



Top Ten Experts in Environmental, Health, and Safety Issues Related to Engineered Nanomaterials

Over the last five years of publication, we have published “Top Ten” articles on venture capital firms, investment banks, and IP lawyers involved in nanotechnology. For the first issue of 2009, we highlight ten individuals with substantial expertise in environmental, health and safety issues related to engineered nanomaterials. We expect these individuals to play leading roles in nanotechnology law and business. The experts are listed in alphabetical order.

Key Words: *top ten, environment, health, safety, EHS*

1. Lynn Bergeson

Lynn L. Bergeson is managing director of Bergeson & Campbell, P.C. (“B&C”), a Washington, D.C. law firm concentrating on conventional and engineered nanoscale chemical, pesticide and other specialty chemical product regulation and approval matters, domestic and foreign chemical classification, chemical product litigation and associated business issues. Ms. Bergeson is also president of The Acta Group LLC and The Acta Group EU Ltd, B&C's consulting affiliates, with offices in Washington, D.C. and Manchester, U.K., respectively.

Ms. Bergeson counsels clients on health, safety, science policy and related legal and regulatory aspects of traditional domestic chemical regulatory programs under the Federal Insecticide, Fungicide, and Rodenticide Act and the Toxic Substances Control Act, as well as on issues pertinent to nanotechnology and other emerging transformative technologies. Ms. Bergeson serves on the President's Council of Advisors on Science and Technology Nanotechnology Technical Advisory Group, and served on the U.S. Environmental Protection Agency's Steering Committee for its Pollution Prevention through Nanotechnology Conference. Ms. Bergeson served in 2004 and 2005 on the American National Standards Institute Nanotechnology Standards Panel Steering Committee and is now a member of the ISO Technical Committee 229 on Nanotechnologies.

Ms. Bergeson also serves on the board of directors of Earth Day Network and is a member of its executive committee. She serves on the board of the Converging Technologies Bar Association and is chair of the CTBA Environmental, Health, and Safety Committee. She was chair of the American Bar Association Section of Environment, Energy, and Resources (2005 to 2006), is the past chair of the SEER Pesticides, Chemical Regulation, and Right-to-Know Committee (2006 to 2008), and serves in other ABA leadership positions. Ms. Bergeson is also a member of the ALI-ABA Environmental Law Advisory Panel.

Ms. Bergeson has served on the editorial board of *Nanotechnology Law & Business* since 2008; the press advisory board of ELI's *Environmental Law Reporter* since 2007; the editorial board of ELI's *The Environmental Forum* since 2004; *Pesticide & Toxic Chemical News* since 2002; *EPA Administrative Law Reporter* since 1996; *Environmental Quality Management* since 2002; *Chemical Processing Magazine* since 2002; and *Pollution Engineering* since 1990, among other publications. Ms. Bergeson is a member of the District of Columbia Bar, Bar Association of the District of Columbia, ABA (Section of Environment, Energy, and Resources), Women's Bar Association of the District of Columbia, and the Women's Council on Energy and the Environment.

Recent publications include: *Chemical Regulation: Preparing to Address the Challenges Ahead*, The Environmental Forum (January/February 2009); *Nanotechnology and the Environment*, CRC Press (2008) (co-author); *Nanotechnology Deskbook*, ELI (2007); and *TSCA and Engineered Nanoscale Substances*, *Nanotechnology Law & Business* (2007) (co-author). Ms. Bergeson is a graduate of Michigan State University (BA, magna cum laude), and the Columbus School of Law, Catholic University of America, where she was a member of the Law Review. She is admitted to the bar of the District of Columbia and several federal circuit courts.

2. Vicki Colvin

Dr. Vicki Colvin has been on the faculty at Rice since the fall of 1996. As a physical chemist interested in complex materials problems, her group includes a diverse range of synthetic chemists, physical chemists and applied physicists. Specific research areas include template chemistry, meso- and macroporous solids, nanocrystalline oxides, photonic band gap materials and confined glasses.

Prior to her start at Rice, Dr. Colvin was a member of the technical staff at Bell Labs where she developed new materials for holographic data storage. She received her Ph.D. in 1994 at U.C. Berkeley under the direction of Dr. Paul Alivisatos. Her undergraduate degree, a B.S. in chemistry and physics, was completed in 1988 at Stanford University. In 1996, Colvin was recruited by Rice University to expand its nanotechnology program. Today, she serves as Professor of Chemistry at Rice University as well as Director of its Center for Biological and Environmental Nanotechnology ("CBEN"). CBEN was one of the nation's first Nanoscience and Engineering Centers funded by the National Science Foundation. One of CBEN's primary areas of interest is the application of nanotechnology to the environment.

