

APPENDIX B

**PROFESSIONAL PROFILES OF
KEY PROJECT PERSONNEL**

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**PROFESSIONAL PROFILES OF
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**ENVIRONMENTAL
STANDARDS**

KENNETH G. SYMMS, Ph.D., DABT

Technical Director of Risk Assessment/Principal

FIELDS OF COMPETENCE

- Defensible site-specific baseline risk assessments.
- Critical reviews of risk assessments and cost/risk-reduction benefits for remedial options in feasibility studies conducted by the US EPA or US EPA contractors.
- Health-based cleanup goal development as a viable and cost-effective alternative to regulatory default or generic cleanup criteria.
- Acceptable exposure level development for various chemicals which have no US EPA-derived toxicity benchmarks, guidelines, or criteria.
- Environmental chemodynamics and biological toxicokinetics of various chemical agents.
- Expert testimony relating to toxicology, risk assessment, and product liability.
- Risk perspective communication: effective translation of hazard into non-technical terminology.
- Sampling strategy development for a cost-effective, focused, and defensible site characterization.
- US EPA and various state regulatory agency guidelines familiarity, including site-specific alternatives for the development of risk-based remediation requirements and risk-management options under Brownfields initiatives.

CREDENTIALS

B.A., Chemistry, University of Washington, 1969.

Ph.D., Pharmacology/Toxicology, University of Washington, School of Medicine, 1979.

CERTIFICATIONS AND AWARDS

Certified as a Diplomate of the American Board of Toxicology (1987).

PROFESSIONAL AFFILIATIONS

American College of Toxicology
International Society for Environmental Toxicology
and Cancer
Society for Risk Analysis
Associate of the Environmental Law Institute
American Chemical Society
(Chemical Health and Safety Division)
National Environmental Health Association
Society of Toxicology

SUMMARY OF EXPERIENCE

Dr. Symms has sixteen years of experience in environmental toxicology. As a Principal of Environmental Standards, Dr. Symms directs the technical aspects of the Valley Forge, PA, risk assessment operations and toxicology support services.

Dr. Symms has developed guidelines for improving the US EPA's published methodologies for indicator chemical selection, exposure coefficients, and evaluating tentatively identified compounds of potential concern. He has provided formal public health risk assessments for RI/FS and RCRA projects in accordance with relevant federal guidelines. In addition to providing over 500 formally written, peer-reviewed toxicological evaluations of hazardous waste sites, Dr. Symms has negotiated with the US EPA toxicologists regarding the defensibility of reasonable exposure scenarios and risk characterizations.

Dr. Symms has developed and defended acceptable levels of exposure for numerous chemical substances not characterized by the US EPA and for which no exposure guidelines exist. He has provided toxicological expertise and communication of hazard perspective on behalf of regulatory agencies to concerned citizens at public meetings. He has also developed reasonable

models for risk analysis of dermal, inhalation, and ingestion routes of exposure for children living near areas of surface contamination.

Prior to co-founding Environmental Standards, Dr. Symms was employed as a senior staff toxicologist for the US EPA's prime national contractor, where he developed the essential format and structure of public health risk assessments under the hazardous waste site investigation program in Region III.

Dr. Symms' post-doctoral experience included rodent bioassay for carcinogens, DNA repair and mutagenicity assays, development of analytical techniques for determination of metabolites, and characterization of mechanisms of bioactivation of carcinogens.

