
APPENDIX A: CURRICULUM VITAE

KRISTEN A. KETELES, Ph.D.

Work Address

EPA National Enforcement Investigations Center
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Education

Louisiana State University	2001	Ph.D.	Biological Sciences, Zoology
Coastal Carolina University	1995	B.S.	Marine Science

Field of Specialization and Areas of Interest

- Human Health and Ecological Risk Assessment
- Toxicogenomics (gene expression in response to chemicals)
- Environmental Forensics/Hazard Assessment
- Children's Environmental Health
- Pesticides
- Fate and Effects of Contaminants of Emerging Concern in the Environment

Professional Society Affiliation

Society of Toxicology
Society of Environmental Toxicology and Chemistry

Professional Experience

Senior Toxicologist, EPA National Enforcement Investigations Center (NEIC), 2016-Present

Duties: Provides technical assistance in the field of toxicology to support criminal investigations and prosecutions, including written reports and declarations, and expert witness testimony during trials and sentencings involving intentional poisonings and chemical exposures resulting from criminal negligence. Communicates potential risks from chemical exposure to juries and other lay audiences. Serves on national technical workgroups including the Risk Assessment Forum and the Science Support Panel. Reviews science policy documents and briefs the NEIC director on these documents. Remains active in the field of toxicology by planning and conducting research. Directs data collection and analysis related to risk assessment as well as advanced monitoring research and other studies. Determines risk from chemical exposures to law enforcement and first responders and establishes clearance levels. Serves as chair of the EPA Risk Assessment Forum Human Health Oversight Committee.

Toxicologist (National Technical Expert), EPA Region 8, Technical Assistance Unit and Pollution Prevention, Pesticides, and Toxics Unit, Denver CO, 2008-2016

Duties: Provided technical assistance regarding human health and ecological effects from exposure to pesticides, metals (including mercury), volatile organic compounds and other toxics to the public, state and local officials, and other federal agencies; Served as a technical expert on risks and effects of pesticides and toxics (PAHs, VOCs, PCBs, lead, mercury, asbestos); Conducted human health and ecological risk assessments at superfund sites; Assessed risk from exposure to chemicals from spills and releases during Emergency Response operations and established screening levels and clearance levels; Served as technical expert on workgroups to develop guidance and policies to protect human health and the environment from exposure to chemicals; Assisted with the training of pesticide applicators; Provided toxicological expertise to the Children's Environmental Health and Air Toxics Program; Served on the Air Toxics Risk Assessors workgroup and the Chemical Safety for Sustainability Implementation Team. Prepared briefings on technical issues for senior leadership; Conducted research on the effects of endocrine disrupting chemicals on aquatic life using toxicogenomic tools. Presented information at scientific and public meetings. Provided technical assistance in the field of toxicology to support criminal investigations and prosecutions.

Acting Deputy Director, EPA National Enforcement Investigations Center (NEIC), 2011

Duties: Provided management oversight and technical leadership to NEIC's Program Managers and Branch Chiefs to ensure that the overall goals to provide forensic science support to the enforcement community of EPA were achieved. Resolved differences in scientific opinion and developed a framework to address these differences.

Affiliate Faculty, Colorado Christian University, Lakewood CO, 2007-Present

Duties: Teaches Biology (general education), Environmental Science, and Human Genetics and Genomics.

Instructor, Miami University, Oxford OH, 2015-Present

Duties: Teaches online classes in the field of environmental science and conservation including, Biology in the Age of Technology, Primate Biology and Conservation, Great Lakes Ecosystem, and Environmental Stewardship Education.

Lecturer, University of Colorado Denver, Denver, CO, 2009-2011

Duties: Taught graduate course in Environmental Biology.

Coastal Watershed Condition Assessment Coordinator (Contaminants Specialist), National Park Service-Water Resources Division, Contractor with Texas A&M University, 2004-2008

Duties: Assessed threats to public health and natural resources within and adjacent to coastal National Parks; provided technical assistance regarding health effects and natural resource damage during chemical spill response and provided technical expertise for spill contingency planning in coastal National Parks. Coordinated projects working with multiple stakeholders to assess environmental impacts to National Park resources. Assured that projects were

completed on time and met the scope of work. Communicated the results of the assessments to Park managers.

