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About Us

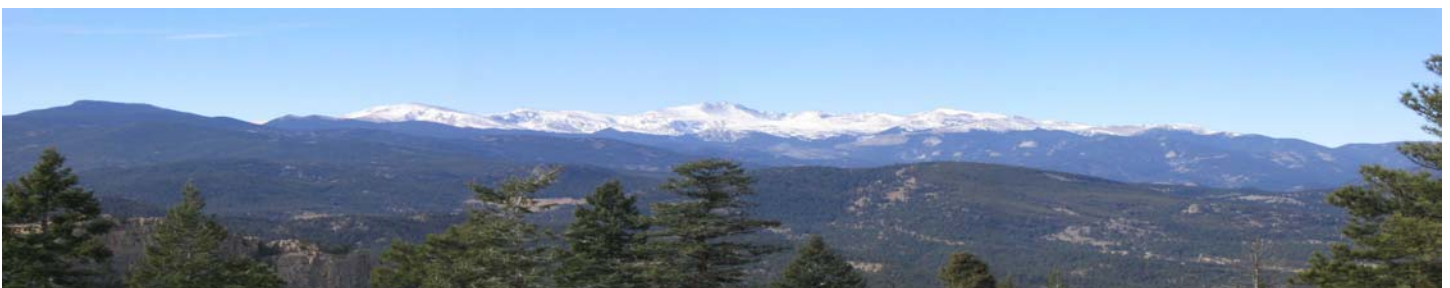
Scientia Veritas (SV) offers a full range of Toxicology and Risk Assessment services. Founded in 1997, SV is a woman-owned small business (WOSB) that specializes in Toxicology, Risk Assessment, Environmental Epidemiology, Environmental Consulting, Expert Reports and Rebuttals, Negotiation Support, and Litigation Support and Expert Witness Testimony. SV's goal is provide the highest-quality environmental expertise, resulting in scientifically defensible, cost-effective solutions. Our Toxicology/Risk Assessment unit is led by Dr. Richard DeGrandchamp, SV's President and Principal Toxicologist. SV's team includes junior-, intermediate-, and senior-level scientists.

Management

Dr. DeGrandchamp is SV's President and Principal Toxicologist. He has a Ph.D. in Toxicology from the University of Michigan and over 25 years of experience. Dr. DeGrandchamp has two faculty appointments at the University of Colorado and has served on the faculty of the Navy Civil Engineering Corps Officer School. He has served on numerous scientific review panels and has been a toxicological consultant for U.S. Environmental Protection Agency (U.S. EPA), Department of the Navy (DON), Department of Energy (DOE), Department of Defense (DOD), and Massachusetts Department of Environmental Protection, as well as many chemical, pharmaceutical, and manufacturing companies. He has conducted or reviewed more than 300 human health risk assessments (HHRAs) regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA; Superfund); Resource Conservation and Recovery Act (RCRA); and Underground Storage Tank (UST) programs. Dr. DeGrandchamp has been the lead negotiator in over 150 regulatory meetings and provides expert toxicological support, as well as expert witness testimony on all issues related to toxic chemical exposure.

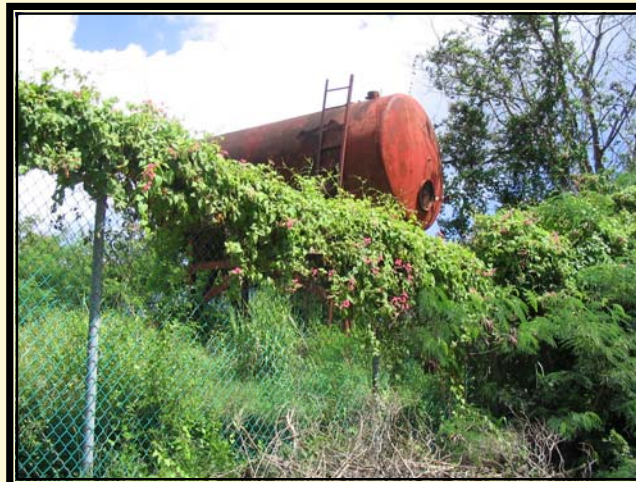
Dr. DeGrandchamp has provided expert toxicological legal support in the private sector and U.S. EPA Regions III, V, and VIII in environmental cases involving hazardous releases. Dr. DeGrandchamp recently served in the U.S. Department of Justice (DOJ) Expert Witness Unit, providing expertise on the U.S. Magnesium Corporation of America (MagCorp) mining Superfund site, Metal Bank Superfund site, and AK Steel Superfund site. He is currently providing support to the District of Columbia Department of the Environment, and he has previously provided support on the Lowry Air Force Base, Rocky Flats, Alameda Naval Air Station, and NAS Whiting Superfund sites. Dr. DeGrandchamp has written several guidance documents for the U.S. Navy's Environmental Health Center, and recently provided support for the U.S. Navy's Office of the General Counsel on Vieques.