KEY PROJECTS

- Performed a base-line risk assessment for a large RCRA Facility Investigation that resulted in no need to remediate contaminated soils because of the occurrence of a Dense Nonaqueous Liquid Phase (DNAPL) in the underlying groundwater.
- Critically reviewed an egregiously flawed baseline risk assessment and Feasibility Study prepared by the US EPA's contractor for an active junkyard listed on the NPL. The detailed review was submitted to the US EPA and resulted in the revision of the proposed Record of Decision and a cost savings of \$16M.
- Developed the first successful Type C (site-specific, risk-based) cleanup goals for an active property listed by the Michigan Department of Environmental Quality. The assessment was accepted by MDEQ and required only very minimal remedial action, costing less than 5% of the originally projected remediation cost.
- Developed provisional toxicity benchmarks (i.e., acceptable exposure levels) for rare and exotic metals (e.g., indium, niobium, and gallium) at a metals recycling facility listed on the NPL, which were accepted by the US EPA.
- Served as an expert toxicological spokesperson on behalf of daycare facility owners to address the concerns of parents who had been informed that their children's daycare water supply was contaminated with trichloroethylene (Group B2 carcinogen). The parents applauded at the conclusion of the open meeting.
- Provided the US EPA with a critique of the Hazard Ranking System (HRS) and recommended elements for consideration in the Revised HRS.
- Designed defensible sampling strategy and performed a no-action risk assessment, which delisted an active steel mill from the National Priorities List.
- Developed health-based cleanup goals for a large parcel with significant soil contamination from leaking petroleum USTs.
 - Utilized state-of-the-science methodologies in fate and transport modeling to demonstrate that minimal soil removal was required.
 - Achieved cost savings of several million dollars.
- Researched and developed a sampling strategy and recommended the use of a simple non-invasive *in vivo* technique (neutron activation analysis) for determining actual body burdens of cadmium for residents surrounding a zinc smelter.
 - Included application of a simple urine test to demonstrate the absence of any latent kidney damage in residents living near the zinc smelter.
- Developed and presented a model to more accurately quantify inhalation exposure incurred by bathing or showering with household water contaminated with volatile organic chemicals.
 - Position paper was requested by the ATSDR (Centers for Disease Control).
- Intervened on behalf of a manufacturing facility under investigation in the pre-listing process to challenge the adequacy of an improperly conducted and unsupportable Hazard Ranking Score (to qualify for NPL listing).
- Served as an expert witness for several toxic tort and cost-recovery cases.
- Recommended by the US EPA to the Virginia Department of Health to provide rapid assessment of

health hazard posed by the accidental application of 2,4-D instead of floor wax in an elementary school.

- Provided input for developing a corporate health and safety program for hazardous waste workers.
- Designed and conducted a two year rodent bioassay to determine the carcinogenic activity of specific chemicals.