Assistant Professor of Biology, University of Central Arkansas, Conway, AR, 2001-2004

Duties: Advised graduate students, maintained a research program in environmental toxicology, taught graduate and undergraduate courses (Environmental Toxicology, Health Effects from Environmental Contaminants, Environmental Science, and Introductory Biology).

Visiting Scientist, Federal Bureau of Investigation, Counter Terrorism Forensic Science Research Unit (FBI-CTFSRU) Quantico, VA, 2003.

Duties: Developed a Polymerase Chain Reaction (PCR) DNA-based method to detect biotreats (*Bacillus anthracis*) in environmental samples.

Adjunct Professor of Biology, River Parishes Community College, Sorrento, LA, 2001

Graduate Research Assistant, Louisiana State University, Baton Rouge, LA, 1999. Effects of PAH on trace metal bioaccumulation in the darter goby, *Gobionellus boleosoma*. Planned and conducted research.

Graduate Research Assistant, Louisiana State University Baton Rouge, LA, 1998. Hazardous Materials Research Center: Fate of PAH contaminants in the environment.

Senior Research Associate, Dartmouth College, Hanover, NH, 1996-1997. Superfund Basic Research Program: Bioaccumulation and biomagnification of toxic metals including mercury in lake foodwebs throughout the Northeastern Region of the U.S.A. Planned research activities, collected data, and briefed leadership including a congressional delegation on the findings of the research.

Workgroups Served On

National Toxicology Program Workgroup
Chemical Safety for Sustainability Implementation Team
Risk Assessment Forum Human Health Oversight Committee, Chair 2020
Science Technology Policy Council Science Support Panel
Air Toxics Risk Assessors
OLEM Human Health Regional Risk Assessors Forum

Presentations

Keteles, K.A. and A. R. Kadry. A Risk-Based Investigation on an Accidental Exposure of a Bison Herd to Chlorophacinone. Society of Toxicology, San Antonio, Texas, March 2018.

Keteles, K.A. Toxicology and Environmental Crimes: Answering, "So what?". Colorado Environmental Crimes Task Force, February 23, 2017.

K.A. Keteles, A.M. Vajda, D. Winkelman, J. Beihoffer, D. Ekman, D.L. Villeneuve, J.M. Lazorchak, A. Jastrow, T. Collette. Use of bioactivity tools to measure estrogenic mixtures below WWTPs

with differing treatment technologies. Society of Environmental Toxicology and Chemistry 36th Annual Meeting, Salt Lake City, UT, November 2015.

Dewoskin, R.S., G.L. Diamond, J. Brown, M.H. Follansbee, K.A. Keteles, C.R. Partridge. Predicting Blood Lead Following Short-Term Exposures Using the All Ages Lead Model (AALM), Society of Toxicology, Phoenix, AZ, March 2014.

Keteles, K.A. Schwindt, A.R., Winkelman, D.L., Vajda, A.M., Beihoffer, J. Bioindicators of exposure to Endocrine Active Chemicals, Rocky Mountain Society of Environmental Toxicology and Chemistry Denver, CO, April 2013.

Keteles, K.A. Science for EPA Region 8's Future (invited), National Academy of Sciences National Research Council Committee, Washington, DC, August 8, 2011.

Keteles, K.A. Children's special vulnerabilities to environmental exposures including prenatal and developmental windows of susceptibility, Improving Children's health through federal collaboration speaker series, November 10, 2010.

Keteles, K.A. EPA's response to the Deepwater Horizon Oil Spill, (Invited) America Water Resources Association, Denver CO, August 2010.

Keteles, K.A. Rethinking pristine: Contaminants of emerging concern in high elevation Lakes, Water Professionals Meeting, Fort Collins, CO, Feb 2010.

Keteles, K.A. Why children are not little adults: toxicology 101. Children's Environmental Health Summit, Missoula MT, August 11, 2009.

