

Robert Scofield, D. Env., M.P.H.
Principal Scientist and Center Director

Professional Profile

Dr. Robert Scofield is a Principal Scientist and the Director of Exponent's Health Sciences Center for Exposure Assessment and Dose Reconstruction. He has over 30 years of experience in performing human health risk assessments and exposure assessments for chemicals in the environment and consumer products.

He has managed or performed health risk over 500 human health risk assessments for chemicals in soil, water, and air. These evaluations have including major Superfund sites, RCRA Sites, agricultural chemical sites, Brownfield redevelopment sites, petroleum spill sites, manufactured gas plant sites, and other waste disposal or spill sites. He has also performed and reviewed multipathway risk assessments for diesel exhaust emissions, municipal and hazardous waste incinerators, and air emissions from industrial process stacks and research laboratories under a variety of State, Federal, and international regulatory programs and in support of risk communication. In recent years, Dr. Scofield has performed several risk assessments designed to meet the requirements of CEQA.

He has performed or peer reviewed risk assessments conducted in many countries in Europe, Asia, and South America. In Australia, he has performed or reviewed more than 20 risk assessments for contaminated land and air toxics sites in New South Wales, Victoria, South Australia, and Western Australia. Dr. Scofield is an approved risk assessor by the New South Wales government for risk assessments performed under their Site Auditor program. He has extensive experience performing critical evaluations of toxicology and epidemiology literature for setting exposure limits, characterizing dose-response relationships, and evaluating evidence for causal relationships between chemical exposures and adverse health effects. He has served on peer review committees for the U.S. Department of Defense and State of California.

In the area of product safety, Dr. Scofield has completed over 300 risk assessments involving the estimation of chemical exposure to consumer products or food. Many of these evaluations have been performed in support of assessments of compliance with California's Proposition 65. He has also performed risk assessments for clients in response to inquiries from the FDA and product recalls ordered by the CPSC. In addition, he has provided risk assessment in support of registration or regulation under FIFRA, CPSIA, and other State-specific product safety laws, as well as EU directives. Dr. Scofield has also provided product safety evaluations on behalf of companies considering the purchase of the rights to manufacture specific products or product lines or considering voluntary product recalls.

Dr. Scofield has taught and lectured extensively on risk assessment at universities, for private industries, and for the California Bar Association. He was an active member of the committee that developed the ASTM Standard, Risk Based Corrective Action (RBCA) for Petroleum

Release Sites. In support of the American Petroleum Institute and the USEPA program to implement RBCA programs within State agencies, he taught basic toxicology, risk assessment, and risk-based corrective active action to several State agencies. He was part of a team that developed and taught a class in toxicology and risk assessment for project managers within the Department of Defense. Dr. Scofield was a member of the National Research Committee on Natural Attenuation. He has been an invited speaker at the Brownfields Asia Conference on two occasions and was invited to present a guest lecture on risk assessment to the Chinese Research Academy of Environmental Sciences in 2008. He was invited to participate in a special meeting of the Toxicology Section of the Royal Society of Chemists in the United Kingdom to participate in discussions on the topic of determining significant health risk. Dr. Scofield is frequently invited to speak on Proposition 65.

Academic Credentials and Professional Honors

D. Env., Environmental Science and Engineering, School of Public Health, Department of Environmental Science and Engineering, University of California, Los Angeles, 1984
M.P.H., Environmental Health Management, University of California, Los Angeles, 1977
B.A., Biology, University of California, Los Angeles, 1975

Post-doctoral researcher, Department of Environmental Toxicology, University of California, Davis, 1983–1985

TRW Scholar, Toxicology, Department of Environmental Toxicology, University of California, Davis, 1982–1983

Publications and Presentations

Scofield R. Streamlining environmental and planning processes to facilitate the development of Green Field projects. Panelist at the 5th Annual Public Private Partnership USA Summit, Washington D.C., March 13, 2009.

Scofield R. Cradle-to-cradle: From Proposition 65 to a new paradigm in green chemistry regulation. Invited Panelist, Los Angeles County Bar Association, Environmental Law Section, Los Angeles, CA, January 15, 2009.

Scofield R, Stubbs C, Mitchell K. Vapour intrusion assessment at Brownfield Sites: An overview of the primary issues and current practice. Keynote Lecture, Brownfield Asia 2008, Kuala Lumpur, Malaysia, October 21–23, 2008.

Scofield R. The evolving methods for evaluating health risks from “goods movement.” Trends 2008; 39(6), July/August.

