

Short List of Candidates for the EPA Human Studies Review Board

The EPA, Office of the Science Advisor (OSA) is considering a few qualified individuals in the areas of human health risk assessment and human toxicology to serve on the EPA Human Studies Review Board (HSRB).

The OSA has reviewed and identified 7 possible candidates to serve on the HSRB. Brief biographical sketches on these candidates are provided below. OSA invites comments or other documentation from members of the public that the OSA should consider in the selection of HSRB members. Any information furnished by the public in response to this Web site posting will be combined with information already provided by the candidates and gathered independently by the OSA. In making the final selection of HSRB members, the combined information will be reviewed and evaluated for any possible financial conflict of interest or a possible appearance of a lack of impartiality. The information will also be used to ensure appropriate balance and breadth of expertise needed to address the charge to the Board. Candidates not selected for membership may be considered in the future as vacancies become available, employed as a consultant to the HSRB, or employed as a member or consultant to an HSRB subcommittee. **Please e-mail your comments no later than noon, Eastern Time, Wednesday, June 1, 2016 to Jim Downing, OSA (Downing.Jim@epa.gov).**

HSRB Nominees:

Deborah H. Bennett, Ph.D.

Dr. Deborah Bennett, Associate Professor, Environmental and Occupational Health, Department of Public Health Sciences, University of California, Davis. My research focuses on the fate, transport, and exposure to chemicals in a multimedia environment within the context of environmental risk assessment. Current research interests fall into three areas. First, I am developing an indoor fugacity model to assess exposures resulting from indoor releases of pesticides and other organic compounds. These exposures are important for young children in homes where pesticides are used due to their increased contact with indoor surfaces and their hand to mouth activity. I have developed a model of the indoor environment, including air and indoor surfaces such as floors and walls, an important sink/source for semi-volatile compounds. I am expanding this model to include the resulting exposure. We are also considering the models applicability for use with other consumer products.

Second, I am looking at the exposure to Hazardous Air Pollutants (HAPs) in various indoor microenvironments through modeling and monitoring. We have quantified variability and uncertainty in indoor sources strengths and the resulting risks from one study. We are developing a model for assessing exposures to HAPs in microenvironments and determine the relative risk between compounds. Finally, we are conducting a field study with two components, the first to monitor a suite of hazardous air pollutants in microenvironments around Boston, and the second to monitor indoor, outdoor, workplace, and personal

exposure for a panel of individuals in both urban and suburban regions in and around Boston.

In the third area, I am developing methods for quantifying, and uses for, the Intake Fraction of compounds. The Intake Fraction is the integrated incremental intake of a pollutant released from a source or source category and summed over all exposed individual per unit of emitted pollutant. These values are useful for comparative risk assessments and life cycle impact assessments. Environmental problems are often classified by the affected media, such as air, water, or soil contamination. However, for multimedia pollutants, air pollutants can be transferred to soil and contaminated soil can transfer pollution into air through air/soil interactions. Multimedia modeling can be used to address this need, and has been a focus of my research. I have published papers on the intake fraction values for a number of multimedia pollutants, as well as the spatial variability in these intake fraction values resulting from agricultural patterns.

I have also developed methods for quantifying the spatial range and temporal persistence of organic pollutants in a multimedia environment, a classification system for persistent pollutants and evaluated the use of long range transport models in the context of regulatory decisions through a model comparison.

Jennifer Cavallari, ScD, CIH

Dr. Cavallari is a Certified Industrial Hygienist (CIH) and occupational epidemiologist. She received her doctorate in Environmental Health from Harvard TH Chan School of Public Health (HSPH) in 2007 where she also completed a post-doctoral fellowship. Since 2012, she has been an Assistant Professor within the Division of Occupational and Environmental Medicine at UConn Health.

Dr. Cavallari has a broad range of research experiences, jointly focused on exposure and epidemiology. She has performed panel studies among construction workers evaluating the association between welding fume exposure and cardiovascular disease by understanding the mechanisms through which small particles produce a cardiovascular response. She has also evaluated biomarkers of exposure including toenail, hair, and urine metals as well as cardiovascular response including heart rate variability, circulating adhesion molecules and other sub-clinical cardiovascular responses.

Yet, Dr. Cavallari's work in exposure assessment goes beyond inhalation exposure routes. Her research has also focused on evaluating the contribution of the dermal exposure route from polycyclic aromatic hydrocarbons (PAHs) to pavers working with asphalt fumes. More recently at UConn, Dr. Cavallari has been working on a green cleaning which sought to evaluate phthalate exposures and health symptoms among custodians as they transition from conventional to green cleaners. In addition to personal exposure monitoring and biomonitoring, Dr. Cavallari has also assessed exposures via questionnaires.

