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Meg McArdle, M.S.

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Professional Profile

Ms. McArdle is an ecotoxicologist who specializes in applying risk assessment and causal analysis approaches to assess adverse effects to organisms exposed to chemicals and other stressors. She works on a variety of projects, including site assessments, product assessments, and natural resource damage assessments.

Ms. McArdle conducts environmental assessments of pesticides and veterinary and human pharmaceuticals. She also provides ecological risk assessment expertise to Superfund, RCRA, and state-led hazardous waste site projects across the country for industrial, commercial, and government clients. Many of her projects include critical analysis of toxicity test data and field survey assessment data, development of toxicity reference values for aquatic life and wildlife, and development of wildlife exposure models.

With over 20 years of experience in conducting ecological risk assessments, Ms. McArdle has worked on sites with heavy metals, PCBs, PAHs, dioxin, pesticides, and petroleum. These sites have included a variety of wetland, upland, freshwater and marine habitats. She has developed and executed numerous sampling and analysis plans to support ecological risk assessments. Following completion of ecological risk assessments, Ms. McArdle has provided her clients with risk-based approaches for site remediation that have met regulatory standards and approval.

Ms. McArdle has published scientific articles on aquatic toxicology, ecological risk assessment, endocrine disruption in fish, ecological effects of nanomaterials, as well as development of clean-up goals for contaminated sediments. Ms. McArdle has served as a board member of the North Atlantic Chapter of Society of Environmental Toxicology and Chemistry (SETAC). She also has served as the chairperson of the Education Committee of the Licensed Site Professionals Association (LSPA). She is currently serving on SETAC's Pharmaceuticals Interest Group.

Academic Credentials & Professional Honors

M.S., Marine Environmental Sciences, State University of New York, Stony Brook, 1999

B.S., Zoology, University of Rhode Island, 1996

Recipient of the first Evan Liblit Memorial Scholarship

Phi Beta Kappa Academic Honor Society

Alpha Award for Zoological Research

Recipient of the New England Environmental Business Council (EBC) Nicholas Humber Environmental-Energy Award for Outstanding Collaboration for work on the Comprehensive Remediation and Transformation of the Contaminated Shaffer Paper Site into the Senator Joseph Finnegan Park in Port Norfolk. June 2018.

Licenses and Certifications

40-Hour Hazardous Waste Operation and Emergency Response Certification (HAZWOPER)

8-Hour HAZWOPER Managers and Supervisor Training

Prior Experience

Senior Scientist, Menzie-Cura & Associates, Inc., 1999-2006

Graduate Research Assistant and Teaching Assistant, State University of New York, 1997-1999

Professional Affiliations

Society of Environmental Toxicology and Chemistry—SETAC

North Atlantic Chapter of SETAC

New England Environmental Business Council

Publications

McArdle ME, Fleming ML. Chapter 9. Wetlands. In JW Conrad Jr & WL Goodfellow Jr (Eds.), Environmental Science Deskbook, 2024-2025 ed. (Environmental Law Series). Thompson Reuters. ISBN: 979-8-3502-8757-8.

Menzie CA, Horr T, Kashuba R, Kierski MW, Kulacki KJ, McArdle ME, Ryan SR, Taylor AA. Emerging Frameworks and Tools for Environmental Risk Assessment. In DJ Paustenbach & K Feinberg (Eds.), Human and Ecological Risk Assessment: Theory and Practice, Third Edition (pp. 26). 2024. https://doi.org/10.1002/9781119742975.ch26.

Staveley, JP, Freeman EL, McArdle ME, Ortego LS, Coady KK, Bone A, Lagadic L, Weltje L, Weyers A, Wheeler JR. Current testing programs for pesticides adequately capture endocrine activity and adversity for protection of vertebrate wildlife. Integr Environ Asess Manag 2023, doi: 10.1002/ieam.4723.

Taylor AA, Tsuji JS, McArdle ME, Adams WJ, Goodfellow WL. Recommended reference values for risk assessment of oral exposure to copper. Risk Analysis 2022;1-8.

Taylor AA, Tsuji JS, Garry MR, McArdle ME, Goodfellow WL, Adams WJ, Menzie CM. Critical review of exposure and effects: implications for setting regulatory health criteria for ingested copper. Environ Manage 2020; 65: 131-159.