Scofield R, Caviness G, Posson M. Unique risk communication challenges posed by estimating human health risks for diesel exhaust. Air and Waste Management Annual Conference and Exhibition, Portland, OR, June 24–27, 2008.

Scofield R. Proposition 65's impact on the science of hazard identification and management. Panel Moderator, Proposition 65 News Conference, Napa, CA, October 5, 2006.

Scofield R, Ooi S, Struik E. Risk-based screening values: A cost-effective approach to contaminated land management. Keynote Lecture, Brownfields Asia 2006, Kuala Lumpur, Malaysia, September 2006.

Scofield R. How do you do a risk assessment. Panelist, Proposition 65 Clearinghouse Conference, San Francisco, CA, March 27, 2006.

Conder JM, Haroun L, Roberts S, Lockwood S, Scofield R, Hall S. Uptake of perchlorate by garden crops in perchlorate-impacted soil: Implications for risk assessment. Presented at Society of Environmental Toxicology and Chemistry (SETAC) North America, 26th Annual Meeting, Baltimore MD, November 13–17, 2005.

Scofield R. Risk assessment vs. risk assumptions: Where's the science? Panelist, Prop 65 Clearinghouse Conference, San Francisco, CA, March 11, 2005.

Scofield R. The role of risk assessment in decisions to restore or reduce risk. Invited presentation at the Theis Conference on Environmental Decision Making: Restoration Versus Risk Reduction, Sedona, AZ, January 16, 2005.

Scofield R. Tai TO. A critical evaluation of commonly used tables of soil cleanup values. Brownfields Asia 2004, Kuala Lumpur, Malaysia, June 2004.

Scofield R. Evaluating toluene exposure under Proposition 65. Presented at the 2001 National Environmental Health and Safety Conference for the Graphic Communications Industries, St. Louis, MO, March 25–27, 2001.

Scofield R. Superfund basic research in the next century: Setting the agenda. Invited Facilitator for National Institute of Environmental Health Sciences Workshop on Evaluating and Communicating Risk, Berkeley, CA, June 1998.

Ryer-Powder JE, LaPiree A, Scofield R. Derivation of a reference dose for a complex petroleum hydrocarbon mixture. Hum Ecol Risk Assess 1997, November.

Scofield R. Expansions and reformation of the application of chemical risk assessment to the clean-up of contaminated sites in the United States. Invited Presentation to the Australian Water and Wastewater Association, Melbourne, Australia, March 1997.

Scofield R, McConnell S. Overview of international directions being taken in risk assessment. Invited presentation to the Australian Water and Wastewater Association, Melbourne, Australia, March 1997.

Ryer-Powder JE, LaPiree A, Scofield R. Derivation of a reference dose for a complex petroleum hydrocarbon mixture. Hum Ecol Risk Assess 1997, November.

LaPierre A, Dizio S, Schum M, Wong K, Ryer-Powder J, Curley W, Scofield R. Site-specific exposure distributions for a state Superfund Human Health Risk Assessment (HHRA). Presented at the Society of Toxicology Meeting, March 1996.

Haag WR, Johnson MD, Scofield R. Direct photolysis of trichloroethene in air: Effect of co-contaminants. Toxicity of Products, and Hydrothermal Treatment of Products 1996; 30:414–421.

CALTOX: An industrial perspective. Presented at Risk Assessment Issues in Toxics: A 1995 Update. Air and Waste Management Association and US Santa Barbara Extension, March 30, 1995.

Scofield R, LaPierre A. CalTox Model: Implications for risk management and decisions. Air & Waste Management Association, Santa Barbara, CA, March 31, 1995.

Ryer-Powder JE, Jain S, Chou G, Scofield R. Use of air dispersion modeling and the determination of a reference concentration to assess the potential for adverse health effects from the release of an Aniline derivative. Presented at the Society of Risk Analysis and Japan Section of SRA, December 1995.

Gates LJ, Libicki SB, Scofield R, Wilhelmi J. A flexible real-time ambient air monitoring program during Superfund Site redevelopment. EPA/AWMA Field Screening Methods for Hazardous Wastes and Toxic Chemicals, February 1993.

Scofield R. The use of epidemiology and risk assessment in the trial of a toxic tort case. Presented at the Defense Research Institute Symposium on Environmental, Hazardous Waste, and Toxic Tort Litigation, March 1993.