Prior to founding SV, Dr. DeGrandchamp served as Corporate Director of Medical Toxicology and Health Sciences and Principal Toxicologist for Terranext, Director of Toxicology and Risk Assessment and Principal Toxicologist for GeoTrans (now part of Tetra Tech), and Toxicology and Atmospheric Science Discipline Leader and Principal Toxicologist for PRC Environmental Management Inc.



Toxicological Services

- *Toxicological effects*
- *Exposure assessments*
- *Environmental epidemiology*
- *Evaluation of toxicity values*
- *Development of new toxicity values*
- *Toxicology/risk assessment workshops*
- *Toxic tort*
- *Medical surveillance plans*



From routine exposure assessments to the development of new toxicity values, SV can provide expert toxicological assistance. Whether you need technical support to complete a project, need toxicological support only on an as-needed basis, need extra help for a large project, or need to subcontract to WOSBs to meet your subcontracting goals, SV can provide the support you need.

Select Experience

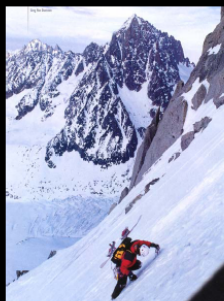
A Toxicity Assessment is one of the four parts of a Human Health Risk Assessment, and SV has prepared or supervised over 300 of these. The Toxicity Assessment presents qualitative and quantitative information pertaining to all aspects of the chemical specific target organ, type of toxic response, and other factors. Additionally, for most chemicals, a dose-response relationship is also established relating chemical intake and severity of response. USEPA has derived toxicity values representing the dose response relationship for

Dose-Response Assessment- Carcinogenic Slope Factors

“The slope factor is the cancer risk (proportion affected) per unit of dose.”

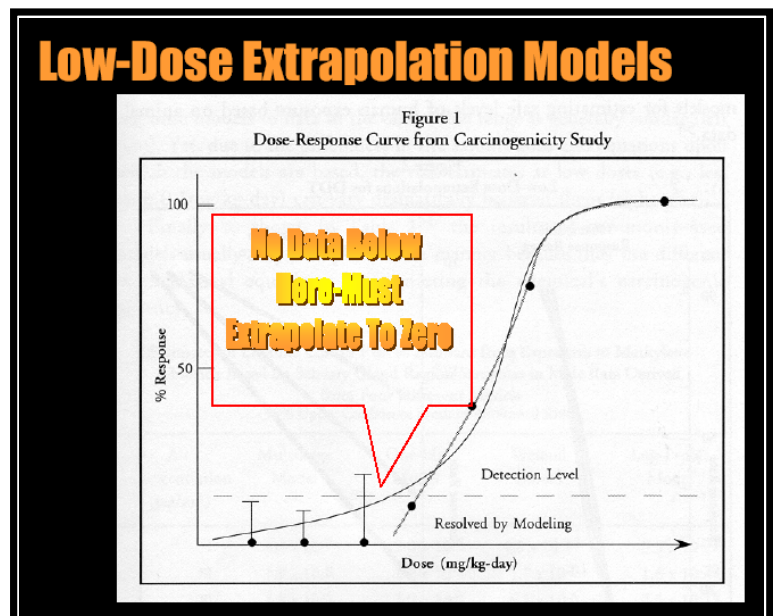
“...the model is equivalent to a one-hit model, which produces an approximately linear relationship between dose and cancer risk at low doses.”