McArdle ME, Freeman EL, Staveley JP, Ortego LS, Coady KK, Weltje L, Weyers A, Wheeler JR, Bone AJ. Critical review of read-across potential in testing for endocrine-related effects in vertebrate ecological receptors. Environ Toxicol Chem 2020; 39(4):739-753.

EPRI. Chemical constituents in coal combustion products: cobalt. 3002016497. Electric Power Research Institute, Palo Alto, CA, 2019.

EPRI. Chemical constituents in coal combustion products: lithium. 3002012311. Electric Power Research

Institute, Palo Alto, CA, 2018.

McArdle ME, Kane Driscoll SB, Booth PN. An ecological risk-based cleanup strategy for contaminated sediments in a freshwater brook. Int J Soil Sed Water 2010; 3(2):1-24.

Kane Driscoll SB, McArdle ME, Plumlee MH, Proctor D. Evaluation of hexavalent chromium in sediment pore water of the Hackensack River, New Jersey, USA. Environ Toxicol Chem 2010; 29(3):617-620.

Kane Driscoll SB, McArdle ME, Menzie CA, Reiss M, Steevens JA. A framework for using dose as a metric to assess toxicity of fish to PAHs. Ecotoxicol Environ Saf 2010; 73:486-490.

McArdle M, Ziccardi L, Lowney Y, Kane Driscoll S. Considerations for interpreting nanomaterial toxicity studies for use in environmental risk assessment. Proceedings, International Conference on the Environmental Implications and Applications of Nanotechnology, University of Massachusetts Amherst, pp. 57-60, June 9-11, 2009. http://scholarworks.umass.edu/tei.

Menzie CA, Ziccardi LM, Lowney YW, Fairbrother A, Shock SS, Tsuji JS, HaMai D, Proctor D, Henry E, Su SH, Kierski MW, McArdle ME, Yost LJ. Importance of considering the framework principles in risk assessment for metals. Environ Sci Techol 2009; 43:8478-8482.

Kane Driscoll SB, Amos BC, McArdle ME, Menzie CA, Coleman A. Predicting sediment toxicity at former manufactured gas plants using equilibrium partitioning benchmarks for PAH mixtures. Soil Sed Contam 2009; 18(3):307-319.

Ziccardi L, McArdle M, Lowney Y. The ecological effects of nanomaterials: A focus on aquatic life. Special Issue on Applications of Nanotechnologies in Environmental Protection and Pollution, Part 1. Schulte J, Vaseashta A (eds), NANO: Brief Reports and Reviews 2008; 3(4):251-255.

Kane Driscoll SB, Amos CB, McArdle ME, Southworth B, Menzie CA, Coleman A. Use of Equilibrium Partitioning Sediment Benchmarks (ESBs) to predict toxicity of PAH contaminated sediments. Electric Power Research Institute (EPRI), Palo Alto, CA, 1010371, 2005.

Kane Driscoll SB, Amos CB, McArdle ME, Southworth B, Menzie CA, Coleman A. Sediment biotoxicity at former MGP and coking sites. Electric Power Research Institute (EPRI), Palo Alto, CA; New York State Electric & Gas Corporation, Binghamton, NY; Central Hudson, Poughkeepsie, NY; and PSEG Services, LLC, Newark, NJ, 1011168, 2004.

McArdle ME, McElroy AE, Elskus AA. Enzymatic and estrogenic responses in fish exposed to organic pollutants in the New York-New Jersey (USA) Harbor complex. Environ Toxicol Chem 2004; 23(4):953-959.

Cura JJ, Bridges TS, McArdle ME. Comparative risk assessment methods and their applicability to dredged material management decision-making. Hum Ecol Risk Assess 2004; 10:485-503.

Kane Driscoll SB, McArdle ME, Menzie CA, Thompson T, Mortensen L, Fitzpatrick A. Using Polycyclic Aromatic Hydrocarbons in sediments for judging toxicity to aquatic life: Volume I and II, EPRI Final Report. Electric Power Research Institute (EPRI), Palo Alto, CA, 1005280, 2003.

Menzie CA, Cura JJ, Kane-Driscoll SB, Lacey R, McArdle M. Assessing ecological risks of PAH-contaminated sediments. Proceedings, International Conference on Remediation of Contaminated Sediments, Venice, Italy, October 10-12, 2001.