Scofield R. The role of risk assessment in expediting site remediation. Presented at Air and Waste Management Association Conference: Accelerating Underground Storage Tank Corrective Action, San Antonio, TX, March 1993.

Scofield R, Fitzwater P. When is enough enough? An Update on Setting and Achieving Cleanup Goals for Soil and Groundwater. California Environmental Law and Regulation Reporter, March 1993.

Scofield R. Current issues in the methods and application of quantitative risk assessment. Presented at the Annual American Industrial Hygiene Toxicology Symposium, April 1992.

Scofield R. The geologists new role in risk assessment of hazardous waste sites. Presented to the Southern California Geological Society, April 1992.

Scofield R. Current issues in Proposition 65 risk assessments. Presented at the Institute of Food Technologists Annual Meeting, Anaheim, CA, June 1990.

Larsen M, Conner K, Scofield R. Incremental risk analysis in teaching institutions. Proceedings, 1989 ASC/NCEE Meeting, Austin, TX, 1989.

Scofield R, et al. Multipathway risk assessment methodology compatible with California Decision Tree and U.S. EPA Superfund Guidelines. Proceedings, 5th National Conference on Hazardous Wastes and Hazardous Materials, Hazardous Material Control Research Institute, Silver Spring, MD, 1988.

Scofield R. The art of risk assessment: What role should science play. Panelist at the University of California Agricultural Issues Center Symposium on Chemicals in the Human Food Chain: Sources, Options, and Public Policy, June 1988.

Scofield R. Assessing environmental health risk of incineration of municipal wastes. Paper presented at the Conference on Municipal Waste Disposal: Landfilling and Incineration/Resource Recovery, University of Massachusetts, Amherst, MA, April 1988.

Daniels JI, Layton DW, Nelson MA, Olivieri AW, Cooper RC, Danielson RE, Bruvold HW, Scofield R, Hsieh DPH, Schaub SA. Organoleptic water quality: Health and economic impacts. In: Resource Mobilization for Drinking Water and Sanitation in Developing Nations. F.W. Montanari, T.P. Curran, and W. Saukin (eds), N.Y.: American Society of Civil Engineers, 1987.

Scofield R. An evaluation of the health hazards from pesticides in water supplies outside of the United States. Paper presented at the Meeting of the Society of Toxicology, San Diego, CA, March 1985.

Scofield R. A refined approach to the establishment of health criteria for water contaminants. Paper presented at the Meeting of the Society of Toxicology, San Diego, CA, March 1985.

Ghassemi M, Iyer R, McSorley J, Scofield R. Effects of synfuel use. Environ Sci Technol 1981; 15(8):866–873. Environmental Aspects of Synfuel Utilization, TRW Environmental Division, EPA Report No. 600/7-81-025, 1981.

Prior Experience

Principal and Practice Area Leader, ENVIRON International Corporation, 1985–2009
Post-doctoral Researcher, UC Davis Department of Environmental Toxicology, 1983–1985
Member Technical Staff, TRW Environmental Division, 1979–1983

Project Experience

Served on the U.S. National Research Council Committee on Natural Attenuation, which evaluated the effects of natural processes that affect the degradation and bioavailability of chemicals in the environment. His role on this committee was to evaluate the relationship between natural attenuation processes and risk assessment and the regulatory and community concerns associated with natural attenuation.

Performed more than 300 risk assessments under California's Proposition 65, including evaluations of consumer products, workplace exposures, and ambient environmental exposures. Services included deriving and critically evaluating No Significant Risk Levels (NSRLs) or Maximum Allowable Dose Levels (MADLs), performing exposure assessments, designing test protocols, and providing expert support for litigation and negotiation with plaintiffs.

On behalf of three utilities in California and the U.S. Navy, developed an approach to environmental management of former town gas sites based on comparison of site investigation data and post-remediation data to background levels of PAHs

Reviewed site investigation data and performed visual inspections of 60 town gas sites and used the information to help a major gas utility in the Midwest develop a priority classification system for managing the sites.

Directed or performed human health risk assessments for more than a dozen manufactured gas plant sites in southern California. Participated in negotiations with State regulators overseeing investigations and remediation, and participated in community meetings for two of the sites.

Developed risk-based exposure limits designed to ensure that people living and working in the immediate vicinity of former MGP sites are not exposed to levels of VOCs associated with adverse health effects as a result of emissions during remediation. Also developed an air-monitoring procedure and a set of action levels for VOCs designed to support the implementation of management measures to limit emissions of VOCs during remediation.