PUBLICATIONS

- Lawrence, K. G., J. C. Kotanchik, K. G. Symms, and D. H. Wardrop. "Chapter 36: Selection of Ecological Toxicity Benchmarks for an Ecological Risk Assessment of Terrestrial Wildlife." Hydrocarbon Contaminated Soils, Vol. 6. Amherst, MA: Amherst Scientific Publishers, 1996.
- Symms, K. G., J. C. Kotanchik, T. Seery, K. G. Lawrence, and R. J. Fares. "Chapter 38: A Scientific Approach to Assessing Risks of Soil Contaminants at Daycare Facilities in Detroit, Michigan." Hydrocarbon Contaminated Soils, Vol. 6. Amherst, MA: Amherst Scientific Publishers, 1996.
- Symms, K. G., K. G. Lawrence, D. H. Wardrop, and R. J. Vitale (W.J. van den Brink, R. Bosman, F. Arendt, editors). "Modeling VOC Migration and Vapor Intrusion into Building Indoor Air from Subsurface Soil Sources." Contaminated Soil '95. Dordrecht, The Netherlands: Kluwer Academic Publishers, 1995.
- Symms, K. G., "A Health Assessment (Including Allergic Effects) of Chromium (Cr) Residues Following Cleanup of a Large Dichromate Spill at a Public Facility." 30th Annual Meeting of the Society of Toxicology. Toxicologist 11(1991):194.
- Rosenbaum, D. J., D. H. Wardrop, K. G. Symms, and I. J. Zankos. "Utility of Risk Assessment in Evaluating Remedial Options on a Site-Specific Basis." Toxicologist Vol. 11, No. 1(1991).
- Zachariah, P. K., Q. H. Lee, K. G. Symms, and M. R. Juchau. "Further Studies on the Properties of Human Placental Microsomal Cytochrome." Biochem. Pharmacol. 25(1975).
- Juchau, M. R., P. K. Zachariah, J. Colson, K. G. Symms, J. Krasner, and S. J. Yaffe. "Studies on Human Placental Carbon Monoxide-Binding Cytochromes." Drug Metab. Dispos. 2(1974).
- Symms, K. G., and M. R. Juchau. "The Aniline Hydroxylase and Nitroductase Activities of Partially Purified Cytochromes P-450 and P-420 and Cytochrome b₅ Solubilized from Rabbit Hepatic Microsomes." Drug Metab. Dispos. 2(1974).
- Juchau, M. R., K. G. Symms, and P. K. Zachariah. "Drug Metabolizing Enzymes in the Placenta." Problems in Perinatal Pharmacology. New York, NY: Raven Press, 1974.
- Juchau, M. R., Q. H. Lee, G. L. Louviaux, K. G. Symms, and S. J. Yaffe. "Oxidation and Reduction of Foreign Compounds in the Human Placenta and Fetus." Fetal Pharmacology. New York, NY: Raven Press, 1973.
- Symms, K. G. and M. R. Juchau. "Stabilization, Solubilization, Partial Purification and Some Properties of Cytochrome P-450 Present in CaCl₂-Precipitated Human Placental Microsomes." Life Sci. 13(1973).
- Symms, K. G. and M. R. Juchau. "Further Studies on the Catalysis of Nitro Group Reduction in Tissue-Free Systems." Proc. West. Pharmacol. Soc. 15(1972).
- Juchau, M. R. and K. G. Symms. "Aniline Hydroxylation in the Human Placenta- Mechanistic Aspects." Biochem. Pharmacol. 21(1972).
- Juchau, M. R., M. G. Peterson, and K. G. Symms. "Hydroxylation of 3,4-Benzpyrene in Human Fetal Tissue Homogenates." Biochem. Pharmacol. 21(1972).

PUBLICATIONS (Cont.)

Symms, K. G. and M. R. Juchau. "The Mechanisms of Aromatic Nitro Group Reduction in the Soluble Fraction of Human Placenta." Biochem. Pharmacol. 21(1972).

Symms, K. G. and M. R., Juchau. "Mechanisms of Aromatic Nitro Group Reduction in the Human Placenta." Proc. West. Pharmacol. Soc. 14(1971).

PRESENTATIONS

Kotanchik, J. C., K. G. Symms, L. J. Long, and K. G. Lawrence. "A Utility Trench Worker Exposure Scenario for Use in Developing Health and Safety Plans." Society for Risk Analysis. Savannah, GA, 5-8 December 1993.

Symms, K. G., L. J. Long, S. Symms, D. H. Wardrop, D. C. Nuber, K. G. Lawrence, and J. C. Kotanchik. "The Industrial Source Complex - Long Term 2 Air Dispersion Computer Model - The Big Black Box." Society for Risk Analysis. Savannah, GA, 5-8 December 1993.

Wardrop, D. H. and K. G. Symms. "The Cost of Conservative Risk Assessment in Remedial Decision-Making." Society for Risk Analysis. Savannah, GA, 5-8 December 1993.

Lawrence, K. G., D. H. Wardrop, K. G. Symms, J. C. Kotanchik, and L. J. Long. "The Crack Factor." Society for Risk Analysis. Savannah, GA, 5-8 December 1993.

Symms, K. G., L. J. Long, J. C. Kotanchik, and K. G. Lawrence. "Sick House Syndrome - Where Air Pollutants Come From and What Hazards and Cancer Risks the Pollutants Pose." Society for Risk Analysis. San Diego, CA, 6-9 December 1992.

Wardrop, D. H. and K. G. Symms. "The Cost of Worst Case." Society for Risk Analysis. San Diego, CA, 6-9 December 1992.

Wardrop, D. H., R. L. Liebowitz, K. G. Symms, and D. J. Rosenbaum. "Evaluation of Risk Posed by Implementation

of Remedial Options; Methodology and Utility." Society for Risk Analysis. Baltimore, MD, 8-11 December 1991.

