

Carolyn G. Scrafford, M.P.H.
Managing Scientist

Professional Profile

Ms. Carolyn G. Scrafford is a Managing Scientist in Exponent's Health Sciences Center for Chemical Regulation and Food Safety. Ms. Scrafford has a strong background in data analysis, statistics, toxicology, and ecotoxicology. She is responsible for providing statistical and data analysis services. Ms. Scrafford has analyzed data from specialized field trials and monitoring programs, nationwide market basket surveys, surveys on the habitual use of cosmetics and toiletries, and has investigated the potential association between demographic, occupational, dietary characteristics, and health indicators using data from nationwide health and nutrition surveys. She has experience in study design, multivariate analysis, and epidemiological analyses. She conducts dietary intake and exposure assessments using Exponent's proprietary software Food Analysis and Residue Evaluation (FARE™) and Dietary Exposure Evaluation Model (DEEM™). In particular, Ms. Scrafford has experience in probabilistic exposure modeling through the use of Monte Carlo software programs such as Excel's Crystal Ball®. She has developed GRAS notifications and JECFA submissions. She also coordinates study management projects and communication between clients and laboratories.

Prior to joining Exponent, Ms. Scrafford gained experience while working at Jellinek, Schwartz, and Connolly, Inc., an environmental consulting firm. She provided assistance to study management projects and coordinated communication between clients and laboratories. She assisted with data development in support of state and federal pesticide registration and re-registration under EPA's FIFRA guidelines. Additionally, she provided ecotoxicological research support to senior management and performed data analysis and summary of raw data.

Academic Credentials and Professional Honors

M.P.H., Johns Hopkins University, Bloomberg School of Public Health, 2004
B.A., Biology, Colgate University (*cum laude*), 1999

Publications

Barraj LM, Tsuji JS, Scrafford CG. The SHEDS-Wood Model: Incorporation of observational data to estimate exposure to arsenic for children playing on CCA-treated wood structures. *Environ. Health Perspect* 2007; 115:781–786.

Mink PJ, Scrafford CG, Barraj LM, Harnack L, Hong CP, Nettleton JA, Jacobs DR. Flavonoid intake and cardiovascular disease mortality: A prospective study in postmenopausal women. *American Journal of Clinical Nutrition* 2007; 85:895–909.

Erdreich LS, Van Kerkhove MD, Scrafford CG, Barraj L, McNeely M, Shum M, Sheppard AR, Kelsh M. Factors that influence the radiofrequency power output of GSM mobile phones. *Radiation Research* 2007; 168:253–261.

Tsuji JS, Yost LJ, Barraj LM, Scrafford CG, Mink PJ. Use of background inorganic arsenic exposures to provide perspective on risk assessment results. *Regul Toxicol Pharmacol* 2007; 48:59–68.

Nettleton JA, Harnack LJ, Scrafford CG, Mink PJ, Barraj LM, Jacobs DR. Dietary flavonoids and flavonoid-rich foods are not associated with risk of Type 2 Diabetes in postmenopausal women. *The Journal of Nutrition* 2006; 136:3039–3045.

Loretz LJ, Api AM, Barraj LM, Burdick J, Davis DA, Dressler WE, Gilberti E, Jarrett G, Mann S, Pan YHL, Re TA, Renskers KJ, Scrafford CG, Vater S. Exposure data for cosmetic products: Hairspray, spray perfume, liquid foundation, shampoo, body wash, and solid antiperspirant. *Food and Chemical Toxicology* 2006; 44:2008–2018.

Goodman M, Teta MJ, Hessel PA, Garabrant DH, Craven VA, Scrafford CG, Kelsh MA. Mesothelioma and lung cancer among motor vehicle mechanics: A meta-analysis. *Ann Occup Hyg* 2004; 48(4):309–326.

Loretz LJ, Api AM, Barraj LM, Burdick J, Dressler WE, Gettings SD, Han Hsu H, Pan YHL, Re TA, Renskers KJ, Rothenstein A, Scrafford CG, Sewall C. Exposure data for cosmetic products: Lipstick, body lotion, and face cream. *Food and Chemical Toxicology* 2005; 43:279–291.