Dr. Colvin has received numerous accolades for her teaching abilities, including Phi Beta Kappa's Teaching Prize for 1998-1999 and the Camille Dreyfus Teacher Scholar Award in 2002. In 2002, she was also named one of *Discover Magazine's* "Top 20 Scientists to Watch" and received an Alfred P. Sloan Fellowship.

3. Barbara Karn

Barbara Karn has led the EPA's research grants program for nanotechnologies in the agency's Office of Research and Development since the program's establishment in 2001. Dr. Karn

represented the EPA on the NSET subcommittee of the White House Office of Science and Technology Policy, National Science and Technology Council.

Karn holds a Ph.D. in biology and environmental science from Florida International University. She has master's degrees from Cleveland State University and Case Western Reserve University, and a bachelor's degree in chemistry from Ohio State University. Her professional background ranges from electroplating to polymers, from environmental consulting to small business owner, and from academic administrator to water quality management planner. Dr. Karn is a much sought-after lecturer. She is the lead editor of the new book, *Nanotechnology and the Environment: Applications and Implications* (Oxford University Press, June 2005).

4. Kristen Kulinowski

Dr. Kulinowski is a Faculty Fellow in the Department of Chemistry at Rice University and Director for External Affairs for CBEN. She currently serves as the Director of the International Council on Nanotechnology ("ICON"), an international, multi-stakeholder organization whose mission is to develop and communicate information regarding potential environmental and health risks of nanotechnology thereby fostering risk reduction while maximizing societal benefit. She has experience as a chemical researcher, educator, curriculum developer, administrator, outreach coordinator and policy fellow.

Since 2004, Dr. Kulinowski has been actively engaged in developing and promoting the International Council on Nanotechnology ("ICON") which provides a neutral forum in which experts from academia, governments, industry and nonprofit organizations can explore questions of nanotechnology's impact on environment, health and safety ("EHS"). She directed an effort that resulted in the web publication of the first publicly available database of citations to peer-reviewed papers on nano EHS. Other activities of ICON include a survey of best practices for nanomaterial handling in the workplace and a public portal of information on nanotechnology EHS.

Dr. Kulinowski has extensive experience in science education, particularly in developing innovative curricula at the undergraduate level, and developed Rice's first introductory undergraduate course on nanotechnology. From 2002-2004 Dr. Kulinowski served as CBEN Executive Director for Education, developing and managing an educational outreach portfolio of programs for audiences that range from middle school children to adults. During this time the center established itself as a national leader in nanotechnology educational outreach.

Prior to joining CBEN, Dr. Kulinowski was a lecturer in chemistry at Cal Poly (San Luis Obispo) for three years and came to Rice as an instructor in chemistry in 1998. In 2001, she was selected by the Optical Society of America and SPIE-The International Society for Optical Engineering as their Congressional Science Fellow and worked in the D.C. office of a member of the U.S. House of Representatives on issues including weapons of mass destruction, anti-terrorism legislation and domestic nuclear power security. She was instrumental in shepherding through new legislation on the stockpiling of potassium iodide near nuclear power plants.

Dr. Kulinowski is highly sought after as a speaker and has given invited talks on issues of nanotechnology environmental health and safety and science policy throughout the U.S., Europe and the Middle East. She has consulted with governments and governmental advisory bodies regarding responsible nanotechnology, and serves as chair of the ASTM International Subcommittee E56.03 on Environment, Health and Safety. Dr. Kulinowski earned a B.S. in chemistry at Canisius College and her M.S. and Ph.D. in chemistry at the University of Rochester.

5. Andrew Maynard

Dr. Andrew Maynard is Chief Science Advisor to the Project on Emerging Nanotechnologies at the Woodrow Wilson International Center for Scholars. He is an internationally recognized scientist, an authority on emerging science and technology policy, and is a leading proponent of public engagement in science.