Symms, K. G. "Approximation of the Inhalation Exposure to Volatile Organic Chemicals from Showering with Contaminated Household Water." Annual Convention and Geotech IV Conference of the American Society of Civil Engineers. Boston, MA, 27-31 October 1986.

Symms, K. G. "Rapid Separation and the Correlation in Relative Retentions of a Diversity of Glucuronide and Their Corresponding Sulfate Conjugates by Reverse-Phase High Performance Liquid Chromatography." Sixth International Symposium on Column Liquid Chromatography. June 1982.

Juchau, M. R. and K. G. Symms. "Drug Biotransformation in Tissue of the Human Fetus." Fifth International Congress of Pharmacology, Abstracts. p. 117, 1972.

Juchau, M. R., Q. H. Lee, G. L. Louviaux, K. G. Symms, J. Krasner, and S. J. Yaffe. "Oxidation and Reduction of Foreign Compounds in the Human Placenta and Fetus." International Symposium Abstracts. Fetal Pharmacology. Stockholm, 1971.

CONFERENCE MODERATOR/CHAIR

Symms, K. G. Chairperson. Session on Human Risk Assessment, Health Effects. 10th Annual Conference on Contaminated Soils. Amherst, MA, 23-26 October 1995.



**ENVIRONMENTAL
STANDARDS**

ROBERT J. FARES

Senior Risk Assessment Manager

FIELDS OF COMPETENCE

- Utilizing a variety of statistical analytical techniques to evaluate monitoring survey and laboratory data for indicator chemicals from multi-media sources to be used in human and ecological risk characterizations
- Integrating production, use, monitoring, modeling, transport, fate, and population information to assess exposure routes and their importance.
- Development of site-specific multi-pathway stochastic models to characterize exposure and risk.
- Development of exposure scenario assumptions and application of chemical transport and exposure models to estimate the occupational inhalation and dermal exposure to the components of various commercial and industrial products.
- Utilizing a wide variety of commercial and public sector software to model the fate and transport of chemicals through different media and predict activity-specific exposures and risks.
- Training and managing risk assessment staff.
- Writing reports, position papers, training manuals, and briefing packages.

CREDENTIALS

B.A., Biology, City University of New York, New York, 1973.

Graduate Studies, Marine Sciences, State University of New York at Stony Brook, New York, 1977.

Graduate Studies, Geographic and Cartographic Sciences, George Mason University, 1984.

PROFESSIONAL AFFILIATIONS

Society for Risk Analysis

SUMMARY OF EXPERIENCE

Mr. Fares has over twenty five years of broad-based experience in the performance of exposure and risk assessments, statistical analysis, field sampling and monitoring, photogrammetric techniques, aquatic bioassay techniques, environmental fate and transport studies of chemical pollutants, acid deposition issues, report writing, literature reviews, data management, and project management. He has had over seventeen years of experience in assessing multimedia exposures and associated risks for chemicals in the vicinity of hazardous waste sites, released from point sources (e.g., stacks, outfalls), contaminants released as nonpoint sources (e.g., vertical and lateral movement of pesticides resulting from different agricultural techniques), and chemicals released from commercially available products and furnishings during use by consumers. Mr. Fares has over twelve years of experience in the development of experimental designs and computer models, sampling strategies, and statistical analysis of exposure-related data. Because of his familiarity with commercially available stochastic modeling software, Mr. Fares currently is a Beta tester of software produced by Palisade Corporation (@Risk, BestFit, Top Rank, Risk View, and Precision Tree) and Decisioneering, Inc. (Crystal Ball). Mr. Fares is also very active in the Society for Risk Analysis, and served as Chair of the Exposure Assessment Specialty Group during 1994. In addition, he reviews papers submitted for inclusion in Risk Analysis, the SRA journal, and is on the committee responsible for selection of papers for the SRA Annual Meetings.

