



**RANDY D. HORSACK, PE**  
**PRINCIPAL**  
**3TM CONSULTING, LLC**

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### SUMMARY

Mr. Horsak is a registered Professional Engineer and scientist with more than 40 years of experience in multiple phases of environmental engineering and science: consulting, engineering, construction, operations management, office supervision, strategic planning, business development, proposal preparation, project management, litigation support, and expert witness testimony. He has managed and directed environmental projects in a variety of areas, including: air pollution, ambient air quality testing, noise, soil and sediment, groundwater, surface water, water treatment and purification, contaminated dust, and ecosystems. His experience includes a wide range of sites and facilities, including: abandoned (legacy) sites, hazardous waste management facilities, refineries, chemical plants, fossil and nuclear power plants, geothermal energy plants, manufacturing and commercial facilities, pipelines, power transmission lines, oil and gas exploration and production sites, and public and private properties. He has authored almost 50 professional publications and lectures, and has testified as an expert witness on multiple occasions. Project categories include:

- Phase I environmental due diligence assessments
- Phase II and III environmental site assessments
- Site selection and site evaluation studies
- Regulatory compliance audits
- Regulatory liaison and permitting support
- Licensing support for grassroots projects
- Environmental impact assessments
- Multi-media environmental sampling and analysis (soil, sediment, surface water, groundwater, sludge, ambient air, indoor air quality, indoor dust, ecosystems)
- Conceptual design and modeling
- Engineering feasibility studies
- Pollution prevention and waste minimization studies
- Engineering cost estimates
- Decontamination studies
- Soil and groundwater remediation and restoration of contaminated sites
- Oil and gas legacy site assessment and remediation/restoration cost estimates
- Health-based exposure and risk assessments
- Water and wastewater treatment
- In-situ chemical oxidation of soil and groundwater
- Electromagnetic imaging and ground penetrating radar
- Historical exposures based on historical emissions and contaminant half-life
- Chemical fingerprinting

### PROJECT EXPERIENCE (OVERVIEW)

Mr. Horsak has had project and technical management responsibility for more than 500 environmental projects in the United States and more than 50 international projects, ranging in size from small consulting assignments (a few thousand dollars) to large, multi-disciplinary projects (more than 25,000 professional labor hours) to turnkey engineering-construction projects (ranging from tens of thousands to millions of dollars). He has also provided technical assistance for projects in Mexico, Taiwan, Venezuela, Ecuador, Argentina, Guam, Lebanon, Egypt, Libya, South Sudan, Somaliland, Malasia (Natuna), the Philippines, and Africa.

## EDUCATION

Bachelor of Science – Engineering, 1967 – 1971  
University of Texas at Austin

Master of Science – Environmental Science, 1972 – 1974 (night classes)  
University of Texas at San Antonio

## PROFESSIONAL AFFILIATIONS (CURRENT AND PREVIOUS)

Registered Professional Engineer – TX, LA, NE, AL

National Society of Professional Engineers

Phi Eta Sigma

Eta Kappa Nu

Tau Beta Pi

Beta Beta Beta

Advisory Board: *Hazardous Substances Journal*

Peer Review Committee: EPA Office of Research and Development  
Air and Waste Management Association

Texas Water Pollution Control Association

Houston Engineers Society

Houston Chamber of Commerce

International Society of Environmental Forensics

National Groundwater Association

Peer Reviewer: *Environmental Forensics Journal*

Member: ASTM Committee on Forensic Environmental Investigations

Member: Forensic Expert Witness Association

Member: Association for the Advancement of Cost Engineering (International)

Texas Board of Professional Engineers – Technical Expert for Enforcement

Lecturer – University of Houston Graduate Program

Lecturer – San Jacinto College

**PROJECT TYPE**

Background Analysis of Soil and Groundwater  
Chemical Fingerprinting  
Control Group Sampling and Analysis  
Economic Analysis and Engineering Cost Estimates  
Fate and Transport Studies  
Geophysical Imaging and Electromagnetic Imaging  
Groundwater Sampling and Monitoring  
Multi-Media Sampling and Analysis  
    Ambient air  
    Ecosystems  
    Groundwater  
    Household attic dust  
    Indoor ambient air  
    Outdoor dust  
    Sediment  
    Sludge  
    Soil  
    Soil gas  
    Surface water  
Phase I, II, III Site Assessments  
Records Review, and Data Compilation  
Remediation and Decontamination  
Site Reconnaissance

**PROJECT SETTING**

Industrial  
    Chemical Plants  
    Iron, Steel, Aluminum, Chrome, other Metals Plants  
    Manufacturing Plants  
    Oil & Gas Exploration and Production  
    Power Plants  
    Refineries and Fuel Terminals  
    Transmission Lines and Pipelines  
    Wood Preserving, Wood Treating Sites  
Commercial  
    Dry Cleaners  
    Gas Stations  
    Restaurants  
    Shopping Malls  
Private Property  
    Farm Land  
    Ranch Land  
    Residential Areas

**PROJECT CONTAMINANT**

Agent Orange  
Carbon Black  
Chloride  
Chlorinated Hydrocarbons (TCA, TCE, PCE)  
Dioxins/Furans  
Metals (RCRA, Priority Pollutant)  
Mold and Biological Agents  
NAPLs (DNAPL and LNAPL)

