

MARGARET McKIERNAN MacDONELL

Program Manager, Cumulative Risk
Environmental Science Division
Argonne National Laboratory

Education:

Ph.D. Northwestern University, Environmental Health Engineering, 1986
M.S. University of Notre Dame, Environmental Health Engineering, 1981
B.S. University of Notre Dame, Biology (with honors), 1979

Professional Experience:

1987-Present Environmental Systems Engineer
Cumulative Risk Program (Manager, 2003-present)
Environmental Health Risk Section (Manager, 1993-2003)
Environmental Science Division
Argonne National Laboratory

Responsibilities include: Integrating chemical, physical, and biological data to assess cumulative risks at contaminated sites and facilities, primarily for the Department of Energy (DOE), and also for the Department of Defense (DoD, Navy and Air Force) and Environmental Protection Agency (EPA). Involves evaluating combined transport/fate, mixed exposures, and joint toxicity of contaminants to characterize risks under baseline conditions and during and following cleanup, for the public as well as workers (including accidents) and biota. Also involves assessing regulatory requirements and remediation options ranging from natural attenuation to treatment and disposal for soil/sediment, water, waste, and structures, and developing radiological and chemical cleanup levels, including cost-benefit analyses. Served as ANL program manager for environmental compliance at DOE's Weldon Spring Site remedial action project (\$2 million annual budget), and participated in community and agency meetings on risk analyses for several sites. Developed risk training workshops for environmental managers and practitioners (including from State agencies and tribal nations), and served as technical advisor to DOE's Center for Risk Excellence for site-specific and complex-wide risk issues. Helped DOE Environmental Management Headquarters organize and evaluate data on contaminated media and wastes and disposition plans across legacy sites, and currently supporting information and records management for long-term stewardship. Collaborating with EPA's National Center for Environmental Assessment to develop screening approaches for assessing cumulative risks at contaminated sites, and with EPA's National Homeland Security Research Center to develop acute and short-term exposure advisories for chemical, radiological, and biological contaminants released to drinking water and buildings. Participated in country studies workshops on infectious disease impacts of climate change, and currently supporting EPA in a project to destroy persistent organic pollutants in Russia. Served on national review panels (including for EPA's World Trade Center ambient air assessment, Integrated Risk Information System, and Frameworks for Cumulative Risk and Metals Assessment), and organized national and international environmental conferences.

Summary of Previous Experience:

1986-1987 Post-Doctoral Appointee, Argonne National Laboratory

Evaluated environmental impacts of waste management operations for an Air Force site and for DOE's high-level radioactive waste program; assessed Navy sites using the Hazard Ranking System; develop an integrated environmental compliance process for formerly used DOE sites.

1981-1986 Civil Engineering Department, Technological Institute
Northwestern University, Evanston, Illinois

Conducted revegetation research with uranium mill tailings using C-3 and C-4 photosynthetic plants, measuring radon releases and conducting radiochemical analyses to assess radium uptake. Also studied revegetation of coal waste, measuring nutrient availability, fixation, and fractionation. Tutored engineering undergraduates in the Technological Institute.

1979-1981 Civil Engineering Department
University of Notre Dame, Notre Dame, Indiana

Characterized incinerated wastes using various extraction procedures, scanning electron microscopy, and X-ray fluorescence for elemental analysis. Performed the Ames microbial assay on incinerated wastes and extractions to assess mutagenicity.

1975-1979 Arbovirus Laboratory, Biology Department
University of Notre Dame, Notre Dame, Indiana

Conducted entomology and epidemiology research, maintaining tissue cultures for viral testing and analyzing human serum for encephalitis antibodies with hemagglutination-inhibition tests.

Research Interests:

Cumulative risk assessment for health protection, cleanup, and environmental sustainability.
Acute and short-term exposure advisories for chemicals, radionuclides, and microbial agents.
Integrated environmental health and technology analyses for international initiatives.
Environmental risk communication and educational outreach for capacity building.

Professional Activities:

National Council on Radiation Protection and Measurements, Scientific Committee 94, Environmental Radiation and Radioactive Waste Issues
Interagency Mixed Exposures Research Group (headed by National Institute of Occupational Safety and Health)
Society for Risk Analysis, Fellow (and National Conference and Workshops Committee, past Chapter President)
American Chemistry Council, Long-Range Research Initiative, Risk Assessment Methods Technical Implementation Panel (Cumulative Risk Lead)
Northwestern University, Adjunct Professor (Environmental Impact Assessment, Risk Analysis)
Clemson University, past Advisory Board Vice Chair
Eco-Informa Foundation
Environmental Science and Pollution Research (International Journal), Editorial Board

Publications:

Author of 100+ conference publications, reports, book chapters, and journal articles.