Dr. Maynard regularly testifies before the U.S. Congress on nanotechnology policy; serves on the U.S. President's Council of Advisors on Science and Technology Nanotechnology Technical Advisory Group; and is a member of the World Economic Forum Global Agenda Council on the Challenges of Nanotechnology. He is also on the executive committee of the International Council On Nanotechnology, and has served on panels convened by the National Academies of Science and The Council of Canadian Academies. He was previously a member of the Nanoscale Science, Engineering and Technology ("NSET") subcommittee of the U.S. National Science and Technology Council, and was co-chair of the Nanotechnology Health and Environment Implications ("NEHI") working group of NSET. In addition, Dr. Maynard is on the editorial board of a number of scientific journals, and is a member of the advisory board of *Chemical & Engineering News*.

Dr. Maynard's scientific research ranges from the physics of airborne particles to the biological impacts of nanoscale materials. This is reflected in over one hundred reports, articles and papers, including papers in high impact journals such as *Nature* and *Nature Nanotechnology*. He has previously led research groups at the U.K. Health and Safety Executive and the U.S. National Institute for Occupational Safety and Health, and he currently holds an honorary Senior Lectureship at the University of Aberdeen, U.K.

Dr. Maynard's current interests extend to the scientific and policy challenges presented by the emerging field of synthetic biology; the effective communication of science; and engaging research communities and members of the public in science-based decision-making processes. He is widely published in the scientific and popular press, and frequently appears on television and radio.

Dr. Maynard was awarded a Ph.D. in physics from the University of Cambridge, U.K. in 1992.

6. Mary Beth Miller

Mary Beth Miller currently serves as Director of Operations at Unidym, a CNT electronics company. Mary Beth Miller has over 25 years experience as an Environmental Health, Safety (EHS) and Facilities professional. She has managed several large manufacturing facility installations in California, Colorado, Ohio and North Dakota which included facility design and construction, equipment specification and procurement, equipment safety certification, equipment installation, EHS and local Permits and production start-up. Ms. Miller has provided regulatory compliance and audit expertise to the nanotechnology, Department of Defense, semiconductor, and manufacturing industries. Ms. Miller has published articles and lectured on Best Management Practices for the treatment of industrial waste water and the design of zero emissions waste treatment technologies.

Ms. Miller has served on various local, state and federal advisory committees, including the International Council on Nanotechnology and the Federal EPA Common Sense Initiative Action Group. Ms. Miller has earned a Bachelor of Science degree in Microbiology, with a minor in Chemistry.

7. John Monica

John Monica is a partner in the Washington, D.C. office of Porter Wright Morris & Arthur LLP and is one of the country's leading legal authorities on nanotechnology-related environmental, health

and safety issues. Mr. Monica's clients include nanoscale material manufacturers, industrial manufacturers using nanotechnology, pharmaceutical companies, chemical companies, and commercial insurance companies.

Mr. Monica chairs Porter Wright's multi-disciplinary Nanotechnology Practice Group and has published numerous nanotechnology articles, including the recent articles: "A Nano-Mesothelioma False Alarm," *Nanotechnology Law & Business* (Fall 2008); "Ramping up the EPA's Nanoscale Materials Stewardship Program," *Small Times Magazine* (Fall 2007); and "The Perils of Pre-emptive Regulation," *Nature Nanotechnology* (Spring 2007). Mr. Monica will release his first full-length reference text, *Nanotechnology Law & Policy*, through West/Thomson-Reuters in 2009.

Mr. Monica has also contributed to the development of voluntary international nomenclature and environmental health and safety standards for the nanotechnology industry. He is a past member of the American National Standards Institute, Technical Advisory Group to the International Standards Organization, Technical Committee 229 - Nanotechnologies; ASTM International, Committee E56 on Nanotechnology; Nanotechnology Advisory Panel, City of Cambridge, Massachusetts; and the Society for Risk Analysis. Under Mr. Monica's leadership, Porter Wright co-sponsored "Nanogovernance 2008, Innovative Approaches to Nanotechnology Environmental Governance" along with the George Washington University Law School and the Environmental Law Institute, and "Transnational Models for Regulation of Nanotechnology" with the University of Dayton School of Law.

Mr. Monica has also presented at national and international nanotechnology symposia in Faro, Portugal, Washington, D.C., Texas, Florida, California, New York, Ohio, Nevada, Minnesota, Colorado, Massachusetts and Tennessee. Mr. Monica received his B.A. from Northwestern University and his J.D. with honors from George Washington University.

