

Shannon R. Magari, ScD, MPH, MS
Principal
Vice President, Health Sciences

Summary of Qualifications

- 10+ years delivering exposure assessment and support, including IH hygiene surveys, indoor environment quality, epidemiologic study design, and risk communication plans
- Served 4 years as a principal of Colden Corporation
- Designed, conducted, and interpreted more than 100 IH exposure assessment studies on chemical, physical, and biological hazards on behalf of Fortune 100 companies
- Managed 30+ epidemiologic cluster investigations in industrial and nonindustrial settings evaluating reproductive, respiratory, and cancer outcomes
- Served as a consulting and testifying expert witness on toxic tort and workers compensation cases. Assisted attorneys in case development, critical medical literature evaluations, and cross-examination strategies

Education

- Harvard University
Doctor of Science, Environmental Health (2001)
- Boston University
Master of Public Health, Epidemiology and Biostatistics (1997)
- Dartmouth College
Master of Science, Engineering Science (1994)
- Syracuse University
Bachelor of Science, Bioengineering (1992)

Academic Affiliations

- Harvard University, Visiting Scientist
School of Public Health, Occupational Health Department
- Syracuse University, Adjunct Assistant Research Professor
LC Smith College of Engineering, Department of Biomedical and Chemical Engineering
(Chapter Founder and Faculty Advisor for Engineers Without Borders)
- SUNY Upstate Medical College, Adjunct Associate Professor
(Director, Environmental Health core course in Master of Public Health Program)

Board Memberships

- Central New York Occupational Health Clinic Center, Member
- Women Together Inspiring Entrepreneurial Success, Member

Organizations

- Engineers Without Borders (Chapter Advisor, Syracuse University)
- International Society for Environmental Epidemiology (ISEE)
- American Industrial Hygiene Association (AIHA)
- American Public Health Association (APHA)
- Biomedical Engineering Society, Co-Chair Dartmouth Chapter (1993-94)
- Society of Women Engineers
- Order of the Engineer

Professional Highlights**COLDEN CORPORATION**

Dr. Magari provides client management and multidisciplinary consulting in a leadership capacity. Specializes in litigation support, biosafety, industrial hygiene exposure assessments, epidemiological investigations, and indoor environment quality investigations.

Industrial Hygiene Exposure Assessment – Have designed and conducted hundreds of industrial hygiene assessments for chemical, physical and biological stressors in industrial, non-industrial and institutional settings. Critical to the success of each assessment is sensitivity to the uniqueness of each work site for the manner in which stressors are used, how workers interact with them, what health effects are of concern and an intimate knowledge of applicable regulations. We are often called upon to perform industrial hygiene analyses in complex environments with multiple stressors.

One illustrative project involved the investigation of hypersensitivity pneumonitis among a group of 400 machinists. The investigation included sampling and analyses of a suite of proprietary chemicals, airborne fungal and bacterial biological, volatile organic compounds and metals. We compiled and presented complex data sets to all stakeholders, identified areas for engineering and administrative controls and validated their efficacy.

Indoor Environment Quality – Designed and led over 100 indoor environment quality investigations in industrial, non-industrial and institutional settings. Investigations have included odor complaints, heating ventilation and air conditioning reviews, microbial investigations, low level volatile organics analysis and other select compounds. Investigations are targeted at

identifying issues in a timely manner to minimizing employee discomfort, reduce work interruption and communicate risk appropriately and effectively.

Epidemiologic Investigations – Have designed and conducted disease cluster investigations in dozens of industrial and non-industrial situations including reproductive, respiratory and cancer outcomes. Recent projects have included an investigation of a cluster of early miscarriage and malformed infants in a foundry, breast cancer in a broadcasting operation and upper respiratory illness in a 150-person call center and a car parts machining environment.

The early-miscarriage investigation included interviews with the employees, review of local epidemiologic data, statistical extrapolation, industrial hygiene auditing and monitoring of 23 stressors, data analysis, interpretation and design of a multi-faceted risk communication strategy for all stake holders. No lawsuits were filed.

Biosafety Program Development – Developed biosafety programs for Fortune 100 companies and research institutions encompassing NIH requirements. Customized biosafety and animal-handling training. Created IH monitoring plan for research environments with myriad chemical and physical hazards. Have developed protocols for 500 resident animal vivaria including rodent, guinea pig and rabbit models. Responsible for filing and maintaining federal and state controlled substances licenses and program documents for all types of scheduled drugs.

Toxic Tort Consulting – Served as a consulting witness for national coordinating counsel in toxic torts with 1,500+ litigants claiming multiple cancer outcomes, autoimmune and reproductive diseases. Conducted critical reviews, analyses and produced summaries and opinions of peer-reviewed medical and epidemiologic literature. Established relational databases to track demographic, occupational, and environmental exposure data and health outcomes. Aided in the selection of illustrative plaintiffs and the preparation of trial exhibits.