Keteles, K.A., E. Smith, T. Walter, and D.S. Johnson. Variation in cadmium bioavailability, Society of Environmental Toxicology and Chemistry 25th Annual Meeting, Portland, Oregon, November 2004.

Keteles, K.A., T. Walter, E. Smith, M. Schroeder. Invited Paper. The influence of water quality on trace metal bioavailability. Arkansas Water Resources Meeting, Fayetteville, AR, April 2004.

Keteles, K.A. The influence of nutrients on the toxicity of arsenate and arsenite. Society of Environmental Toxicology and Chemistry 24th Annual Meeting, Austin, Texas, November 2003.

Keteles, K.A. and J.W. Fleeger, The trophic transfer of exoskeleton-associated metals in crustacean prey (*Palaemonetes pugio*) to a fish predator (*Fundulus grandis*). Society of Environmental Toxicology and Chemistry 22nd Annual Meeting, Baltimore, MD, November 2001.
Keteles, K.A. and J.W. Fleeger. The effect of source of exposure on the uptake and partitioning of metals by *Palaemonetes pugio*. Society of Environmental Toxicology and Chemistry 21st Annual Meeting. Nashville, TN, November 2000.

Keteles, K.A. and J.W. Fleeger. Uptake and partitioning of metals by *Palaemonetes pugio*. Society of Environmental Toxicology and Chemistry 20th Annual Meeting, Philadelphia PA, November 1999.

Publications

Cavallin, J.E., W. A. Battaglin, J. Beihoffer, B. R. Blackwell, P. M. Bradley, A. R. Cole, D. R. Ekman, R. N. Hofer, J. Kinsey, K. Keteles, R. Weissinger, D. L. Winkelman, and D. L. Villeneuve. Effects-Based Monitoring of Bioactive Chemicals Discharged to the Colorado River before and after a Municipal Wastewater Treatment Plant Replacement. *Environmental Science & Technology* 2021 55 (2), 974-984.

Weissinger, R.H., B.R Blackwell, K.A. Keteles, W. A Battaglin, P.M. Bradley. (2018) Bioactive contaminants of emerging concern in National Park waters of the northern Colorado Plateau, USA. *Science of The Total Environment*. 636: 910–918

Ekman, D.R., K.A. Keteles, J. Beihoffer, J.E. Cavallin, K. Dahlin, J.M. Davis, A. Jastrow, J.M. Lazorchak, M. Mills, M. Murphy, D. Nguyen, A.M. Vajda, D. L. Villeneuve, D.L. Winkelman, and T.W. Collette. (2018) Use of Targeted and Untargeted Effects-based Monitoring Tools to Assess Impacts of Wastewater Effluents on Fish in the South Platte River, CO. *Environmental Pollution* 239: 706–713.

Bai, X, Lutz, A., Carroll, R. Keteles, K., Dahlin, K., Murphy, M., and Nguyen, D. (2018) Evaluating occurrence, distribution, and seasonality of pharmaceuticals and other emerging contaminants in urban watersheds. *Chemosphere*. 200: 133-142.

Jastrow, A., D. Gordon, K. Auger, E. Punska, K. Arcaro, K. Keteles, D. Winkelman, D. Lattier, A. Biales, J. Lazorchak. (2017) Tools to minimize inter-laboratory variability in vitellogenin gene expression monitoring programs. *Environmental Toxicology and Chemistry*. 36 (11), 3102-3107.

Schwindt, A.R., D. Winkelman, K.A. Keteles, M. Murphy, A. Vajda. (2014) An environmental estrogen disrupts fish population dynamics through direct and transgenerational effects on survival and fecundity. *Journal of Applied Ecology*. 51(3), 582-591.

U.S. EPA (Environmental Protection Agency). (Contributing Author) (2010) Integrating Ecological Assessment and Decision-Making at EPA: A Path Forward. Results of a Colloquium in Response to Science Advisory Board and National Research Council Recommendations. Risk Assessment Forum. Washington, DC. EPA/100/R-10/004.

