

EXPERIENCE (continued)

dimensional kriging, Monte Carlo simulation, mixing theory, and frequency-weighted exposures.

- Directed both field and theoretical studies of speciation and migration of chromium in soil and ground water. Work included design of the investigation study, development of an innovative technique for measuring oxidation/reduction potential, and assessment of risks from chemicals in soil. The culmination was a remedial action plan preparing the site for development. Evaluated remedial alternatives of in-situ chromium treatment at another site. Senior advisor for risk assessments at numerous New Jersey chromium sites being conducted for a private client. Evaluated the status of a natural renovation chromium treatment program at a Midwest plating plant. Conducted a critical review of cleanup levels for chromium soil.
- Applied statistical techniques including sampling plan design, non-linear regression analysis, sensitivity analysis, Monte Carlo simulations, and geo-statistics (kriging), and determination of background soil concentrations through analysis of underlying probability distributions.
- Acted as an expert witness for litigation concerning human exposure to dioxins at Missouri dioxin sites. This work involved process chemistry of dioxin formation, phenoxyherbicide manufacturing, environmental fate and transport, statistical analysis of analytical data, and pharmacokinetics.
- Project manager for a task involving evaluation of ecological risk models for EPA.
- Acted as a consultant to three private clients on the subject of human health and environmental impacts of disposal of ash from municipal solid waste incinerators. Includes expert testimony and litigation support. Developed a methodology for conducting a screening risk assessment for ash disposal. Performed a full-scale risk assessment for a proposed ash monofill.
- Performed an evaluation of the potential relative risk associated with ground water, air, and surface water

EXPERIENCE (continued)

contamination, as well as fire and transportation spills all within one political jurisdiction. This involved seven facilities, including a hazardous waste TSDF, oil refinery, and several publicly owned treatment works (POTWs).

- Supervised the development of polychlorinated biphenyl (PCB) cleanup goals in aquatic sediment at the Resolve Superfund site. This project included the use of several complex mathematical models in addition to integrating field biology with exposure and toxicological concepts. Senior technical advisor to development of a technical guidance document for cleanup of PCBs from sediments for Pennsylvania Department of Environmental Resources. (PA DER). Principal investigator for review of a PCB toxicology assessment. Developed mathematical models for evaluating co-mobility of PCBs and solvents in soil. Developed a congener-specific risk assessment methodology for PCBs. Advisor to a project evaluating PCBs spilled from natural gas pipelines on behalf of a gas distribution company. Advisor to Department of Justice (DOJ) regarding PCB environmental chemistry.
- Project director of an investigation into the status of viability of the endangered Desert Tortoise in the Las Vegas Valley. On behalf of the development community, participated in negotiations with Fish and Wildlife Service (FWS) and Bureau of Land Management (BLM) in addition to litigation involving the Desert Tortoise. Project culminated in a listing of the Tortoise as threatened rather than endangered.
- Project manager of a large-scale nationwide pesticide exposure assessment conducted for termiticide application of chlordane and heptachlor according to EPA guidance. Negotiated with EPA on behalf of a private client concerning development of a monitoring and exposure study for chlordane.
- Supervised laboratory toxicological research into the induction of potentially detoxifying enzymes in rats exposed to phenoxy herbicides.

EXPERIENCE (continued)

- Evaluated the relative risk from home owner/applicator exposure to pesticides used for gypsy moth control, including acephate, carbaryl, DDVP, and integrated pest management. Provided expert testimony for evaluation of exposure to EDB in groundwater.
- Performed endangerment and/or risk assessments of four sites associated with abandoned coal-gasification facilities. Assisted in developing a protocol for rapid assessment at manufactured gas plants. Concluded remedial investigations at two gas plant sites for a utility. Currently evaluating the bioavailability and toxicity of cyanide wastes at gas sites. Assisted legal defense team regarding a lawsuit over property transfer at an inactive manufactured gas site.
- Managed the development and application of a cost-effectiveness risk assessment methodology for Electric Power Research institute. This project included original contributions in fate and transport of unstable substances in water and developing a link between benefits, costs, and both human health and aquatic life risks.
- Conducted a critical review of the carcinogenicity of dichloroethylene.