Presentations

Scrafford CG, Barraj L, Tran N. Nutrient deficiency classification bias relating to dietary recall: A case-study with dietary and red blood cell folate in UK young people (4–18 years). Presented at the 2006 International Society of Exposure Analysis, Paris, France, 2006.

Habig C, Scrafford CG. Additional factors for inclusion in higher tier avian and mammalian risk assessments. Society of Environmental Toxicology and Chemistry, Europe Annual Meeting, May 2006.

Habig C, Scrafford CG. Pesticide residues in invertebrate prey items: From sampling to data analysis for non-target organism risk assessments. Society of Environmental Toxicology and Chemistry, Europe Annual Meeting, May 2005.

Tsuji J, Van Kerkhove M, Scrafford C, Kaetzel R. Biomonitoring of a community for soil arsenic exposure. Presented at the 2005 Society of Toxicology Conference, March 2005.

Barraj L, Johnston J, Scrafford C. Investigating the impact of certain assumptions on estimates of long-term occupational exposure to agricultural pesticides. Presented at the 2004 Annual Society for Risk Analysis Meeting, Palm Springs, CA, December 2004.

Erdreich LS, Van Kerkhove MD, McNeely M, Scrafford C, Barraj L. Factors affecting output power (and radiofrequency exposure) of GSM mobile phones. Presented at BEMS, June 2004.

Scrafford C, Barraj L. The use of bone biomarkers to identify osteoporosis intervention groups in pre-adolescents and adolescents. Presented at the 23rd Annual Meeting for the Society for Risk Analysis, Baltimore, MD, December 7–10, 2003.

Barraj L, Scrafford C, Walls C, Johnston J. Comparison of three approaches to derive estimates of longitudinal exposures using short-term data. Presented at the 2002 International Society of Exposure Analysis/International Society for Environmental Epidemiology Annual Conference, Vancouver, British Columbia, Canada, 2002.

Barraj L, Walls C, Scrafford C, Johnston J. Impact of between and within person variability on estimates of longitudinal exposures using short-term data. Presented at the 2002 International Society of Exposure Analysis/International Society for Environmental Epidemiology Annual Conference, Vancouver, British Columbia, Canada, 2002.

Johnston JE, Scrafford C, Daniels CL. An examination of exposure database limitations. Presented at the 2002 International Society of Exposure Analysis/International Society for Environmental Epidemiology Annual Conference, Vancouver, British Columbia, Canada, 2002.

Barraj L, Francis M, Scrafford C. Biomonitoring data from the priority toxicant reference range study. Presentation at the International Society of Exposure Analysis, Charleston, SC, November 2001.

Walls CL, Petersen BJ, Scrafford C, Barraj LM. Calendar model methodologies for assessing drinking water exposure. Presentation at the International Society of Exposure Analysis, Charleston, SC, November 2001.

Project Experience

Conducted nutritional epidemiological research and analysis to investigate the potential association between flavonoid intake and heart health.

Conducted dietary risk assessments in support of Proposition 65 cases for acrylamide and caffeine.

Conducted analyses to measure how environmental factors and characteristics of cell phone use affect radiofrequency (RF) power output, a surrogate measure of individual exposure from mobile phone use.

Analyzed data from a community study investigating the relationship between arsenic found in soil and arsenic in urine among young children.

Analyzed data on lead levels in chocolate and other candies in support of a Proposition 65 case to determine the source of the lead and potential dietary exposure among candy consumers in the US population.

Conducted epidemiological analyses on data from a community study to determine SIRs based on Census records to account for non-response and potential biases in the study population.

Conducted research on the association of diet components and health status. The research objective is to support potential claims by a major food company.

Analyzed microbial growth data and developed predictive microbial models to be used to support proposed new processing methods for food products.

Analyzed data from several surveys of consumer products use and developed summary distributions for use in risk assessments of compounds/contaminants in these consumer products.

Summarized and critiqued ecotoxicology studies for an Annex II section of an EU dossier.

Coordinated a study management project for ecotoxicology studies. Facilitated dialogue between the laboratory and client and reviewed various study protocols and reports.