Prior to joining Environmental Standards, Inc., Mr. Fares was a Senior Scientist at a large consulting company and was involved in several exposure and human health risk assessment projects. In that capacity, he served as acting chief of the Industrial Resources Branch for over one year. As Project Manager for a subcontract for the EPA Office of Water Enforcement and Permits (OWEP) support, Mr. Fares directed and conducted Performance Audit Inspections in EPA Region 5, and oversaw the laboratory analysis of sludge samples from Regions 3 and 5. Mr. Fares presented a discussion on the utility of Monte Carlo analysis in exposure and risk assessments at the EPA Eighth Annual Risk Assessors Group Conference in Atlanta, Georgia on May 5, 1993. He was the only contractor invited to speak at the conference.

KEY PROJECTS

- Developed a multi-pathway model for a private industrial client to assess residential risks resulting from exposure to volatile chemicals during consumptive use of contaminated groundwater.
- Developed a metabolic inhalation pathway model for exposure to benzene releases from an agri-chemical production facility in the Commonwealth of Puerto Rico.
- Assessed risks to residents, workers, trespassers, and children in a playground from exposure to residual chemicals in soil at a former manufactured gas plant (MGP). This was the first risk assessment approved by PA DEP under Act 2 to use stochastic modeling. His efforts resulted in the clients remediation costs being reduced from millions of dollars to zero. Has conducted two additional studies for the same client at two similar sites. In order to facilitate a remediation strategy at the last site, used Monte Carlo sampling to back-calculate the concentration of a significant chemical that would ensure protection of human health for workers at the site. US EPA is considering including this procedure in forthcoming guidance documents on estimation of ecological soil screening levels and probabilistic risk assessment.
- Characterized the risk to adolescents from exposure to the bioavailable component of lead in soil at a former shooting range for a private client.
- For another private client, used Pareto analysis and stochastic modeling to assess the cost risks associated with renovating and putting into operation a Russian nuclear power plant in Eastern Europe.
- Conducting an indirect exposure multi-pathway risk assessment for a cement kiln in Missouri. In addition to managing the project, he is coordinating with US EPA and State agency representatives to develop a user-friendly fate and transport model with a Monte Carlo component for use in assessing the risks to various sub-populations in the vicinity of the facility.
- Assessed risks to residents from leachate components of floor and counter tiles that are manufactured from spent potliner material. The study required innovative modeling to estimate exposures to adults and children under the most adverse conditions.
- Responsible for training other members of the risk assessment staff with regard to statistical analytical techniques, software utilization, and exposure/risk modeling.
- Conducts senior-level review of all risk assessments prior to client delivery in order to ensure work product consistency and accuracy.
- Conducted literature reviews and prepared reports and risk assessments on the environmental fate and effect of selected chemicals for EPA/OIS. Also served as Document Coordinator for a hazard assessment document on chloroform and as author of sections on physical/chemical properties, environmental fate, and exposure for chloroform, carbon tetrachloride, and TCDD for EPA/ECAO.
- Examined the effects of atmospheric deposition in Adirondack lakes from acid rain, particulate matter, and other airborne pollutants. Study performed for the Electric Power Research Institute (EPRI) also involved an evaluation of the ecological impacts of mitigation strategies, specifically liming operations.
- Examined the effects of ozone on soybean growth for EPRI. Study involved performance of regression analyses and generation of different dose-equations for the effects of ozone on State, regional, and national soybean yield.
- Conducted analyses to assess the potential impacts of chemically contaminated sediments on living water resources in the Great Lakes Region for the Great Lakes National Program Office (GLNPO). Task involved studies of the sediment chemistry of seven harbors in Lake Michigan, 11 harbors in Lake Erie, seven areas in the St. Lawrence River, and four connecting channels in the upper Great Lakes.
- Conducted analyses to assess the potential impacts of chemically contaminated sediments on living water resources in Lake Michigan and Lake Erie for GLNPO. Analyses were performed as part of the process to develop remedial action plans (RAPs) for the Indiana Harbor Canal in Indiana, and the Maumee River in Ohio. The potential impacts of contaminated surface water, ground water, and air also were evaluated for these RAPs.
- Provided technical support for assessing ecological risks from nutrient enrichment and/or eutrophication in Table Rock Lake in Missouri for EPA Region 7. Served as Project Administrator and principal investigator of the environmental evaluation which assessed the impact to Table Rock Lake from various wastewater treatment technology strategies employed by a small Missouri lakeside community.
- Reviewed pesticide data as required for manufacture registration under Subsections K (re-entry exposure) and U (mixer/loader/applicator exposure) of FIFRA.