(USEPA 1999; IRIS)



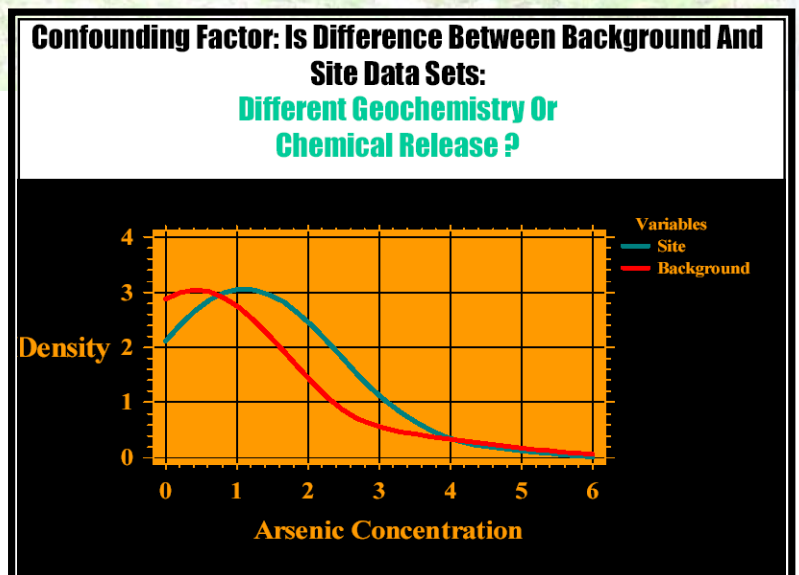
carcinogens and noncarcinogens, which are termed the Slope Factor and Reference Dose, respectively. While USEPA has derived toxicity values (as part of the Integrated Risk Information System, or IRIS) for approximately 250 chemicals most often detected at hazardous wastes sites, the agency has not developed them for the universe of chemicals that are detected. In the absence of USEPA-verified toxicity values, it is incumbent upon the toxicologist preparing a HHRA to develop a provisional toxicity value in order to quantify human health risks. This toxicity value typically undergoes rigorous review by USEPA and state toxicologists before the HHRA gains approval.

- U.S. Navy: SV was contracted to prepare the NAF Atsugi Toxicological Assessment, which involved developing toxicity values for 86 chemicals that did not have USEPA-verified toxicity values. After developing the toxicity values *de novo* based on an exhaustive toxicity assessment, a risk assessment was performed for three sites at NAF Atsugi.
- U.S. Navy: SV developed detailed human health risk assessment guidance for polychlorinated biphenyls. A structure-activity relationship was used to develop unique toxicity values for PCB congeners.
- U.S. Navy: Performed toxicological assessments of 13 chemicals, including dioxin.
- U.S. EPA: SV's Dr. DeGrandchamp was selected by USEPA to represent the agency in trial because USEPA needed a nationally recognized toxicologist to develop a new toxicological paradigm for dioxin-like PCB congeners that currently do not have USEPA-verified toxicity values. Dr. DeGrandchamp developed a toxic equivalency factor (TEF) approach based on the structure activity relationship of mono- and non-ortho substituted PCBs where each of the 12 individual PCB congeners was assigned a toxicity value relative to the toxicity of TCDD.
- U.S. Navy, Office of the General Counsel: SV's Dr. DeGrandchamp was retained by the Office of General Counsel, Naval Sea Systems Command, to provide toxicological expert support in a case involving more than 6,000 individuals who claimed medical injuries from putative Navy chemical releases. Dr. DeGrandchamp conducted a toxicological analysis of several chemicals using hair analysis results. As part of this toxicological assessment, Dr. DeGrandchamp evaluated the potential risks associated with mercury-induced brain damage based on hair samples provided by the plaintiff experts. This was based on correlations between *in utero* blood levels in umbilical cord and hair. As part of this analysis, Dr. DeGrandchamp used currently accepted scientific principles; peer-reviewed references; and USEPA, World Health Organization (WHO), and National Academy of Sciences (NAS) guidelines to address data gaps in previous studies in order to refute another expert's findings.
- U.S. Department of Justice, Expert Witness Unit: SV's Dr. DeGrandchamp was retained by USDOJ and worked with USEPA Region VIII to conduct a multifaceted toxicological and epidemiological assessment of worker-related human health risks. During this complex and multifaceted study, Dr. DeGrandchamp assessed risks from numerous chemicals using many toxicity databases, evaluated the toxicity based on blood sample results from the workers, and conducted a toxicological review of their medical records as part of an epidemiological study. Review of workers' medical records showed they were experiencing a higher-than-normal prevalence of chemical-specific toxic effects.