Cura J, Kane Driscoll SB, Lacey R, McArdle ME, Menzie CA. Assessing ecological risks of PAH-contaminated sediments. In: Sediments Guidance Compendium. Electric Power Research Institute (EPRI), Palo Alto, CA, 1005216, 2001.

McArdle ME, Elskus AA, McElroy AE, Larsen BK, Benson WH, Schlenk D. Estrogen and CYP1A response of mummichogs and sunshine bass to sewage effluent. Mar Environ Res 2000; 50(1-5):175-179.

Specker JL, Schreiber AM, McArdle ME, Poholek A, Henderson J, Bengtson DA. Metamorphosis in summer flounder: effects of acclimation to low and high salinities. Aquaculture 1999; 176:145-154.

Presentations

Goodfellow WL, McArdle ME, Staveley J. Environmental Assessments: Calculating Predicted Environmental Concentrations (PECs) for Aquatic Animal Drugs. 30th Annual US Fish and Wildlife Service, Aquaculture Drug Approval Coordination Workshop. Bosman, MT. July 25, 2024

Bunge M, McArdle ME, Mihaich EM, Van Sprang P. The species sensitivity distribution approach as a tool for deriving safe threshold values for data-rich endocrine-active substances in the regulatory practice: case study on bisphenol A. 33rd Annual Society of Environmental Toxicology and Chemistry (SETAC) Europe Meeting, Dublin, Ireland, April 30-May 4, 2023.

Mihaich EM, Borgert C, Bunge M, McArdle ME, Sondenheimer K. The importance of integrating all of the evidence to identify endocrine disruption: a case study with bisphenol A. 33rd Annual Society of Environmental Toxicology and Chemistry (SETAC) Europe Meeting, Dublin, Ireland, April 30-May 4, 2023.

McArdle M, Goodfellow W, Folcik A, Adams W, Smith E. Recommended oral reference values for risk assessment of copper. Society of Risk Analysis Conference, Tampa, FL, December 4-8, 2022.

McArdle M, Folcik A, Goodfellow W, Adams W. Evaluating appropriate oral reference values for risk assessment of copper. 43rd Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Pittsburgh, PA, November 13-17, 2022.

McArdle M, Ryan S, Menzie C, Taylor A, Kulacki K, Kierski M, Kashuba R, Goodfellow W. Emerging Frameworks and Tools for Environmental Risk Assessment. 41st Annual Society of Environmental Toxicology and Chemistry (SETAC) SciCon2 North America, November 15-19, 2020.

Feifarek D, Staveley J, McArdle M, Freeman E, Hillwaker W. Bioactivity models as tools for predicting endocrine-mediated adversity – regulatory significance. 40th Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Toronto, ON, Canada, November 3-7, 2019.

Goodfellow WL, McArdle ME, and Brown KI. Harmful Algae Blooms (HABs): a regional and nationwide concern. Presentation to the Illinois Pollution Control Board, Chicago, IL, December 5, 2018.

Nusz J, Fairbrother A, Daley J, Burton G, McArdle M, Staveley J. Multiple lines of evidence applied for a realistic Toxic Substances Control Act ecological risk evaluation for D4 using environmental monitoring data. 39th Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Sacramento CA, November 4-8, 2018.

Goodfellow W, McArdle M, Brown K. Harmful algae blooms (HABs): a regional and nationwide concern. Presented to the Chicago Bar Association, October 2, 2018.

McArdle M, Staveley J, Freeman E, Ortego L, Coady K, Weltje L. Use of read-across for testing estrogen, androgen, thyroid and steroidogenesis pathways in vertebrate ecological receptors. 38th Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Minneapolis MN,

November 12-17, 2017

Yozzo KL, Hauri J, Kane Driscoll S, McArdle ME, Morrison A. Review of current literature of cardiotoxicity of oil to early life stages of fish for use in natural resource damage assessments. 37th Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Orlando FL, November 6-10, 2016.

Goodfellow WL, McArdle ME, Kulacki KJ. Designing, performing, and reviewing toxicity test for effective presentation in reports and journals. 37th Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Orlando FL, November 6-10, 2016.