Workers Compensation – Have served as both a consulting and testifying witness in several workers compensation cases including those related to construction and indoor environment quality. Have assisted attorneys in developing their cross-examination strategy.

HARVARD UNIVERSITY

Dr. Magari received her doctoral training and served as a postdoctoral research fellow at the Harvard School of Public Health specializing in Occupational Epidemiology. She currently maintains an academic appointment as a Visiting Scientist with the Harvard School of Public Health.

Epidemiologic Investigations – Responsible for all phases of a short-term prospective epidemiologic study investigating the effects of particulate air pollution on the cardiovascular system. This included study design, development, laboratory and project staff management. Designed relational databases and performed all statistical programming and interpretation using SAS and Splus.

Teaching – Teaching and curriculum development performed in basic environmental health, epidemiology and occupational health policy.

Biosafety – Served as laboratory health and safety director to ensure compliance with university regulations in an active BSL 2 laboratory.

ARIAD PHARMACEUTICALS

Dr. Magari was an associate research scientist in the toxicology department performing work to support several discovery avenues including allergy, asthma, osteoporosis and regulated gene therapy products in a BSL 2 laboratory.

Laboratory Research – Designed, tested and analyzed pharmacokinetic, bioavailability and preliminary investigative toxicology studies. Developed analytical chemistry methods for these studies using HPLC and MS. Developed tissue culture and assay methods for the analysis of bone resorption for an *in vitro* osteoporosis model.

DARTMOUTH COLLEGE

Dr. Magari received her master of engineering training at the Thayer School of Engineering.

Engineering Design and Testing – Design, construction, characterization and operation of a novel bioreactor for the *in vitro* tissue engineering of articular cartilage in a BSL 2 laboratory. Tested various biomaterial matrices within the reactor and developed chemical assays to monitor chondrocyte function and articular cartilage regeneration in the reactor.

BRISTOL-MYERS SQUIBB

Dr. Magari served as an intern in both the fermentation and health and safety departments in their Upstate New York manufacturing facility.

Industrial Hygiene Exposure Assessments – Conducted health hazards analyses of bioaerosol exposures in a wastewater treatment facility including a preliminary risk analysis, industrial hygiene sampling and recommendations for protective action. Developed and implemented a drinking water sampling and analysis plan for the site. Initiated a personal protective equipment review for electrical shop personnel, and made and implemented appropriate safety recommendations.

Process Engineering – Performed engineering analysis of heat transfer, mass transfer and power uptake for biochemical fermentation processes. Responsible for tracking, compiling and publishing detailed production engineering reports for weekly and monthly periods. Performed engineering and cost analysis of proposals for modification and implementation of operating procedures. Responsible for software updating, documentation and training of chemical process operators with new computer control systems.

Presentations / Published Abstracts

Magari, S.R., Schwartz, J., Williams, P., Hauser, R., Smith, T.J., Christiani, D.C., The Association of Particulate Air Metal Concentrations with Heart Rate Variability, *American Journal of Epidemiology*, Vol. 155, No. 11, pp 309 Suppl. S, 2002.

Magari, S.R., Schwartz, J., Williams, P., Hauser, R., Smith, T.J., Christiani, D.C., Association of Personal Particle Exposure with Heart Rate Variability, *Epidemiology*, Vol. 12, No. 4, pp S39, 2001. International Society of Environmental Epidemiology, Garmisch, Germany, 2001.

Magari, S.R., Hauser, R., Smith, T.J., Schwartz, J., Williams, P., Christiani, D.C., Association of Heart Rate Variability with Occupational and Environmental Exposure to Particulates. Seventh International Congress on Combustion By-Products, North Carolina, 2001.

Kim, J.Y., **Magari, S.R.**, Christiani, D.C., Exhaled Nitric Oxide Measurements in Workers Exposed to Fuel-Oil Ash, *American Journal of Respiratory and Critical Care Medicine*, Vol. 163, No. 5, pp A494 2001. American Thoracic Society, San Francisco, 2001.

Mukherjee, S., Rodrigues, E., **Magari, S.R.**, Kim, J.Y., Weker, R., Christiani, D.C. Urinary 1-Hydroxypyrene As A Biomarker of Exposure to Airborne Polycyclic Aromatic Hydrocarbons in Boilermakers, *American Journal of Respiratory and Critical Care Medicine*, Vol.163, No.5, pp A495, 2001, American Thoracic Society, San Francisco, 2001.