- Examined the effects of dioxins released into the environment for EPA. Project required an assessment of the environmental and human health risks to dioxins from exposure to paper industry sludge.
 - Examined the effects of pollutants introduced into the environment from a reclamation landfill in Ohio. Responsibilities included the selection of indicator chemicals from multimedia sources and performance of exposure and risk estimates for actual and potential exposure scenarios.
 - Examined the effects of pollutants into the environment from the vicinity of an underground storage tank excavation site for Illinois EPA. Study involved the performance of exposure and risk estimates from potential multi-media exposure scenarios.
 - Predicted the human health impacts and ecological risks of a sudden large release of saccharin to living water resources. This study was performed for the EPA Office of Solid Waste as part of a hazardous waste delisting petition for saccharin.
 - Recently presented a discussion on the utility of Monte Carlo analysis in exposure and risk assessments at the EPA Eighth Annual Risk Assessors Group Conference in Atlanta, Georgia on May 5, 1993. He was the only contractor invited to speak at that conference.
 - Senior author of a US EPA Office of Health and Environmental Assessment (OHEA) report, Populations - Identifying and Quantifying Highly Exposed and Sensitive Populations at Superfund Sites.
 - Author of the section on Health and Environmental Assessments in the RCRA Subpart X Guidance Document submitted to the EPA Office of Solid Waste (OSW).
 - Part of a team effort to revise the EPA Guidance Document for Dermal Exposure Assessment for OHEA.
 - Developed a training manual for OPPT on the use of Monte Carlo sampling techniques in exposure and human health risk assessments.
 - Modified a Formaldehyde exposure model which will be used by the EPA Office of Pollution Prevention and Toxics (OPPT) to generate exposures in a variety of scenarios in residential settings as part of the development of a Notice of Proposed Rule Making.
- Additionally, as part of this task, developed strategies for assessing the potential dose and human health risks from acute exposure to formaldehyde from wood products in mobile homes and single-family houses.
- Developed options for assessing exposure and potential human health risks to chemicals released during use of aerosol spray paints in residences for OPPT.
 - Assessed the potential human health risks to consumers from exposure to various components of aerosol spray paints for OPPT.
 - Evaluated the utility of Monte Carlo sampling on human health risk assessments performed for NPL sites in another work assignment for the Toxics Integration Branch of OSW.
 - Worked with the Toxics Integration Branch of OSW (EPA) to develop a definitive soil ingestion default distribution for use in Superfund risk assessments.
 - Evaluated the impact of avoiding, or otherwise misrepresenting, parameter correlations in stochastic models of exposure and risk for the Toxics Integration Branch of OSW.
 - Developed preliminary remediation goals (PRG) for a mixture of polycyclic aromatic hydrocarbons of the environmental and human health risks to dioxins from exposure to paper industry sludge.

PUBLICATIONS

Symms, K. G., J. C. Kotanchik, T. Seery, K. G. Lawrence, and R. J. Fares. A Scientific Approach to Assessing Risks of Soil Contaminants at Day Care Facilities in Detroit, MI. Hydrocarbon Contaminated Soils, Vol. 6. Amherst, MA: Amherst Scientific Publishers, 1996.

Phillips, L. J., R. J. Fares, and L. G. Schweer. "Distributions of Total Skin Surface Area to Body Weight Ratios for Use in Dermal Exposure Assessments." J. Exposure Analysis and Environmental Epidemiology. Vol. 3, No. 3(1993): 331-338.