Kane Driscoll SB, Hauri J, Kulaki K, Morrison AM, McArdle ME, Schierz P, Yozzo KL, Edwards ME. The influence of mixing energy on the concentration and composition of oil in laboratory toxicity tests. 37th Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Orlando FL, November 6-10, 2016.

Staveley JP, Freeman E, McArdle ME, Ortego L, Coady K, Weltje L. Testing for Endocrine-mediated effects in vertebrate ecological receptors: Potential for read-across. 37th Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Orlando FL, November 6-10, 2016.

Mogharabi S, McArdle ME. The murky implications of the new Clean Water Rule. Women's Council on Energy and the Environment (WCEE) Lunch and Learn Meeting, Washington DC, October 5, 2016.

BenKinney M, Goodfellow WL, McArdle ME. Water quality standards and permitting: recent initiatives may soon influence change. Exponent Webinar, May 18, 2016.

Morrison AM, McArdle, M, Menzie C. A tiered approach to causal analysis in natural resource damage assessment. 35th Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Vancouver, BC, Canada, November 9-13, 2014.

McArdle ME, Kane Driscoll SB, Menzie CA, Fairbrother A. Guidance for a weight-of-evidence approach for ecological risk assessments in British Columbia. 32th Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Boston, MA, November 13-17, 2011.

Morrison AM, Kane Driscoll S, McArdle, M, Menzie C. Integrated environmental benefit analysis of sediment remediation thresholds. 32nd Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Boston, MA, November 13-17, 2011.

Deardorff T, Menzie C, Ma J, Salatas J, Wickwire T, McArdle M, Pryke D. The first international environmental decision by The World Court on paper mill impacts. 32nd Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Boston, MA, November 13-17, 2011.

Kane Driscoll SB, McArdle ME, Montgomery C. Case studies of MassDEP findings on environmental risk characterizations. Co-presented a credited, 8-hour short course to Massachusetts Licensed Site Professionals Association, Westford, MA, April 27, 2010.

Kane Driscoll SB, McArdle ME, Montgomery C. Improve your understanding of ecological risk assessments to write a better RAO. Co-presented a credited, 4-hour short course to Massachusetts Licensed Site Professionals Association, Westford, MA, February 26, 2009.

Kane Driscoll S, McArdle M, Booth P. Use of Solid Phase Microextraction (SPME) to assess the contribution of PAHs to toxicity of sediments at a former manufacturing plant. Battelle Sediment Conference, Jacksonville, FL, February 5, 2009.

Kane Driscoll S, McArdle M, Proctor D. Evaluation of hexavalent chromium in sediment pore water of the Hackensack River, New Jersey. 29th Annual Society of Environmental Toxicology and Chemistry

(SETAC) North America Meeting, Tampa, FL, November 2008.

McArdle ME, Booth PB, Kane Driscoll SB. Benefits of using site-specific measurements and innovative approaches in an ecological risk assessment. Annual International Conference on Contaminated Soils, Sediments, and Water, Amherst, MA, October 20-23, 2008.

Booth PB, McArdle ME, Kane Driscoll SB. Application of ecological risk-based approach to the remediation of a former manufacturing plant site. Annual International Conference on Contaminated Soils, Sediments, and Water, Amherst, MA, October 20-23, 2008.

Kane Driscoll S, McArdle M, Menzie C. Assessing risk of metals in sediment: Experience in applying the weight-of-evidence approach to aquatic sites contaminated with heavy metals. Sediment Management Work Group Spring Sponsor Forum, Kalamazoo, MI, April 29—30, 2008.

Ziccardi L, McArdle ME, Lowney Y. The ecological effects of nanomaterials: are new stressors associated with mew technologies? International Symposium on Nanotechnology in Environmental Protection and Pollution (ISNEPP) 2007, Fort Lauderdale, FL, December 11-13, 2007.

McArdle ME, Menzie CA, Kane-Driscoll S. Experience in applying the weight-of-evidence approach to aquatic sites contaminated with heavy metals. 13th Annual Meeting of the North Atlantic Chapter of Society of Environmental Toxicology and Chemistry (SETAC), Bristol, RI, June 13-15, 2007.

Kane Driscoll SB, Amos CB, McArdle ME, Menzie CA, Coleman AJ. Use of site-specific equilibrium partitioning benchmarks for polycyclic aromatic hydrocarbon mixtures to predict the toxicity of sediment at former manufactured gas plants. 28th Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Milwaukee, WI, November 11-15, 2007.