Performed human health risk assessments for diesel emissions from several rail yards in California and from proposed track expansion projects.

Performed risk assessments for emissions from several port operations in southern California.

Prepared a critical evaluation of the unit risk factor developed by the California Office of Environmental Health Hazard Evaluation for diesel particulate matter.

Prepared a critical evaluation of the concentration-response function developed by the State of California for estimating numbers of premature deaths attributable to diesel particulate matter.

Preparing risk-based remediation goals for a former pesticide manufacturing site in southern California, and negotiating a remediation plan with EPA.

Providing peer review for the environmental management of two former pesticide manufacturing plants in northern California.

Performed multipath risk assessment of former oil refinery sites and petroleum spill sites using risk-based target concentrations to identify chemicals, exposure pathways, and areas requiring risk management.

Performed risk assessments for several chlorinated solvent spill sites, including an evaluation of risk posed by the spilled solvent and the degradation products.

Evaluated risks for vinyl chloride using EPA methodology to account for the extra sensitivity of children.

Performed complete risk assessments and provided risk assessment support for permit applications of several hazardous waste treatment, storage, and disposal facilities.

Performed a multipathway baseline human and ecological risk assessment for a former pesticide formulating facility in California. Worked with the State on behalf of the client to develop risk-based remediation goals for pesticides and related chemicals in soil and groundwater.

At more than 20 redevelopment sites and on behalf of real estate developers and lending institutions, calculated health risks associated with commercial and residential development of agricultural land with residual pesticides in surface soil. Negotiated remediation goals with agency representative and developed risk communication text as part of the developers' disclosure obligations.

Performed a screening evaluation of more than 300 volatile waste chemicals from a major scientific research institution in California, to identify those with the greatest likelihood of exceeding odor thresholds or causing adverse human health effects. Performed health risk assessment for 50+ volatile chemicals emitted from the fume hoods in several individual laboratories.

Managed the multipathway health risk assessment task for a major Superfund site, which included deriving exposure limits, developing site-specific human intake estimates, and characterizing human health risks for several remedial action alternatives.

Performed evaluations of food products, cosmetics, personal care products, and ambient releases for compliance with Proposition 65, including performing exposure estimates for products or releases; performing appropriate adjustments to account for dermal absorption; providing critical evaluation of cancer potency factors derived by the Cal/EPA; and recommending further product analysis or ambient monitoring.

Advised the manufacturer of a new pesticide in the selection and design of toxicology studies to be submitted to the EPA and EEC in support of a registration request. Monitored performance of the studies by contract laboratories.

Managed a project performing critical evaluations of the toxicology literature for several chemicals important in the lumber industry, including arsenic, creosote, chromium, and dioxins.

Provided a critical evaluation of the toxicology and epidemiology literature that serve as the basis for EPA exposure standards for inorganic arsenic.

Reviewed the toxicology and epidemiology literature for fiberglass and evaluated the strength of evidence for a causal link between human exposure to fiberglass and lung cancer.

Provided critical evaluation of and suggested improvements for a multipathway risk assessment performed for a large incinerator in southern California.

Managed the development of a multipathway risk assessment methodology to be applied to town gas sites using the California Decision Tree Methodology.

Critically evaluated a proposed method for estimating the carcinogenic potency of diesel exhaust.

Managed the preparation of toxicity profiles and safe exposure limits to be used for the assessment of risks at a Superfund and other waste sites. Also managed a project to identify chemicals present at waste sites for which risk assessments should be performed.

Participated in the development of toxicity testing requirements and guidelines for hazardous waste testing programs at EPA's Office of Solid Waste.

Prepared critical evaluations of epidemiology studies linking liver disease to dioxin exposure.

Prepared toxicity evaluations of over 100 chemicals for inclusion in Material Safety Data Sheets.

Provided technical assistance in exposure and toxicology to the owner of a large lead smelter negotiating remediation goals for lead and other metals with USEPA for a Superfund site.

Provided a critical evaluation of the literature on lead as a reproductive toxicant, and recommended a no-effect level to be used under California Proposition 65.

Professional Affiliations

- Genetic and Environmental Toxicology Association
 - President-Elect 1996–1997
 - Elected to Executive Board 1992–1993
- Northern California Chapter, Society of Toxicology
 - Appointed Program Chairman 1991 and 1992
- Society for Risk Analysis
- Northern California Chapter of the Society of Risk Analysis
 - Elected Treasurer 1992–1993 and 1996–1997