Risk Assessment

- SV conducts the four parts of a Human Health Risk Assessment, which are as follows:
 - Data Assessment;
 - Exposure Assessment;
 - Toxicity Assessment; and
 - Risk Characterization.
- Site-specific risk assessments: Deterministic, probabilistic, Monte Carlo simulation
- Complex risk assessment techniques: probabilistic analysis; physiologically based pharmacokinetic (PBPK) modeling; development of cancer slope factors, reference doses/concentrations, Benchmark Dose Modeling
- Geochemical analysis
- Fingerprint analysis
- Advanced statistical and epidemiological models
- Chemical fate and transport
- Sampling plans
- Base realignment and closure (BRAC) and Brownfields sites
- Mitigation and remediation plans
- Indoor air vapor intrusion: calculation of cancer and noncancer risks for all chemicals identified in groundwater, hydrogeological, and sub-slab data
- Technical review, analysis, and revision of preexisting risk assessments
- Inorganics, volatile organic compounds, radionuclides, asbestos and asbestos-like fibers, dioxins, PCBs, etc.
- Multiple receptors and pathways
- Training programs and courses
- Complex mining sites, chemicals, petroleum, radiation
- Residential property cleanup levels
- Evaluation of land use projects for contaminated properties (BRAC and Brownfields)
- RCRA, CERCLA, UST



Select Experience

- U.S. Navy: SV prepared and delivered a Standard Operating Procedure (SOP) for conducting a lead risk assessment and background analysis.
- Washington, D.C.: SV conducted a comprehensive risk assessment involving vapor intrusion into approximate 500 homes from contaminated groundwater at a site in Washington D.C for the District Department of the Environment (DDOE). SV is also developing the risk assessment portion of DDOE's regulation for stormwater reuse and is the technical expert developing the Districts' risk-based approach to protect children from dry cleaner-related tetrachloroethylene exposures.
- EPA Region VIII: SV provided EPA Region VIII with toxicological and risk assessment technical support at two RCRA sites involving hazardous solvent exposure to off-site residents. Responsible for evaluating risks and health hazards associated with vapor entering homes from contaminated groundwater into nearby homes. SV was responsible for evaluating current toxicological peer-reviewed toxicological studies on formaldehyde to identify current health problems among residents, determining acceptable levels of exposure, and identifying homes that may require interim measures or evacuation of residents.
- U.S. Navy: SV conducted a background analysis implementing Procedural Guidance for Statistically Analyzing Environmental Background Data, which Dr. DeGrandchamp authored for the Navy, at NAS Whiting (Milton Florida). This approach is being used to identify chemicals of concern for risk assessment, evaluate Applicable or Relevant and Appropriate Requirements (ARAR), and identify chemical releases. Successful completion of this project is expected to save DOD and the state of Florida \$30 million in potential remediation costs.
- U.S. Navy: SV conducted a comprehensive review and analysis of diverse scientific methods used to

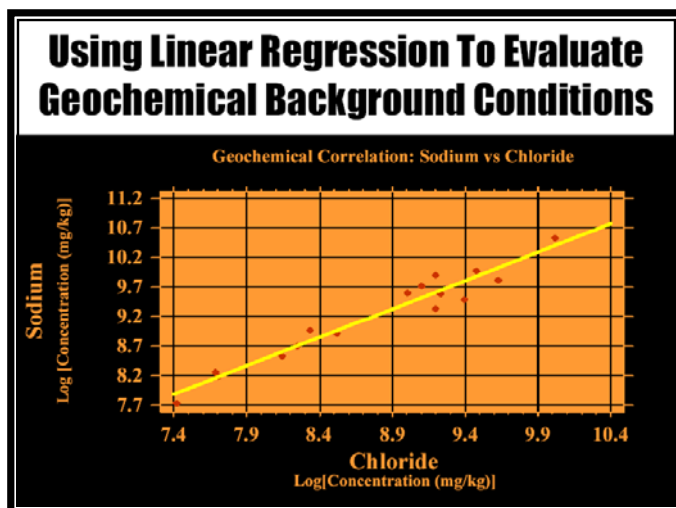
How Does The Low-Dose Extrapolation Model Impact Risk Estimates ?