Mukherjee, S., Rodrigues, E., **Magari, S.R.**, Kim, J.Y., Weker, R., Christiani, D.C. Assessment of Urinary 1-Hydroxypyrene Level as a Biomarker of Polycyclic aromatic Hydrocarbon (PA) Exposure in Occupationally Exposed Boilermakers, *Epidemiology*, Vol.12, No. 4, pp 174, 2001.

Magari, S.R., Woodin, M., Hauser, R., Smith, T.J., Schwartz, J., Williams, P., Christiani, D.C., Cardiovascular Effects of Exposure to Fuel-Oil Ash and Metal Fume: A Preliminary Assessment. *American Journal of Respiratory and Critical Care Medicine*, Vol. 161, No. 3, pp. A25, American Thoracic Society, Toronto, Canada, 2000.

Kim, J.Y., **Magari, S.R.**, Herrick, R.F., Smith, T.J., Christiani, D.C., Comparison of PM_{2.5} Measurements from a Direct-Reading Instrument and a Gravimetric Sampling Method, American Industrial Hygiene Conference, 2000.

Fine, E.G., **Magari, S.R.**, Rousseau, S., Orndorff, K. A., Heath, C.A., and Rosen, J. M., Chondrocytes Grown on Opaque Porous Biodegradable Polymer Matrices Examined by Confocal Microscopy, 20th Annual Mtg., Society for Biomaterials, Boston, MA, April 1994.

Magari, S.R. and Heath, C.A., In Vitro Chondrocyte Growth and Cartilage Formation Under Intermittent Hydrostatic Pressure, Engineering Foundation Conference, Cell Culture Engineering IV, San Diego, CA, March 1994.

Magari, S.R. and Heath, C.A., Chondrocyte Growth and Cartilage Formation in a Three-Dimensional Resorbable Matrix under Intermittent Hydrostatic Pressure, U.K.-U.S. Workshop on Cellular Engineering, Chester, England, September 1993.

Publications

Kim JY, Prouty LA, Fang SF, Rodrigues EG, **Magari SR**, Modest GA, Christiani DC, Association between Fine Particulate Matter and Oxidative DNA Damage May Be Modified in Individuals with Hypertension. *Journal of Occupational and Environmental Medicine*, In Press, 2009.

Harezlak, J, Coull BA, Laird, NM, **Magari SR**, Christiani DC. Penalized Solutions to Functional Problems. *Computational Statistics and Data Analysis*, Vol. 51, pp. 4911-4925, 2007.

Kim JY, **Magari SR**, Herrick RF, Smith TJ, Christiani DC. Comparison of Fine Particulate Measurements from a Direct-Reading Instrument and a Gravimetric Sampling Method. *J Occupational Environmental Hygiene*, Vol. 1, pp.707-15, 2004.

Magari, SR, Schwartz, J, Williams, PL, Hauser, R, Smith, TJ, Christiani, DC, The Association of Particulate Air Metal Concentrations With Heart Rate Variability, *Environmental Health Perspectives*, Vol. 110, No. 9, 875-880, 2002.

Magari, SR, Schwartz, J, Williams, PL, Hauser, R, Smith, TJ, Christiani, DC, The Association Between Personal Measurements of Environmental Exposure to Particulates and Heart Rate Variability, *Epidemiology*, Vol. 13, pp 305-310, 2002.

Magari, SR, Hauser, R, Schwartz, J, Williams, PL, Smith, TJ, Christiani, DC, The Association of Heart Rate Variability with Occupational and Environmental Exposure to Particulate Air Pollution, *Circulation*, Vol. 104, 986-991, 2001.

Clackson, T, Yang, W, Rozamus, LW, Hatada, M, Amara, JF, Rollins, CT, Stevenson, LF, **Magari, SR**, Wood, SA, Courage, NL, Lu, X, Cerasoli, F, Gilman, M and Holt, DA, Redesigning an FKBP-ligand Interface to Generate Chemical Dimerizers with Novel Specificity, *Proceedings of the National Academy of Sciences*, Vol. 95, 10437-10442, 1998.

Magari, SR, Rivera, VM, Iuliucci, JD, Gilman, M, and Cerasoli F, Pharmacologic Control of a Humanized Gene Therapy System Implanted in to Nude Mice, *Journal of Clinical Investigations*, Vol. 100, No. 11, pp. 2865-2872, 1997.

Rivera, VM, Clackson, T, Natesan, S, Pollock, R, Amara, J, Keenan, T, **Magari, SR**, Phillips, T, Courage, NL, Cerasoli, F, Holt, DA, and Gilman, M, A Humanized System for Pharmacologic Control of Gene Expression, *Nature Medicine*, Vol. 2, No. 9, pp. 1028-1032, 1996.

Heath, CA and **Magari, SR**, Mini-Review: Mechanical Factors Affecting Cartilage Regeneration In Vitro, *Biotechnology and Bioengineering*, Vol. 51, pp. 430-437, 1996.