McArdle ME, Wickwire TW, Menzie CA, Kierski M, Bailey E, Murray D. Applying risk based solutions to target efficient Brownfields redevelopment. Brownfields 2006 Conference, Boston, MA, November 12-15, 2006.

Menzie CA, McArdle ME. Applying weight-of-evidence approaches for management of sediments contaminated with metals. 27th Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Montreal, Canada, November 5-9, 2006.

Kane Driscoll SB, McArdle ME, Burmistrov D, Reiss M, Steevens JA. A methodology for deriving a tissue concentration of cyclodiene pesticides that is protective of fish. 27th Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Montreal, Canada, November 5-9, 2006.

Kane Driscoll SB, McArdle ME, Burmistrov D, Reiss M, Steevens JA. A methodology for deriving a dietary dose of total polynuclear aromatic hydrocarbons that is protective of fish. 27th Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Montreal, Canada, November 5-9, 2006.

Menzie CA, Fogarty K, McArdle ME. Risk-based environmental solutions for Brownfields: 2 Case Studies. Brownfields 2005 Conference, Denver, CO, November 2-4, 2005.

Kane Driscoll SB, Menzie CA, McArdle ME, Coleman A. Application of site-specific equilibrium partitioning sediment benchmarks for PAH mixtures to manufactured gas plants. 25th Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Portland, OR, November 14-18, 2004.

Kane Driscoll SB, McArdle ME, Menzie CA, Thompson TA, Coleman A. An examination of the bioavailability and toxicity of sediment-associated PAHs at manufactured gas plants. 24th Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Austin, TX, November 9-13, 2003.

McArdle ME, Kane Driscoll SB, Lacey R, Menzie CA, Thompson ME. The use of goose feces as a measure of exposure to lead contaminated sediments in an ecological risk assessment. 26th Annual Meeting of the New England Association of Environmental Biologists, Newport, RI, March 13-15, 2002.

Kane Driscoll SB, McArdle ME, Menzie CA, Coleman A. Application of sediment quality guidelines of PAHs to manufactured gas plant sites. 23rd Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Salt Lake City, UT, November 16-20, 2002.

Bridges T, Cura JJ, Kane Driscoll SB, McArdle M, Nelson M. A review of comparative risk assessment methods and their applicability to dredged material management decisions. 23rd Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Salt Lake City, UT, November 16-20, 2002.

Kane-Driscoll SB, McArdle ME, Lacey R, Thompson ME, Menzie CA. Using feces and eggs to assess waterfowl exposures to lead in an ecological risk assessment. 22nd Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Baltimore, MD, November 11-15, 2001.

Menzie CA, Cura JJ, Kane-Driscoll S, Lacey R, McArdle M. Assessing ecological risks of PAH-contaminated sediments. Proceedings, International Conference on Remediation of Contaminated Sediments, Venice, Italy, October 10-12, 2001. Battelle Press, Columbus, OH.

McArdle ME, McElroy AE, Elskus AA. Effects of organic contaminants in New York-New Jersey Harbor on fish steroid and xenobiotic biotransformation systems. 20th Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Philadelphia, PA, November 14-18, 1999.

McArdle ME, Elskus AA, McElroy AE, Larsen B, Benson W, Schlenk D. Differences in estrogenic response in two species, Fundulus heteroclitus and Morone saxatilis. 10th Annual Meeting of Pollutant Responses in Marine Organisms, Williamsburg, VA, April 25-29, 1999.

McArdle ME, McElroy AE, Elskus AA. Estrogenic potential of organic contaminants in New York Harbor. Presentation of the Tibor T. Polgar Fellowship Program.

McArdle ME, McElroy AE, Elskus AA. The estrogenic potential of organic contaminants in the New York-New Jersey Harbor Complex sediments. 19th Annual Society of Environmental Toxicology and Chemistry (SETAC) North America Meeting, Charlotte, NC, November 15-19, 1998.

Project Experience

Prepared a white paper on the state of the science of pharmaceuticals personal care products (PPCPs) in the environment with a focus on overland spraying.

Part of a multi-disciplinary team for one of the first manufacturer-requested risk evaluations to be submitted under TSCA. Conducted a systematic review of available information to assess environmental risks of octamethylcyclotetrasiloxane (D4).