Estimates of Lifetime Cancer Risk to Humans from Exposures to Methylene Chloride Based on Salivary Gland Region Sarcomas in Male Rats Derived from Four Different Models (95% Upper Confidence Limit of Additional Risks)

Air Concentration (µg/m ³)	Multistage Model	One-Hit Model	Weibull Model	Log-Probit Model
1	1.8 x 10 ⁻⁷	2.0 x 10 ⁻⁷	4.8 x 10 ⁻¹⁰	3.5 x 10 ⁻³¹
10	1.8 x 10 ⁻⁶	2.0 x 10 ⁻⁶	1.7 x 10 ⁻⁸	1.6 x 10 ⁻²²
100	1.8 x 10 ⁻⁵	2.0 x 10 ⁻⁵	6.1 x 10 ⁻⁶	2.5 x 10 ⁻¹⁵
1,000	1.8 x 10 ⁻⁴	2.0 x 10 ⁻⁴	2.0 x 10 ⁻⁵	1.3 x 10 ⁻⁹
10,000	1.8 x 10 ⁻³	2.0 x 10 ⁻³	2.0 x 10 ⁻⁴	2.4 x 10 ⁻¹

USEPA DEFAULT

evaluate risks associated with lead exposure for DON and prepared a Navy position paper that evaluated all lead risk assessment models, including the scientific veracity of the U.S. EPA Integrated Exposure Uptake Biokinetic Model (IEUBK) software code, the California Lead Spread Model, and the new probabilistic Integrated Stochastic Model to make recommendations for improvement. Developed DON risk assessment strategy to evaluate adult lead exposure in order to expedite lead cleanup at closing Naval installations.



Litigation Support and Expert Witness Testimony

- Pretrial legal and negotiation support on issues involving toxicology, chemical fate and transport, risk assessment and risk management, and environmental laws and regulations
- Expert reports and rebuttals
- Expert witness testimony
- Extensive public speaking and university teaching experience

Select Experience

- U.S. Department of Justice, Expert Witness Unit, Metal Bank Superfund Site: SV conducted a toxicological evaluation/human health risk assessment, prepared toxicology expert report, and testified as the Toxicological Expert Witness in two trials. SV's Dr. DeGrandchamp testified to the veracity of toxicity values that were used in expert reports. Dr. DeGrandchamp was retained as an expert witness by USDOJ, on behalf of USEPA Region III, to prepare an expert report on the toxicity of dioxins, furans, and PCBs. In the first phase of the trial, the defendants retained two expert toxicologists who prepared expert reports on the toxicity of these three groups of chemicals. In response to these two expert reports, USEPA headquarters requested that Dr. DeGrandchamp develop a rebuttal report reanalyzing these compounds, which only have provisional toxicity values. In this rebuttal report, Dr. DeGrandchamp presented his toxicological evaluation and concluded that the opposing expert's toxicity assessment was not based on the most recent toxicological data and information. The study Dr. DeGrandchamp performed, as well as the rebuttal report, were extensively reviewed and approved by USEPA headquarters. Ultimately, the court found that Dr. DeGrandchamp's toxicological evaluation was the more scientifically tenable and supported by the latest scientific information, and ruled in favor of USEPA for \$25 million.
- U.S. Department of Justice, Expert Witness Unit, AK Steel Superfund Site: SV completed an HHRA that was part of an expert report Dr. DeGrandchamp prepared as the testifying expert, and involved a massive release of PCBs into a stream, contaminating thousands of fish. This study involved conducting a toxicity assessment of PCBs, dioxins, and furans, and using the information to estimate the human health risks associated with direct contact with soils and sediments, as well as from eating fish. At the request of Dr. DeGrandchamp, USEPA caught and analyzed fish tissue to measure chemical levels in fish. The toxicity assessment he prepared was particularly important because there is considerable controversy surrounding the toxicity of PCBs, and USEPA has not yet derived verifiable toxicity values for individual PCB congeners. This toxicity assessment and the toxicity values that were developed have undergone extensive USEPA review and were approved by USEPA headquarters. As a result of Dr. DeGrandchamp's toxicity assessment and expert report, the plaintiff's attorneys retained eight



nationally recognized toxicologists to rebut his expert opinion, and he is currently preparing a supplemental expert report and preparing for deposition and expert witness testimony in trial.

- U.S. Department of Justice, Expert Witness Unit, U.S. Magnesium Corporation Superfund Site: An extensive toxicology assessment of workers was conducted and expert witness reports prepared based on human health risk assessments and review of medical records of workers. In conjunction with NIOSH, blood samples were collected to measure biomarkers of exposure in blood. The project required evaluation and verification of the provisional toxicity value for dioxin and PCBs.
- U.S. Navy, Office of the General Counsel: SV provided toxicology reports for the Navy, which was engaged in toxic tort litigation regarding Vieques. Evaluated the toxicity of several chemicals using biomarkers in hair samples. A toxicity value for mercury using biomarkers in hair was used to calculate risk based on recent toxicological studies.

