

Emily Goswami, CIH **Managing Scientist**

Professional Profile

Ms. Emily Goswami is a Certified Industrial Hygienist (CIH) and Managing Scientist in Exponent's Health Sciences Center for Exposure Assessment and Dose Reconstruction. She has more than 10 years of professional experience in human health risk assessment, ecological risk assessment, exposure assessment, industrial hygiene, chemical fate and modeling, statistical analysis, literature research, and project management.

Ms. Goswami's work includes conducting human health and ecological risk assessments for various sites including a former weapons arsenal, a barium manufacturing plant, several manufactured gas plant sites, several former gold mines, and a former paint manufacturing site involving total petroleum hydrocarbons, polyaromatic hydrocarbons, metals, pesticides, PCBs, explosives, volatile and non-volatile organic chemicals in soil and groundwater, and volatiles and particulates in air. In these risk assessments, she has formulated potential exposure pathways, analyzed site-specific data, developed remediation goals protective of human health and ecological species, and calculated cancer and non-cancer risk values.

Ms. Goswami has designed and conducted several exposure simulations associated with use of consumer products (e.g. dinnerware, PVC products, painted containers, marking pens, and nail polish) and analyzed results for compliance with California's Proposition 65 and Consumer Product Safety Commission guidelines. She has performed probabilistic modeling in order to evaluate exposures to benzene during parts washing activities. She has performed several residential investigations including of air and surface sampling and analysis for mold and other indoor contaminants. Ms. Goswami also has extensive experience assessing the exposure, epidemiology, and toxicology associated with various sources and types of occupational and environmental exposure to various chemicals including asbestos, silica, and benzene.

Academic Credentials and Professional Honors

M.S., Environmental Health (emphasis in Risk Assessment), University of Washington, 2001
B.A., Environmental Science, University of California at Berkeley, 1998

Licenses and Certifications

Certified Industrial Hygienist - Comprehensive Practice, American Board of Industrial Hygiene, 2009

Publications

Sheehan P, Bogen KT, Hicks J, Goswami E, Brorby G, Lau EC, Ott B. Benzene inhalation by parts washers: New estimates based on measures of occupational exposure to solvent coaromatics. *Risk Anal* 2010; 30(8):1249–1267.

Bogen KT, Goswami E. Screening-level hazard assessment for six phthalates under A.B. 1108 and Proposition 65 (Rev. 1). Technical Report prepared by Exponent, Inc., for the Environment Section, Office of the Attorney General, California Department of Justice (CalDOJ), May 2009 (made public by CalDOJ, August 2009), Exponent, Inc., Oakland, CA, 97 pp.

Sheehan P, Malzahn D, Goswami E, Mandel JH. Simulation of benzene exposure during use of a mineral spirit solvent to clean elevator bearing housings. *Human Ecol Risk Assess* 2008; 14:421–432.

Goswami E, Larson T, Lumley T, Liu L-J. Spatial characteristics of fine particulate matter: Identifying representative monitoring locations in Seattle, Washington. *Air Waste Manage Assoc* 2002; 52:324–333.

Presentations

Goswami E, Craven V, Dahlstrom D, Mowat F. Domestic asbestos exposures: A review of epidemiologic and exposure data. American Industrial Hygiene Conference and Exposition (AIHce), Denver, CO, May 22–27, 2010.

Goswami E, Malzahn D, Richter R, Sheehan P. Simulation and modeling techniques to reconstruct historical benzene exposures. Platform presentation at the Society for Risk Analysis Meeting, Baltimore, MD, December 3–6, 2006.

Brorby G, Kalmes R, Goswami E, Mowat F, Sheehan P. Evaluating exposures to consumer products. Platform presentation at the Society for Risk Analysis Meeting, Baltimore, MD, December 3–6, 2006.

Sheehan P, Hicks J, Goswami E, Lau E, Greene J, Fedoruk M. Assessment of mechanics' exposure to benzene in mineral spirit solvents during parts washing activities. Platform presentation at the American Industrial Hygiene Association Conference and Exposition, Anaheim, CA, May 21–26, 2006.

Goswami E, Greene J, Sheehan P, Hicks J. Analysis of exposure to benzene in mineral spirit solvents during parts washing and degreasing operations. Poster presentation at the Society of Toxicology Meeting, San Diego, CA, March 5–9, 2006.

Goswami E, Kalmes R. Exposure to formaldehyde during use of a nail care product. Poster presentation at the American Industrial Hygiene Association Conference and Exposition, Anaheim, CA, May 21–26, 2005.