Millward, R.N., Fleeger, J.W., Reible, D.D., Keteles, K.A., Cunningham, B.P. and Zhang, Li. (2001) Pyrene bioaccumulation, effects of pyrene exposure on particle size selection and fecal pyrene content in the oligochaete, *Limnodrilus hoffmeisteri* (Tubificidae, Oligochaeta). *Environmental Toxicology and Chemistry*. 20 (6), 1359–1366.

Keteles, K.A. (2001) Metal partitioning in *Palaemonetes pugio* and its role in depuration and trophic transfer. Dissertation, Louisiana State University, Baton Rouge, LA.

Keteles, K.A. and J.W. Fleeger (2001) Metal partitioning among tissues and exoskeleton of *Palaemonetes pugio* and its role in depuration and trophic transfer. *Marine Pollution Bulletin*. 42: 1397-1402.

Awards, Grants, and Fellowships

Gold Medal for Commendable Service (2018), Terminix Enforcement Criminal Team for Outstanding Support to the Terminix Criminal Enforcement Case.

EPA Science Achievement Award (2018), South Platte Endocrine Disruption Study Team, for engagement in a multi-year collaborative research project to advance scientific knowledge and analytic methods regarding the presence of estrogenic chemicals in public water ways.

Bronze Medal for Commendable Service (2017), Boasso America Criminal Case Team in recognition of the Boasso Enforcement Team's outstanding investigative efforts leading to the sentencing of Boasso and nine individual defendants totaling 343 months of incarceration.

Regional Applied Research Effort: "Using a biosensor tool to evaluate the safety of produced water for beneficial reuse during drought conditions in the west", 2017, \$98,440.

EPA Regional Applied Research Effort: "Application of 21st century bioanalytical tools to identify sources and effects of bioactive contaminants associated with select municipal wastewater discharges to the South Platte and Colorado River watersheds" 2017, \$134,000.

EPA Region 8 Office of Enforcement Compliance and Environmental Justice Certificate of Excellence (2016) for exemplary work to quickly resolve a significant pesticide misuse by securing a fast and effective remedy in the Meyers Ranch incident.

Science Achievement Award (2013) for outstanding achievement in cementing partnerships to bridge a critical gap in laboratory capacity with the development of a novel laboratory method for the expedited assessment of the viability of *Bacillus anthracis* from an environmental sample.

EPA Science Award (2012) for initiative and creativity in the use of novel molecular biology methods to detect endocrine active chemicals in the environment.

EPA Bronze Medal for Commendable Service (2011), Chemical Safety for Sustainability Research Program Development Team for design and development of the Chemical Safety for Sustainability Research Program Action plan, which embodies innovative, trans-disciplinary approaches for understanding chemicals and enhancing sustainability.

Regional Methods Initiative: "Development of a Whole Effluent Test for androgenicity and estrogenicity" 2009, \$180,000.

Office of Research and Development Pharmaceuticals in the Environment Workshop 2009, \$60,000.

Oak Ridge Institute for Science and Education Fellowship: Visiting Scientist Fellow at the Federal Bureau of Investigation Academy.

URC Faculty Research Grant: "Variation in the uptake of potentially toxic trace metals by aquatic organisms inhabiting agricultural vs. forested watersheds" 2002, \$8,795.00.

University Research Council Summer Stipend: "The Effect of Calcium Limitation on Cadmium Uptake" 2002, \$2,600.

NSF UFE Workshop, "New Approaches and Techniques for Teaching Science: Addressing Environmental Problems to Stimulate Undergraduate Learning."

"The influence of source of exposure on the uptake and partitioning of metals by *Palaemonetes pugio*" National Sigma Xi Grant-in Aid of Research; 1999, \$800.

Litigation Experience: Trials and Depositions

USA v. CMS Energy Corporation; Western District of Michigan, Grand Rapids, MI; February 22, 2018; Deposition at US Department of Justice Environment and Natural Resources Division. Washington, DC.

USA v Raymond Mitchell; Southern District of Georgia, Savannah, GA; March 18, 2016; Testified as an expert witness at the sentencing on the toxicity and potential for harm from exposure to naphthalene.