Negotiation Support

- SV staff have served as lead negotiators in over 150 regulatory meetings, providing expert toxicological, risk assessment, and risk management support
- Public meetings
- Pretrial legal and negotiation support on issues involving toxicology, chemical fate and transport, risk assessment and risk management, and environmental laws and regulations

Select Experience

- Navy CLEAN Program: Provided toxicological expertise and negotiation support; prepared position papers; developed the Navy's overall remediation strategy; negotiated with local, state, and federal regulatory agencies; and provided technical expertise in numerous negotiations and dispute resolution meetings.



- Navy: Negotiated a geochemical method for evaluating background conditions in the state of Florida for the Department of Defense (Navy). After conducting a pilot study to demonstrate that the geochemical technique can be used to define background conditions and identify chemical release areas, the Florida Department of Environmental Protection (FDEP) formally approved the technique for use on Superfund and Federal Facilities throughout Florida.
- Navy: Conducted numerous baseline risk assessments at Naval Air Station (NAS) Lemoore in California. These risk assessments were ultimately combined into a comprehensive installation-wide risk assessment that involved fate and transport modeling of contaminants, coupled with the analysis of current and potential future health risks. Responsible for all negotiations with federal and state regulators, and successfully negotiated cost-effective management of human health risks during remedy selection by using a risk-based approach to avoid unnecessary and expensive remediation.

- Navy: Conducted all risk assessments and coordinated feasibility studies for NAS Moffett Field in California. Carried out a detailed future land use analysis that was used to focus risk mitigation strategies based on probable future land use. The land use analysis was also used to focus human health risk assessments on realistic exposure conditions to avoid unrealistic conservative default assumptions. Negotiated all aspects of the risk assessment approach with state and federal regulatory agencies. The Navy requested that Dr. DeGrandchamp assist the Department of Justice in order to avert formal dispute resolution.
- Navy: Conducted risk assessments for NAS Alameda in California, and responsible for developing the overall risk assessment approach and negotiating all technical aspects of the Navy project with local, state, and federal regulators. Tasked with preparing innovative approaches to establish anthropogenic and nonanthropogenic background conditions, preliminary remediation goals, and data aggregation to estimate exposure-point chemical doses. Responsible for developing a Navy policy document for risk-based corrective action (RBCA) at petroleum sites.
- Air Force, Lowry AFB: Attended meetings/negotiations with the Colorado Department of Public Health and the Environment (CDPHE); provided legal non-testifying expert support to Air Force attorneys; developed sampling and analysis plans for contaminated areas and activity-based sampling; conducted statistical analyses on areas of concern; developed risk management protocols and evaluated several novel approaches based on new analytical procedures to expedite decision-making; conducted field investigations; reviewed extensive epidemiological studies to evaluate toxicological endpoints; and calculated health risks and prepared risk assessment reports.
- Massachusetts Department of Environmental Protection: Provided technical expertise to the Massachusetts Department of Environmental Protection for radionuclide risk assessments, compliance, and cleanup standards. Worked with the state to develop state guidance for radionuclide cleanup of all Department of Defense and Nuclear Regulatory Commission operated sites within the state.
- EPA Region VIII: Provided oversight and technical support to the EPA Region VIII (Montana office)



RCRA division for remediation of oil refineries in Billings, Montana; Mandan, North Dakota; and Commerce City, Colorado. Oversaw all phases of the RCRA process involving preliminary investigations and corrective measures studies, developed health-protective cleanup levels, and evaluated facility permitting and remediation enforcement. Worked together with Colorado Department of Health officials to negotiate remediation goals and a cost settlement.