Conducted environmental assessments and developed categorical exclusions, as appropriate, for human, veterinary and animal care products.

Conducted a comprehensive review of the toxicity of petroleum oil to aquatic species with a focus on adverse effects to early life stages of fish.

Led an ecological risk assessment for a large former coal-fired power plant along a large river. Developed a scope of work and sampling and analysis plan to support a site-specific ecological risk assessment of

contaminants associated with coal combustion residues (CCRs) placed in unlined basins in upland, wetland, and aquatic habitats. Participated in a field effort to assess the presence of chemicals associated with CCRs in surface water, sediment and biota. Led and conducted the field sampling and managed the analytical analyses to support the ecological risk assessment. Prepared the risk assessments in accordance with the Massachusetts Contingency Plan (MCP).

Directed the ecological risk assessment for the Senator Joseph Finnegan Park project in Dorchester, MA. This project was recognized by the New England Environmental Business Council (EBC) in 2018.

Conducted ecological risk assessments for a portion of a tidal river in southern Connecticut, which contained elevated levels of lead, thought to be related to a former lead battery manufacturing plant. Developed preliminary remediation goals for sediments that take into account water depth and other factors in different areas of the river. Provided support regarding the ecology of the river needed for the permit application for the dredging project. Involved in the public meetings held to inform the public of the site and the planned dredging project. Currently providing support on the remediation of the river, including reviewing aquatic toxicity results of process water from benchtop pilot studies of treated water from dewatered dredged sediment from the river.

Managed human health and ecological risk assessments for a former manufacturing site impacted by historic fuel oil release in upland, wetland, and aquatic habitats. Developed a scope of work and sampling and analysis plan to support a site-specific human health and ecological risk assessment of contaminants associated with historic fuel oil release in upland, wetland, and aquatic habitats. Participated in a field effort to assess the presence of residual fuel oil in river sediment. Led and conducted the field sampling and managed the analytical analyses to support the ecological risk assessment. Prepared the risk assessments in accordance with the Massachusetts Contingency Plan (MCP).

Led an ecological risk assessment of a river and wetland in Massachusetts impacted by a historical fuel oil release. Studies included sediment toxicity testing and analysis of site-specific soil invertebrate tissues for trophic modeling.

Peer-reviewed the work plan and background study for an ecological risk assessment of a freshwater wetland contaminated with mercury in southern Connecticut. Led and conducted the field sampling and oversaw the analytical analyses to support the ecological risk assessment.

Provided technical support to environmental assessments of veterinary drugs.

Providing technical support to natural resource damage assessment of the Deepwater Horizon oil spill.

Provided litigation support relating to contamination in the Chesapeake Bay near a steel manufacturing site.

Developed guidance for a weight-of-evidence approach for ecological risk assessments in British Columbia for the Science Advisory Board for Contaminated Sites in British Columbia.

Developed a study plan to evaluate hexavalent chromium in sediment pore water of the Hackensack River, New Jersey. Constructed passive samplers (peepers) and oversaw their deployment and retrieval, which was done by divers. Processed the samples in the field prior to shipment to the analytical laboratory for chemical analyses, managed the analytical analyses, and reviewed analytical results and associated quality control data.

Prepared summary reports of fish tissue and surface water data as part of the RI/FS for 150 miles of the upper Columbia River (Canadian border to the Grand Coulee Dam) and surrounding uplands to assess potential ecological risks of smelter emissions to aquatic life, plants, and wildlife.

Reviewed and provided comments on the documents from Connecticut Department of Environmental Protection (CT DEP) related to proposed changes to the Connecticut Water Quality Standards (WQS) as

proposed by the CT DEP in 2009.

Provided technical support for re-registration of pesticide product by critically reviewing reports of available data on impacts to non-target species, and creating a database of details from those reports.

Prepared an ecological risk assessment of a system of streams, wetlands, and uplands in Maryland impacted by landfilling activities. Studies included sediment toxicity testing and analysis of site-specific fish and soil invertebrate tissues for trophic modeling. Provided feasibility study support related to ecological exposures.

Conducted an ecological risk assessment of a freshwater stream and wetland in central Massachusetts impacted by a historical wire mill factory. The ecological risk assessment included sediment toxicity testing and ecological exposure modeling of contaminants in surface water, sediment, and food items for wildlife. Developed ecological-based cleanup goals to support remedial activities.