Hazardous Materials Management

- Performed an analysis of trends associated with a mercury in the municipal solid waste stream. This included a mass balance which calculated mercury diverted into stack gas and ash from operation of an incinerator. The analysis predicted both current and future mercury levels.
- Managed a project to develop a remedial action plan for remediation of a development site contaminated with PCBs, PAHs, asbestos and petroleum. Included technical and regulatory aspects of remediation, health and safety planning, and monitoring of the extent of remediation.

EXPERIENCE (continued)

- Technical Director of Remedial Investigation/ Feasibility Study (RI/FS) activities being conducted by ICF at the Hopewell Landfill Superfund site on behalf of the York County Solid Waste Authority.
- Advised a private client on RCRA, FIFRA, and CERCLA issues associated with purchase of a property previously contaminated with organochlorine pesticides. Activities included interpretation of TCLP data, manifesting, conducting a risk assessment, and meeting with regulatory agencies.
- Technical Manager of RI/FS activity at two state-lead Superfund sites. This included the Wide Beach, New York PCB site. Participated in sampling design, data analysis, risk assessment, environmental assessment, development of cleanup levels, community relations, evaluation of remedial alternatives, and negotiations among interested parties.
- For a private client, directed oversight of contractor activities involved in remediation of a site contaminated with organic **arsenicals**. This work involves monitoring sampling, analysis, and development of remedial alternatives, including evaluation of technology and costs for treating inorganic and organic arsenic.
- For a private client, conducted a study of PCB migration from an inactive sanitary landfill. This project included both field studies and mathematical modeling for passive and active vapor phase transport. The work culminated in a decision not to remediate.
- For a private client, investigated the impact of RCRA and FIFRA on pentachlorophenol manufacturing. The project included a review of process chemistry, an evaluation of waste minimization programs, a commercial TSDF survey, and a review of applicable treatment technologies.
- Performed modeling for air exposure analysis at hazardous waste sites. Designed and implemented an ambient air monitoring **program** for lead in

EXPERIENCE (continued)

response to a New Jersey ECRA action. Used air modeling to aid in design of PCB storage barn.

- For a private client, performed an evaluation of health, safety, and environmental impacts of a proposed TSDF expansion. Included expert testimony before an administrative law judge.
- For a private client, directed studies to support a treatment program that will remove dioxins/furans from groundwater. These studies included locating the source of the dioxins, predicting their mobility, recommending personal protection for remedial personnel, evaluating treatment techniques, and advising on risk communications.
- For a county government POTW, directed a program to assess the hazards posed by aqueous chlorine emissions. Used the MERGE model and EPA's approach based on water quality criteria. This included development of a stochastic technique for evaluating exposure of aquatic life to chlorine.
- One of two authors of a RCRA exposure information report (EIR) for a private client. Project manager for a alternate concentration limit (ACL) demonstration project for the same client. Additional RCRA-related assignments have included development of a risk-based closure plan, assessing liability requirements for owner operators and advising clients on listing and categorization of wastes.
- Project Manager of a remedial investigation/feasibility study of an oil spill in Delaware Bay. Senior advisor to a team developing ACLs for service stations with groundwater contamination by petroleum. Developed a model to predict the rate of dissolution of spilled gasoline in groundwater for EPA. Senior advisor to UST investigative team. Senior reviewer for EPA's gasoline risk assessment methodology. Assisting a building contractor in evaluating a fuel oil spill which contaminated a development site. Director of field and evaluation work for litigation involving a gasoline release from a UST. Evaluated probability of failure of USTs including impact of corrosion and maintenance.