White Papers and Policy

- Stormwater harvesting and reuse policies for state and local governments
- EPA: Technical oversight for *Draft Human Health Risk Assessment Protocols for Hazardous Waste Combustion Facilities and Screening Level Ecological Risk Assessment Protocols for Hazardous Waste Combustion Facilities*
- EPA: Technical lead for EPA Region VI in developing a new technical guidance document for RCRA sites, *Risk Management Strategy*
- EPA: Compiled a database for conducting Monte Carlo simulations and provided technical review on supplemental guidance for conducting Monte Carlo simulations for EPA Region VIII. Developed a cost-effective risk assessment template for RFP to streamline and provide consistency for all risk assessments.
- Department of Defense: Comprehensive guidance document on sampling and analysis, and conducting risk assessments at PCB- and dioxin-contaminated sites for DOD. These documents were used to train Navy personnel in the environmental restoration program who are responsible for remediating Navy installations that will be returned to civilian use.
- Department of Defense: Conducted a background analysis implementing Procedural Guidance for Statistically Analyzing Environmental Background Data, which he authored for the Navy, at NAS Whiting (Milton Florida). This approach is being used to identify chemicals of concern for risk assessment, evaluate Applicable or Relevant and Appropriate Requirements (ARAR), and identify chemical releases. Successful completion of this project is expected to save DOD and the state of Florida \$30 million in potential remediation costs.
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Publications

1. DeGrandchamp, R.L. 2005. *Final Standard Operating Procedures: Investigating and Managing Lead Risks at Navy Installations.*
2. Johnston, R.K., S.A. Kurtz, R.L. DeGrandchamp, and M.G. Barron. 2005. *A Guide for Determining the Risk of PCB Exposure to Ecological Receptors. Final Report.* Prepared for Naval Facilities Engineering Command (NAVFAC) Risk Assessment Workgroup, Washington Navy Yard, Washington, D.C., December 2005.
3. DeGrandchamp, R.L. and M.G. Barron. 2005. *PCB Analysis and Risk Assessment at Navy Installations. Part A: Overview of PCB Mixtures.* <http://web.ead.anl.gov/ecorisk/issue/pdf/PCBAnalysisPartA.pdf>
4. DeGrandchamp, R.L. and M.G. Barron. 2005. *PCB Analysis and Risk Assessment at Navy Installations. Part B: PCB Human Health Risk Assessment.* <http://web.ead.anl.gov/ecorisk/issue/pdf/PCBAnalysisPartB.pdf>
5. DeGrandchamp, R.L. and M.G. Barron. 2005. *PCB Analysis and Risk Assessment at Navy Installations. Part C: PCB Ecological Risk Assessment.* <http://web.ead.anl.gov/ecorisk/issue/pdf/PCBAnalysisPartC.pdf>
6. DeGrandchamp, R.L. (1997). *Risk-based Screening Using A Back Calculating Approach.* Prepared for the Naval School, Civil Engineer Corps Officers (CECOS). Port Hueneme, CA
7. DeGrandchamp, R.L. (1998). *Developing Monte Carlo for Probabilistic Risk Assessment.* Prepared for the Naval School, Civil Engineer Corps Officers (CECOS). Port Hueneme, CA
8. DeGrandchamp, R.L. (1998). *Applying a Tiered Risk Assessment Approach.* Prepared for the Naval School, Civil Engineer Corps Officers (CECOS). Port Hueneme, CA
9. DeGrandchamp, R.L. (1998). *Using Geostatistics in Risk Assessment.* Prepared for the Naval School, Civil Engineer Corps Officers (CECOS). Port Hueneme, CA
10. DeGrandchamp, R.L. (1998). *Evaluating Future Land Use in Risk Assessment.* Prepared for the Naval School, Civil Engineer Corps Officers (CECOS). Port Hueneme, CA
11. DeGrandchamp, R.L. (1998). *Applying RAGS Part C in Risk Assessment.* Prepared for the Naval School, Civil Engineer Corps Officers (CECOS). Port Hueneme, CA
12. DeGrandchamp, R.L. (1998). *Environmental Risk Assessment & Management For Human Health Risk, Student Guide.* Prepared for the Naval School, Civil Engineer Corps Officers (CECOS). Port Hueneme, CA
13. DeGrandchamp, R.L. (1998). *Applying Risk-Based-Corrective-Action.* Prepared for the Naval School, Civil Engineer Corps Officers (CECOS). Port Hueneme, CA.
14. Issue papers written for the U.S. Navy include the following:
 - *Conducting Lead in Soil Risk Assessment;*
 - *Pesticide Risk Assessment;*
 - *A Risk Management Procedural Guidance for Determining Non-Cancer Risk;*
 - *Analysis of Polychlorinated Biphenyl (PCB) and Dioxins;* and
 - *Environmental Background Analysis.*