants such as nanomaterials. She provides testimony and scientific briefings for the U.S. Congress and regularly participates in stakeholder and expert scientific federal advisory committees.

**Thaddeus Schug**, Ph.D. received his PhD in nutrition and biomedical sciences from Cornell University. His graduate work focused on the relationships between nuclear hormone receptor activation and various forms of cancer. Thad conducted his postdoctoral studies at the National Institutes of Health/National

Institute of Environmental Health Sciences (NIH/NIEHS). At NIH, he investigated the sirtuin family of genes which are involved in the aging process, homeostasis, metabolism, and inflammation. Thad is now assigned to the Cellular, Organs, and Systems Pathobiology Branch in the extramural division of NIEHS where he helps manage a portfolio of grants in the scientific areas of male and female reproduction, and the development and disruption of the endocrine systems.

**Lauren Zeise, Ph.D.** is Chief of the Reproductive and Cancer Hazard Assessment Branch of the California Environmental Protection Agency. She oversees or is involved in a variety of California's risk assessment activities, including cancer and reproductive toxicant assessments; development of frameworks and methodologies for assessing cumulative impact, nanotechnology, green chemistry/safer alternatives, and susceptible populations; the California Environmental Contaminant Biomonitoring Program; and health risk characterizations for environmental media, food, fuels and consumer products. Dr. Zeise's research focuses on human interindividual variability and risk. She has served on advisory boards of the Environmental Protection Agency (EPA), Office of Technology Assessment, World Health Organization, and National Institute of Environmental Health Sciences. She has also served on several NRC and IOM committees, including the Board on Environmental Studies and Toxicology's Committee on Evaluation of the Presumptive Disability Decision-Making Process for Veterans, the Committee on Toxicity Testing and Assessment of Environmental Agents (which produced *Toxicity Testing in the 21st Century*), the Committee on Improving Risk Analysis Approaches used by the U.S. EPA, the Board on Population Health and Public Health Practice, the Committee on Risk Characterization, the Committee on Comparative Toxicology of Naturally Occurring Carcinogens, and the Committee to Review EPA's Research Grants Program. Dr. Zeise is currently serving as a member of the NRC's Committee on Improving Risk Analysis Approaches Used

**Harold (Hal) Zenick, Ph.D.** is the Director for the Health and Environmental Effects Research in the Office of Research and Development in the U.S. Environmental Protection Agency (EPA). Dr. Zenick earned a Ph.D. in Physiological Psychology from the University of Missouri (Columbia). He also completed a Post-Doctoral Fellowship in Toxicology at the University of Cincinnati. Prior to joining NHEERL, he was a Branch Chief in EPA's Office of Health and Environmental Assessment, Office of Research and Development. Before coming to EPA, Dr. Zenick spent 13 years in academia with the Department of Environmental Health in the University of Cincinnati Medical School preceded by an appointment at New Mexico Highlands University. Dr. Zenick serves as EPA's liaison to the National Institute of Environmental Health Sciences (NIEHS), the National Toxicology Program (NTP), and the National Center for Environmental Health/Centers for Disease Control (NCEH/CDC) Advisory Councils/Boards. Currently Dr. Zenick serves as a U.S. Co-Chair of the Environmental Health Workgroup under the binational U.S.-Mexico Border 2012 Program. Within the Agency, he is Chair of the Agency's Health Effects Institute Advisory Board and is ORD's senior executive lead for environmental justice matters. . He has received numerous Agency awards including the prestigious Presidential Meritorious Executive Rank Award and the ORD Statesmanship award. Recently, he has had a leading role in several emerging programs at EPA including efforts to develop better indicators of public heath impact of environmental decisions. In this capacity, he has participated on a number of prominent National and Federal projects. Dr. Zenick also has the lead for the Office of Research and Development for several cross-EPA/cross-Federal Agency initiatives including the impact of the environment on the rapidly growing, aging population and the Futures of Toxicity Testing. Dr. Zenick has over 100 publications. His current interests are in integrating human health and ecological risk assessment, strengthening the linkages between environmental and public health agendas and agencies, and the application of emerging computational and molecule sciences in improving risk assessment practices.