Led an ecological risk assessment and provided technical support to the feasibility study of a former army base, which included four upland areas of concern and one containing marine sediments. Characterized risk to aquatic organisms, fish, and wildlife through a combination of empirical investigation and modeling. Developed cleanup numbers in sediment and soil for polychlorinated biphenyls (PCBs), DDT, dieldrin, and lead that would be protective of ecological receptors at the former army base.

Managed an ecological risk characterization for a boat yard in southeastern Massachusetts. The assessment evaluated exposures of ecological receptors to metals, PCBs and tributyltin (TBT) in sediment and the food chain. The work included collection of representative aquatic organisms, sediment toxicity tests, exposure pathway analysis, selection of contaminants of concern, fate and transport analysis, and the identification of toxicological endpoints, and combining these elements in a risk characterization.

Directed a human health and ecological risk assessment for a property along the Mystic River near Boston, Massachusetts. The assessment evaluated exposures of ecological receptors to arsenic, lead, polynuclear aromatic hydrocarbons (PAHs), extractable petroleum hydrocarbons (EPH) and PCBs in groundwater, soil and sediment. Considered future uses of property in human health risk assessment.

Led an ecological risk assessment for a Brownfields site, which abuts the Chelsea River in Chelsea, Massachusetts. The property was a lithographic facility that produced wrappers and labels and is being redeveloped for residential and retail use. Conducted an exposure pathway analysis, selection of contaminants of concern, fate and transport analysis, and the identification of toxicological endpoints and a risk characterization.

Conducted an ecological risk assessment for a large, eutrophic water body with metal contaminated sediments in Massachusetts. Characterized risks to benthic invertebrates, planktonic invertebrates, fish and wildlife using site-specific information on the water body and three reference areas. Site-specific data included body burdens of metals in fish, submerged aquatic vegetation, and freshwater clams; sediment and water column bioassays; benthic and planktonic invertebrate community assessments over two season; synoptic survey of fish communities; field observations of wildlife; and food chain modeling to wildlife.

Led an ecological risk assessment for a site containing wetlands in Gloucester, Massachusetts. Evaluated the potential risk from metals and PAHs in the sediment and wetland soil to the environment based on a comparison to background levels and evaluations for aquatic life and wildlife based on site-specific information (e.g., toxicity test bioassays, bioaccumulation tests, and food chain modeling). Developed cleanup numbers in sediment and soil for chromium that would be protective of ecological receptors at the site.

Managed a human health and ecological risk assessment for a former incinerator facility in northeast Massachusetts. Dioxins, furans, PAHs and certain metals were found in soils and sediments above

background levels. Potential risks from these chemicals to a recreational fisher, trespasser, utility work, construction work and parking lot landscaper were evaluated. The environmental characterization, which was conducted for a nearby pond, evaluated risk to aquatic organisms and semi-aquatic wildlife based on body burdens of contaminants in fish and benthic invertebrates, and on estimated exposure to contaminated sediment and prey.

Collected and evaluated data on metal concentrations in fish tissues to estimate the potential for risk to human health and ecological receptors (e.g., fish and wildlife) that may use a large lake at a former army base in Alabama.

Reviewed the available information on the toxicity of dioxin-like compounds to birds. Compiled a database of dose-response relationships that was used to develop a species sensitivity distribution for effects to avian species.

Co-authored a literature review of scientific studies on the ecological effects of engineered nanomaterials.

Reviewed literature on the effects of cyclodiene pesticides on fish and relationships between fish tissue residue levels and effects to support the development of tissue residue levels that are protective of fish.

Reviewed literature on the evaluation and consideration of the effects of non-chemical stressors in dredging projects for preparation of a manuscript with US Army Corps of Engineers on applying risk assessment approaches to non-chemical stressors related to dredging.

Conducted an environmental evaluation of a proposed water desalination plant adjacent to the Mediterranean Sea. Described the potential impacts of the desalination plant processes (e.g., wastewater discharge) on the surrounding marine environment based on a review of the ambient conditions. Described the potential impacts from the surrounding Mediterranean environment (e.g., nuisance algal blooms) to the proposed desalination plant. Provided recommendations for mitigating those potential impacts to the water desalination plant and the surrounding aquatic environment.