8. Paul Sarahan

Paul C. Sarahan, Counsel in Fulbright & Jaworski L.L.P.'s Houston office, has extensive regulatory experience addressing environmental and occupational safety issues. Prior to joining Fulbright in 2005, Mr. Sarahan served as Director of the Texas Commission on Environmental Quality's Litigation Division ("TCEQ"), where he litigated complex environmental enforcement cases, participated in rulemaking projects, and provided legal advice regarding the agency's Environmental Audit program. He supervised the agency's criminal enforcement efforts and participated in the agency's legislative activities related to enforcement issues. While at TCEQ, Mr. Sarahan was named one of the top in-house counsels in Texas by *Texas Lawyer*.

At Fulbright, Mr. Sarahan has advised clients on state and federal environmental regulations related to matters involving air, waste, water and toxic substances. He has developed and implemented environmental audit programs and represented clients in administrative, civil and criminal enforcement actions. In addition, Mr. Sarahan has expanded his regulatory practice by advising clients on a variety of Occupational Safety and Health Administration requirements.

Mr. Sarahan has applied his expertise in environmental and occupational safety matters to issues being faced by nanotechnology companies. He has spoken and written widely on environmental and occupational safety requirements applicable to nanomaterial operations, and has provided legal support and practical advice to companies seeking to utilize occupational safety and environmental audits to ensure compliance with very complex environmental and occupational safety requirements. He has provided guidance regarding applicable requirements under the Toxic Substances Control Act and the Federal Insecticide, Fungicide and Rodenticide Act. As the EPA

increases its regulatory activity directed at nanomaterial manufacturers, Mr. Sarahan regularly updates clients regarding these developments.

Mr. Sarahan received a B.B.A. in Finance from the University of Texas at Austin, a J.D. with Honors from the University of Texas School of Law, and an LL.M. in Environmental, Energy and Natural Resources Law from the University of Houston Law Center.

9. Jo Anne Shatkin

Jo Anne Shatkin, Ph.D., is Managing Director of CLF Ventures, a non-profit affiliate of the Conservation Law Foundation, New England's most influential environmental advocacy organization. Dr. Shatkin is a recognized expert in strategic environmental initiatives, human health risk assessment, technical communications and environmental aspects of nanotechnology. Dr. Shatkin has 19 years of experience in research and application of quantitative human health risk assessment for emerging contaminants and sites; drinking water and air quality, and environmental evaluations of emerging contaminants. She works with organizations to reduce economic, environmental and society risks through proactive evaluation and actions. Her book, *Nanotechnology Health and Environmental Risks*, published in 2008 (CRC Press) describes NANO LCRA, an adaptive risk framework for identifying and managing the potential risks of nanomaterials.

Dr. Shatkin organizes and presents courses and workshops on nanotechnology and risk. Dr. Shatkin recently founded the Emerging Nanoscale Materials Specialty Group of the Society for Risk Analysis, with 130 international members from public and private organizations, and organized their first workshop, *Nano Risk Analysis: Advancing the Science for Nanomaterial Risk Management*, co-sponsored by NSF, EPA, DOD and others. Dr. Shatkin was a member of the Expert Nanotechnology Panel of the Council of Canadian Academies, and is an advisor to the Massachusetts Interagency Working Group on Emerging Contaminants and Nanotechnologies. She is past president of the New England chapter of the Society for Risk Analysis; past Board Member and President of the Regional Environmental Council, past member of the Massachusetts Water Resource Authority Expert Risk Panel, and committee member of the Massachusetts Department of Environmental Protection Science Advisory Panel for Solid Waste. She received her Ph.D. in Environmental Health Science and Policy in 1994 and her MA in Risk Management and Technology Assessment, both from Clark University, Worcester, Massachusetts and possesses a Bachelor of Science degree from Worcester Polytechnic University in Molecular Biology and Biotechnology. She is a research fellow of the George Perkins Marsh Institute at Clark University.

10. David Wallace

David Wallace is a litigation partner at the New York-based international law firm of Chadbourne & Parke, where he founded and leads the firm's multidisciplinary nanotechnologies practice. He frequently writes and speaks on a range of nanotechnology-related topics and also serves on the Advisory Board of *Nanotechnology Law & Business* as well as the Advisory Board of The Nanoethics Group at California Polytechnic State University.

An accomplished courtroom lawyer, Mr. Wallace's practice is focused on all phases of complex, health-related products liability and related counseling. For two decades, he has counseled, coordinated and personally litigated the defense of multinational corporations in civil-and common-law jurisdictions globally.