In addition to performing her own research, Dr. Cavallari is well-experienced in reviewing studies. Since 2008, Dr. Cavallari has been teaching occupational epidemiology. First at

HSPH where she co-taught the Epidemiology of Environmental and Occupational Health Standards. As co-instructor, Dr. Cavallari taught graduate students to critically review the epidemiology that informs occupational and environmental health standards. She focused on allowing the students to carefully balance study results in light of the potential biases. She continues to lecture at HSPH and teaches Occupational and Environmental Epidemiology at UConn Health.

In summary, Dr. Cavallari has dedicated her career to understanding how occupational and environmental exposures contribute to health.

Alesia Ferguson, PhD

I am currently an Associate Professor in the Department of Environmental and Occupational Health (EOH). My earlier work focused on human dermal exposure assessment for children and adults to various contaminants (e.g., pesticides, dioxins, lead, hair-styling products) through videotaping/video-translation methods, numerical modeling, and adherence chamber studies. I am currently on my 5th funding cycle through the environmental protection agency (EPA) focused on exposure assessment, education and outreach to various communities concerning contaminants found in the home environment (4 as Principal Investigator). I have great experience with human subject's research, and the development and approval of human subject's protocols over the years. I have served on numerous students projects that also involve human's subject's research.

My interest areas lie in developing *Healthy Homes* initiatives for the State, and continuing my work in exposure assessment. I currently teach courses or individual lectures in Environmental Public Policy, Occupational Hazards Control, Human Exposure Assessment, Built Environment, and Environmental and Occupational Regulation, and Policy and Law and also serve as a lead trainer for EPA for over 6 years. I serve on a number of committees in the College of Public and Campus Wide, and I am currently the director for the MPH program in the EOH program and the Academic Senate Past-President (previous President) here at the University of Arkansas for Medical Sciences of 1400 faculty. My resume will demonstrate my broad knowledge in the areas of environmental science, human exposure science and occupational exposures.

Dale Hattis, Ph.D.

Dr. Dale Hattis, Research Professor, George Perkins Marsh Institute, Clark University, Worcester, Massachusetts. For the past forty two years I have been engaged in the development and application of methodology to assess the health, ecological and economic impacts of regulatory actions. My work has focused on the development of methodology to incorporate interindividual variability data and quantitative mechanistic information into risk assessments for both cancer and non-cancer endpoints. Specific studies have included pharmacokinetic modeling and risks from developmental effects of the organophosphate insecticide chlorpyrifos, dosimetric uncertainties in epidemiological information on dioxin cancer risks, age-related differences in pharmacokinetic processes and susceptibility for carcinogenesis, renal effects of cadmium, reproductive effects of ethoxyethanol,

neurological and cardiovascular effects of methyl mercury, neurological effects of acrylamide, chronic lung function impairment from coal dust, four pharmacokinetic-based risk assessments for carcinogens (for perchloroethylene ethylene oxide, butadiene and diesel particulates), an analysis of uncertainties in pharmacokinetic modeling for perchloroethylene and an analysis of differences among species in processes related to carcinogenesis. Until recently I have been a member of the National Toxicology Program Board of Scientific Counselors. In the past I have also served as a member of the Environmental Health Committee of the EPA Science Advisory Board, and as a member of the Food Quality Protection Act Science Review Board. I have also been a counselor and I am a Fellow of the Society for Risk Analysis.

Walter T. Klimecki, DVM, Ph.D.

Dr. Walter Klimecki, Chair (Interim) Department of Pharmacology and Toxicology College of Pharmacy, University of Arizona. Academic: I hold two doctorates, a DVM from Ohio State University (1984) and a Ph.D. in Pharmacology and Toxicology from the University of Arizona (1994). I completed an NRSA-funded post-doctoral fellowship at the Arizona Cancer Center. Following employment in the biotech sector developing human genetic testing platforms I joined the University of Arizona in 2000 as an Associate Research Scientist, and transitioned to a tenure-track position in Pharmacology and Toxicology in 2006, where I am currently an Associate Professor.

Research: My academic research has progressed in two complementary paths. My work has studied the human determinants of individual variability in disease and in response to environmental toxicants. Featured prominently within that is my keen interest in inherited human genetic variation and its potential impact on human health. My work has involved numerous IRB-approved studies in populations of human research participants. Among other findings, our work has identified genetic and non-genetic factors that drive person-to-person differences in ingested arsenic biotransformation, a well-recognized risk factor for human arsenic associated disease. My laboratory also has a sustained, funded effort in mechanistic toxicology. We currently have two funded projects aimed at understanding the carcinogenic mechanism of action of inorganic arsenic in experimental models of lung cancer. I believe that the translational spectrum of the research that I have led gives me a unique tool set to bring to the HSRB.