USA v Ryan Chamberlain; Northern District of CA, San Francisco, CA; February 5, 2016; Testified as an expert witness in a Delbert hearing on the use of toxicity data to determine the lethal effects from exposure to the biological toxins, ricin and abrin.

USA v Carl Kieser; Central District of Illinois, Peoria, IL; October 29, 2014; Testified as an expert witness in a criminal trial on the toxicity of the herbicide, diuron to aquatic life.

USA v Martin Kuna; District of Oregon, Portland; OR, July 22, 2013; Testified as expert witness at the sentencing on the effects of lead on children.

Colorado v. Joseph Loskinski; Weld County District Court, Greeley, CO; December 12, 2012; Testified as an expert witness at the sentencing on the effects and lethality of the rodenticide, strychnine.

Litigation Experience: Expert Reports, Declarations and Affidavits

Expert witness opinion report for *USA v. Edward Miller*; District of Nebraska; April 8, 2020; Expert opinion report on health effects from exposure to chemicals found at illegal dump sites in Hamilton County, Nebraska.

Expert witness opinion report for *USA v. Lloyd Robl*; Western District of Wisconsin, Madison, WI; July 30, 2019; Expert opinion report on health effects from exposure to asbestos.

Expert witness opinion report for *USA v. Total Reclaim Lorch and Zirkle*; Western District of Washington, Seattle WA; March 25, 2019; Expert opinion report on health risks from exposure to mercury from electronic waste.

Declaration for *USA v. Tonawanda Coke Corporation*; Western District of New York, Buffalo, NY; September 17, 2018; Expert opinion on the health effects from exposure to benzene and particulate matter.

Expert witness opinion report for *USA v. Chelsea Environmental-Paul Potter*; Eastern District of VA, Alexandria, VA; August 21, 2018; Expert opinion report on health effects from exposure to asbestos.

Expert witness opinion report for *USA v. CMS Energy Corporation*; Western District of Michigan, Grand Rapids, MI; January 16, 2018; Expert opinion report on risks from the discharge of cement kiln dust leachate.

Expert witness opinion report for *USA v. OE Construction Corporation*; District of Colorado, Denver, CO; June 19, 2017. Expert opinion on health effects from exposure to diesel emissions. Expert witness report for *USA v. Dipen Patel*; Northern District of Indiana, Hammond, IN; January 26, 2017; Expert opinion on health effects from exposure to the pesticide, Doom (active ingredient, dichlorvos).

Declaration for *USA v. Ryan Chamberlain*; Northern District of California, San Francisco, CA; February 5, 2016; Declaration to support the government's opposition to the defendant's motion to exclude expert witness testimony on the use of toxicological data to determine the toxicity of abrin and ricin.

Expert witness report for *USA v. Terminix International Company*; District Court of the Virgin Islands, St. Thomas, VI; December 1, 2015. Expert opinion on the methylbromide exposure incident.

Expert witness report for *USA v. Cenex Harvest States, Inc*; District of Montana, Great Falls, MT; January 22, 2013; Expert opinion on the toxicity of the gases released from a warehouse fire to livestock and human health.

Expert witness report for *USA v. Martin Kimber*; Northern District of New York, Albany, NY; February 2012; Summary of the health hazards of mercury by inhalation exposure.

Expert witness report for *USA v. Seville Colony*; District of Montana, Great Falls, MT; January 17, 2012; Expert opinion on the imminent and substantial endangerment from the illegal application of the rodenticide, strychnine.

Expert witness report for *USA v. Bazan et.al.*; United States District Court District of Kansas, Kansas City, KS; March 14, 2011; Expert opinion on the toxicity of the pesticide, methomyl.

Expert witness report for *USA v. Martha Hebert*; Eastern District of Louisiana, New Orleans, LA; November 10, 2011; Expert opinion on the falsification of whole effluent toxicity data.

Expert witness report for the *USA v. Roy Stricklin*; District of Wyoming, Casper, WY; September 8, 2011; Expert opinion on the risks to a population from the exceedance of the drinking water maximum contaminant level for coliform.