EXPERIENCE (continued)

- Advised local governments (Dutchess County, New York and York County, Pennsylvania) on management options for both active and inactive hazardous waste sites and solid waste disposal options.
- Performed hazardous materials audits for a dye factory for the city of Poughkeepsie, New York, and a specialty organic chemicals facility for the town of Woodbury, New York. Performed a due diligence audit for the acquisition of a chrome plating plant in New York State by a foreign investor. Assisted in the environmental audit of a major Washington, D.C. hotel complex for a foreign investor. Formerly senior advisor to Clement's environmental audit practice.
- Performed preliminary evaluations of over 10 potential Superfund sites using the HRS. Participated in the national priority list delisting operation and audit of Superfund participation for private clients. Provided input to EPA's HRS revisions.
- Provided oversight for contractor compliance to remedial plans at several former hazardous waste sites undergoing development. This included negotiations with state officials in New Jersey and California.
- Managed activities for a RCRA closure equivalency demonstration for a private client.
- Advised the U.S. Fish and Wildlife Service about environmental liabilities associated with purchase of property. This evaluation resulted in the savings of millions of dollars.

Environmental Chemistry and Engineering

- On behalf of a Superfund PRP, tracing chemical processes in a manufacturing plant to ascertain contributions to an National Priority List (NPL) site.
- Principal investigator of a project designed to validate over 20 years of environmental radiation measurements of a DOE site. Developed a statistical QA/QC program to implement the validation.

EXPERIENCE (continued)

- Developed techniques to perform second-level analytical data validation to data which had already passed CLP validation. Applied technique to numerous cases resulting in major impacts on regulatory decisions.
- Developed an analytical methodology for rapid field detection and quantification of organophosphate pesticides. Compared results to laboratory methods using GC/FPD. Applied methods to a multiple pesticide release incident in New York.
- Developed in-depth chemical fate and transport profiles of polychlorinated aromatics (PCBs, PCDD/PCDFs) and polynuclear aromatic hydrocarbons. Developed criteria for organic volatiles and metals in drinking water based on their effects on human health. Senior peer reviewer for exposure sections of ATSDR toxicological profiles.
- Developed chromatographic methods for rapid analysis of PCBs absorbed to surfaces of vegetation and in surface films on water bodies. Applied the technique to evaluating PCB exposure at the Schatz Bearing Site, Poughkeepsie, New York.
- Developed a technique for rapidly assessing emissions from chemical fires based on thermodynamics, kinetics, and mass transfer.
- During the four years from 1969-1972 performed as a industrial quality control/process control chemist. Included statistical analysis, development of sampling plans, development of control charts, and specification of raw materials.
- Hands-on experience with numerous methods for samples, sample preparation and analysis. Sample preparation experience includes the use of Kuderna-Danish evaporators, Soxhlet extractors, continuous liquid-liquid extractors, and sonification. Analytical experience includes GC (GC/MS, FID, electron capture, Hall, photoionization detectors) HPLC, spectroscopy, electrochemistry, and wet methods. Data handling experience includes statistics, data reduction, use of electronic integrators, and chemometric pattern recognition.

EXPERIENCE (continued)

- Developed a QA/QC plan for an independent contract laboratory. Audited QA/QC programs for private labs. Performed QA/QC audits on six contract laboratories and field labs in the REM III Superfund contract.

This involved several lab visits per year with inspection of QA documentation and Standard Operating procedures along with observation of all activities from receipt of samples of chain-of-custody to printing of data reports. Audited a private laboratory of discrepancies in QA/QC program.

- Compared TCLP to EP toxicity methods for extraction of metals from tailings at the Palmerton Zinc site.
- Conceptual design of treatment operations including stripping and activated-carbon treatment for aqueous organics and on-site chemical reaction for soil-bound PCBs. Developed and implemented laboratory and pilot plant protocols for testing of aquatic ozonation systems. Conducted treatability studies in many areas of water treatment.
- Directed laboratory research projects following TSCA protocols on environmental fate and transport of four chemicals. Modeled environmental performance and estimated properties of over 50 chemicals.
- Conducted laboratory testing and advised a client on technical and regulatory basis of FIFRA registration of a disinfectant.
- Evaluated a series of new techniques developed by a pesticide manufacturer to quantify low level analytical sensitivities. Performed data validation of applications of the method to herbicides in groundwater.
- Developed and implemented chemometric methods for source-apportionment of complex mixtures including PCBs, dioxins, petroleum, and PAHs.

Environmental Education

- Developed and taught an environmental chemistry curriculum at Vassar College. Course work at both