Teaching, Mentoring, Outreach: I have a longstanding commitment to teaching and to outreach to communities impacted by environmental contaminants. I am an active educator at the undergraduate, graduate, and professional course level. I have presented at workshops on ethics pertaining to human genetics. Last summer I participated in a residential 2-day undergraduate retreat on bioethics, and I have been invited to return this summer. I am the P.I. of a recently-awarded R25 from NIEHS aimed at providing two years of training and paid research experience in the environmental health sciences to disadvantaged undergraduates. As one example of putting teaching and outreach into action, two weeks ago, over spring break, I led a team of my R25 trainees to the Navajo nation to work on a colleague's R21 (NIEHS) project quantifying metal levels in soil, water, and sediment downstream of the Gold King Mine spill. During that visit I presented a

community-understandable summary of the toxicology and potential health impact of selected metals. I have delivered many similar talk in diverse communities and settings, on both sides of the US/Mexico border. I cite these examples to emphasize that the experience that I have as a leader of studies utilizing human participants is within a larger context and value system of respect and empathy that I think is important in the review of studies involving human participants.

Leadership: I am the Interim Head of the Department of Pharmacology and Toxicology at U. Arizona. At the college level I am an elected member of the Academic Freedom and Tenure committee. I was recently appointed as the Chair of the University of Arizona Graduate Council, the shared governance body for graduate education at U. Arizona. I have served as an elected Counselor, and more recently in the Presidency 4-year track of the Metals Specialty Section of the Society of Toxicology.

Anne M. Riederer, ScD

Dr. Anne Riederer is environmental health scientist with research interests in human exposure studies, biomarkers, risk assessment, developmental neurotoxicant exposures and outcomes, pesticides, heavy metals, and global environmental health. Her research has generated primary data important for evaluating critical pathways of exposure to environmental neurotoxicants among children and adults (including pregnant women and women of childbearing age). She has led or contributed to studies involving sampling and analysis of pesticides, heavy metals, and other toxics in various clinical (urine, blood, cord blood, breast milk) and environmental (water, food, house dust, soil) samples. She has also analyzed large biomarker data sets (e.g., the U.S. National Health and Nutrition Examination Survey [NHANES]) elucidating factors influencing body burdens of selected contaminants in children and adults. Last, she has led or collaborated on studies contributing improved methods for environmental biomarker data analysis and children's dietary pesticide exposure and risk assessment.

Dr. Riederer works (part-time) as a Research Scientist for the American College of Medical Toxicology and teaches introductory environmental and occupational Health, and global environmental health, at George Washington University. She also holds adjunct/affiliate faculty appointments at the University of Washington and Emory University, serves as Treasurer (elected) of the International Society of Exposure Science, and is a technical advisor to Blacksmith Institute/Pure Earth. Previously, she was an American Association for the Advancement of Science and Technology Policy Fellow hosted by the EPA Assistant Administrator for Research and Development, Research Assistant Professor and Co-Director of the Global Environmental Health Program at Emory University, and Senior Research Associate, Hagler Bailly Consulting (Arlington VA and Manila, Philippines). She holds a BS in Neuroscience from Brown University, an MS in Foreign Service from Georgetown School of Foreign Service, and an MS (Environmental Science and Engineering) and ScD (Environmental Health) from the Harvard School of Public Health. She currently lives in Seattle, WA with her husband and two young children.

Christine Rioux, PhD, MS

Dr. Christine Rioux, Research Assistant Professor, Department of Public Health and Community Medicine (PHCM), Tufts University, Boston/Medford MA. Dr. Rioux's research and expertise bridge the disciplines of environmental science and engineering and public health. Her work focuses on environmental exposures, the role of neighborhood factors on disease progression and international work with USAID on the One Health program examining the intersection of animal, human and environmental health. Her research and teaching promotes an interdisciplinary perspective, a fertile ground for discovery and integration of new and prior knowledge. Her most recent projects involved leading trainings in health risk assessment in the Democratic Republic of Congo and Gabon to physicians, veterinarians, environmental scientists, and forestry students. Her prior publications have advanced the understanding of susceptibility and vulnerability to environmental exposures using geo-spatial analyses, community-based research, and interdisciplinary risk assessment.

She currently teaches environmental and occupational health and epidemiology/biostatistics and is a course director for the Applied Learning Experience in the MPH program.