PRESENTATIONS

Flessner, D. Jr., L. Randecker, and R. Fares. "Comparative Assessment of 19 Cleaning Products." Society for Risk Analysis Annual Meeting. Baltimore, MD, 6 December 1994.



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- Dawson, J., C. Dary, J. Quackenboss, R. Fares, D. Feliciano, T. Wick, T. Schaffer, and H. Rosnick. "The Application of Biomechanics to Exposure Assessment." Fourth Conference of the International Society For Exposure Analysis. Research Triangle Park, NC, 19 September 1994.
- Fares, R. "Comparison With Point Estimates: Uses and Abuses of Monte Carlo In Exposure Analysis." EPA Eighth Annual Risk Assessors Group Conference. Atlanta, GA, 5 May 1993.
- Newton, J. Jr., M. Alford, and R. Fares. "RCRA Subpart X Permitting: A Challenge to EPA, DOD, and Industry." American Defense Preparedness Association 18th Environmental Symposium and Exhibition: "DOD & Industry: Leveraging Resources for Environmental Leader." Alexandria, VA, 24-27 February 1992.
- GOVERNMENT AND CONTRACTOR REPORTS:**
- Versar, Inc. "Biomechanical Analysis of Exposure Data." EPA's Office of Research and Development/Office of Modeling, Monitoring Systems, and Quality Assurance, Environmental Monitoring Systems Laboratory - Las Vegas. EPA Contract 68-D3-0013. 1994.
- Versar, Inc. "RM2 Dossier: Aerosol Spray Paints, Indoor Air Screening Cluster." US EPA, Office of Pollution Prevention and Toxics. EPA Contract No. 68-D3-0013. 1994.
- Versar, Inc. "Indoor Air Cluster Report; Consumer Exposure to Components of Aerosol Spray Paint - RM2 Report." US EPA, Office of Pollution Prevention and Toxics. EPA Contract No. 68-D3-0013. 1994.
- Versar, Inc. "Soil Ingestion Rates for Children." US EPA, Office of Solid Waste, Toxics Integration Branch. EPA Contract No. 68-D3-0013. 1993.
- Versar, Inc. "Environmental Investigation, Risk Assessment, and Alternatives Analysis: For Des Moines, Des Moines, Iowa." US Army Environmental Center. Contract No. DAAA15-90-D-0014. 1993.
- Versar, Inc. "Risk Assessment, Tacony Warehouse, Philadelphia, Pennsylvania." US Army Environmental Center. Contract No. DAAA15-90-D-0014. 1993.
- Versar, Inc. "Ignoring or Otherwise Misrepresenting Correlations Between Variables in Stochastic Modeling of Exposure and Risk - Effects on Model Output." US EPA, Office of Solid Waste, Toxics Integration Branch. EPA Contract No. 68-D3-0013. 1993.
- Versar, Inc. "Indoor Air Screening Cluster Report: Consumer Exposure to Components of Wood Stains and Varnishes." US EPA, Office of Pollution Prevention and Toxics. EPA Contract No. 68-D3-0013. 1993.
- Versar, Inc. "Exposure and Human Health Risk Assessment: Acrylonitrile." Prepared for a private client. 1993.
- Versar, Inc. "Recommended Remediation Objectives Based on Review of Risk Characterization - Leaking UST Site, 2900 S. 25th Avenue, Broadview, Illinois - Incident No. 903381. Illinois Environmental Protection Agency. 1993.
- Versar, Inc. "Monte Carlo Sampling in Exposure Assessments: A Training Manual." Internal Review Draft. US EPA, Office of Pollution Prevention and Toxics. EPA Contract No. 68-D3-0013. 1992.
- US EPA. "Dermal Exposure Assessment: Principles and Applications." US EPA, Office of Health and Environmental Assessment. EPA/600/8-9/011F. 1992.
- Versar, Inc. "RMI Dossier: Aerosol Spray Paints, Indoor Air Screening Cluster." US EPA, Office of Pollution Prevention and Toxics. EPA Contract No. 68-D3-0013. 1992.
- Versar, Inc. "Risk Assessment - Bedinghaus Business Communications, Inc., Sharonville, Ohio." Prepared for a private client. 1992.
- Versar, Inc. "Endangerment Assessment for the Buckeye Reclamation Landfill, St. Clairsville, Ohio - A Supplemental Task of the Buckeye Reclamation Landfill Remedial Investigation/Feasibility Study." Buckeye Reclamation Landfill Steering Committee. 1991.
- Versar, Inc. "Literature Search: Assessing Uncertainty in Exposure Assessment." US EPA, Office of Health and Environmental Assessment. EPA Contract No. 68-D3-00101. 1990.