Madl AK, Leung HW, Proctor D, Goswami E, Hays S, Cohen E. Derivation of a RfD for perchlorate: identifying a critical health endpoint and the most sensitive subpopulation. Poster presentation at the Society of Toxicology Annual Meeting, Baltimore, MD, March 21–25, 2004.

Prior Experience

Graduate Student Research Scientist, University of Washington, Department of Environmental Health, 1999–2001

Web Site Coordinator, U.S. EPA Region IX, 1998–1999

Project Experience

Risk Assessment

Conducted numerous risk assessments for various types of sites including former gold mines, a former barium manufacturing facility, railroad corridors, and foundries, as well as the first former munitions site in California to be granted DTSC approval for unrestricted residential use. Prepared statistical analyses of metals, explosives, and polyaromatic hydrocarbon concentrations to determine whether soils were affected by site activities. Developed remediation goals protective of future residents, commercial workers, construction workers, recreational site users, and ecological receptors. Also evaluated modeled potential re-suspended dust emissions during remediation activities.

Performed GIS analyses for contaminant source areas to evaluate exposure to vapors from contaminants in soil and groundwater and subsequently modeled risk-based clean-up concentrations. Developed clean up levels for soil and groundwater based on estimated indoor concentrations of volatiles from soil and groundwater sources produced by Johnson and Ettinger modeling.

Consumer Product Assessment

Designed and conducted exposure simulations to assess personal inhalation exposure to ethylbenzene during use of marking pens, benzene during use of adhesive sprays, and formaldehyde during application of beauty and personal care products. Designed and conducted numerous exposure simulations of product use followed by hand-wiping to measure the potential hand-loading and subsequent oral exposures via hand-to-mouth behaviors. Various products evaluated for lead include painted containers, dinnerware, PVC products, toys, and cable cords. Evaluated experimental exposure results with regard to Proposition 65 and Consumer Product Safety Commission (CPSC) compliance.

Air Quality

Designed and conducted residential indoor air quality investigations to assess the potential exposure to mold and other indoor contaminants.

Collected and analyzed air monitoring data from 40 stations to evaluate potential exposures to particulates, nitrogen dioxide, and sulfur dioxide in Seattle as part of an EPA-sponsored study. Health effects of elderly residents near the monitoring stations were recorded to evaluate toxic responses to the particulate exposures in that area.

Reviewed air quality data for metals, volatile organics, and PCBs in a building near ground zero at the World Trade Center disaster site. Data were assessed for adequacy of detection limits and detected concentrations to determine health protection for re-occupancy.

Asbestos

Provided extensive support to experts in epidemiology, exposure assessment, and risk assessment for numerous asbestos-related cases for a variety of chrysotile asbestos-containing products. Evaluated risk of disease and asbestos exposure for a variety of occupations including insulators, plumbers, pipefitters, electricians, railroad workers, farmers, power plant workers, sheetmetal workers, steel workers, bricklayers, carpenters, construction laborers, bakers, TV repairmen, refinery workers and longshoremen. Reviewed product literature, scientific literature, and case-specific materials. Worked with experts to create exhibits and prepare for trial testimony.

Worked with expert pathologists to create exhibits for trial testimony. Reviewed and analyzed pathology articles related to fiber deposition and clearance, degree of toxicity based on fiber type and size, fiber lung burden and epidemiology. Worked with pathologists to present information in a manner that can teach the jury about pathology.

Benzene

Designed and conducted exposure reconstruction studies to estimate historical benzene exposures during use of products that contained benzene.

Provided extensive support to experts in epidemiology and exposure assessment for benzene-related cases for a variety of solvent-based products. Reviewed product literature, scientific literature, and case specific materials.

Chemical Support

Provided toxicological support for two major chemical companies. Researched current toxicological literature to determine representative toxicological values for use in company-wide MSDSs for hundreds of substances. Evaluated toxicity of chemicals to determine whether chemicals should be used and to determine appropriate personal protective equipment, handling procedures, and disposal.

Research Experience

- Graduate Student Researcher: Assessment of exposure and health effects of fine particulates on sensitive sub-populations in the Seattle area, U.S. EPA, University of Washington, 1999–2001

Professional Affiliations

- Northern California Society for Risk Analysis, 2003–present
- Society for Risk Analysis, 2006–present
- American Industrial Hygiene Association, 2005–present
- American Industrial Hygiene Association – Northern California Section, 2009–present
- Genetic and Environmental Toxicology Association of Northern California, 2006–present