**ENVIRONMENTAL
STANDARDS**

KATHLEEN A. KOERBER

Project Risk Assessor

FIELDS OF COMPETENCE

- Quantitative, site-specific human health and ecological risk assessments.
- Health-based remediation objective development as a cost-effective alternative to default or generic cleanup criteria.
- Site-specific environmental database system development and management.
- Comprehensive environmental data analysis and modeling using state-of-the-science statistical software.
- Wetlands delineation and ecological surveys.
- Air dispersion modeling using US EPA's Industrial Source Complex (ISC).

CREDENTIALS

B.S., Comprehensive Science, Villanova University, 1993,
Geography Minor.

SUMMARY OF EXPERIENCE

With over three years of experience at Environmental Standards, Ms. Koerber has become a valuable asset to the Risk Assessment department. Immediately involved in several large projects, from day one Ms. Koerber quickly progressed from performing intensive data analysis using state-of-the-science commercial software to authoring human health risk assessments, aiding in ecological risk assessments, and providing project management.

Ms. Koerber has completed formal wetlands delineation training, qualifying her to perform wetlands delineations according to US Army Corps of Engineers protocol. In addition, she has become proficient in habitat suitability index (HSI) modeling as a means for determining habitat quality for a diverse number of creatures.

Recently, Ms. Koerber has completed formal training courses in a variety of disciplines including ISC air

dispersion modeling, the Microsoft Access database application, and freshwater wetlands construction. Ms. Koerber's experience complemented with this coursework has provided her with a well-rounded knowledge of several fields that are often involved in the risk assessment process.

Prior to joining Environmental Standards, Ms. Koerber gained over three years of analytical experience in a large national environmental laboratory. During that time, she developed a thorough understanding of US EPA SW-846 and Contract Laboratory Program (CLP) protocol for inorganics digestion for graphite furnace atomic absorption (GFAA) and inductively coupled plasma (ICP) analyses. Ms. Koerber also gained a year's experience in mercury sample digestion and analysis by cold vapor atomic absorption (CVAA) using US EPA SW-846 and CLP methodologies.

KEY PROJECTS

- Performed a revised feasibility study utilizing knowledge of statistical methods and risk assessment concepts that resulted in substantially reduced requirements for remediation.
- Developed an alternate human health and ecological risk assessment that enabled development of reasonable cleanup objectives for a Superfund site in Michigan, where ACT 201 amendments necessitated revision of the Record of Decision (ROD).
- Aided in developing risk-based remedial action objectives for an active Resource Conservation and Recovery Act (RCRA) facility involving significant groundwater contamination. The risk assessment and remedial objectives minimized further clean-up requirements over interim measures.
- Developed a sophisticated vapor emissions/intrusion model estimating volatile emissions from soil and groundwater sources with subsequent infiltration into indoor air of residential and commercial buildings. This model was utilized to limit the need for deed restrictions at a site formerly used as a landfill and dumping area.



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Kathleen A. Koerber
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- Involved in numerous Pennsylvania Act II and other Brownfields initiatives in the development of cost effective and site-specific health-based cleanup standards.
- Performed a human-health risk assessment and ecological screening for a chemical storage facility under Pennsylvania Act II regulations. The results of the assessment virtually eliminated remedial costs for the client.