Pentachlorophenol (PCP)  
Pesticide and Herbicides  
Polychlorinated Biphenyls (PCBs)  
Polycyclic Aromatic Hydrocarbons (PAHs)  
Radionuclides  
Salinity, TDS, Sodium, Chloride  
Semi-Volatile Organic Compounds (SVOCs)  
Sulfur, Sulfides, and Inorganics  
Total Dissolved Solid (TDS)  
Total Petroleum Hydrocarbons (TPH)  
Volatile Organic Compounds (VOCs)

#### ENVIRONMENTAL SCIENCE AND ENGINEERING PROJECTS

Site selection and site evaluation studies  
Environmental reports and impact statements  
Air, water, wastewater, solid waste, and hazardous waste permitting and regulatory compliance  
Multi-media environmental sampling and analysis (air emission testing, ambient air quality sampling, household dust sampling, outdoor dust sampling, surface soil and subsurface soil sampling, sludge sampling, groundwater and surface water sampling, ecosystem sampling)  
Pollution abatement and waste minimization system design and construction  
Fate and transport studies  
Exposure assessments and human health and ecological risk assessments  
Forensic investigations and chemical fingerprinting  
Expert reports

#### POWER SYSTEMS PROJECTS

Fossil-fueled electrical generating stations (natural gas, fuel oil, wood, lignite, and coal)  
Gas turbine and combined cycle units, with heat recovery  
Nuclear power generating stations  
Geothermal and hydrothermal power systems  
Wind power systems  
Solar power systems  
Wet, wet/dry, and dry cooling tower systems

Assignments have included:

Project management and system planning  
Transmission and distribution studies, protective relaying  
Engineering feasibility studies  
Pro forma cost estimates and engineering cost estimates  
Nuclear fuel cycle cost analysis  
Site selection and permitting, regulatory compliance  
Licensing studies, and environmental impact studies

#### PROJECT EXPERIENCE (WATER AND WASTEWATER TREATMENT)

Project planning, and engineering feasibility studies  
Water sampling and analysis  
Bench-scale treatability studies  
Field pilot studies  
Engineering economic evaluations  
Conceptual design of water and wastewater treatment systems involving the treatment of raw sewage, industrial waste, chemical-contaminated water, and pathogen-contaminated water  
Conceptual design of processes involving electro-coagulation/flocculation, filtration, reverse osmosis, ultra-violet light purification, ozonation, chlorination, carbon block filters, and other technologies  
Assessment of effluents in terms of drinking water applications

Use of solar and wind turbine systems to power water treatment processes  
Expert reports

OIL AND GAS EXPERIENCE

Site reconnaissance  
Records review  
Spill plans  
Background establishment  
Site assessment, including sampling of soil, sludge, groundwater, surface water, and ecosystems  
Fate and transport assessments  
Electromagnetic imaging  
Chemical fingerprinting  
Remediation of hydrocarbons, salinity, NORM, and metals in soils and groundwater  
Engineering cost estimates  
Expert reports  
Petroleum hydrocarbons, chlorides / salinity, metals, radionuclides

PROJECT EXPERIENCE (ENGINEERING COST ESTIMATES)

Pro Forma Cost estimates  
ASCE Level 1, 2, 3, 4, 5 estimates  
Deterministic estimates (e.g., Excel based)  
Stochastic estimates (e.g., Monte Carlo based)  
Range of estimates: a few thousands to several billion dollars  
Expert reports

## PROJECT AND WORK EXPERIENCE

### City Public Service (1972-75)

Staff Engineer, Project Coordinator  
City Public Service  
San Antonio, Texas

- Performed breakeven economic calculations of coal-fired versus nuclear powered electrical generation facilities.
- Designed a conceptual layout of a power transmission line from an existing fossil-fueled power plant to a large cooling reservoir.
- Performed economic analyses associated with pumping condenser cooling water and transmitting high voltage power for a conceptual nuclear power plant.
- Performed economic analyses associated with various environmental considerations for a conceptual nuclear power plant site.
- Worked with consultants to develop a site selection methodology for a nuclear power plant.
- Studied and provided technical coordination of site selection studies for a proposed nuclear power plant. The primary considerations were environmental impact, technical feasibility of the site, and relative economics.
- Assisted other engineers and scientists in developing a methodology and data base for the selection of candidate sites for a proposed nuclear power plant.
- Prepared a bid specification for a meteorological monitoring station at an existing fossil-fueled power plant, and then evaluated bids, and recommended a contractor for implementation.
- Prepared EPA permit applications for wastewater discharges from fossil-fueled power plants.
- Collected wastewater samples from a fossil-fueled power plant and had them tested to support EPA NPDES permit requirements.
- Assisted in the review of the environmental impact statement for South Texas Nuclear Project.

### R. W. Beck & Associates (1975-79)

Senior Engineer / Project Manager  
R. W. Beck & Associates  
Columbus, Nebraska  
Denver, Colorado

- Performed an independent review of an environmental impact statement for a coal-fired power plant.
- Provided environmental inputs into financial feasibility studies and funding for public power supply projects (multiple projects).
- Performed site selection studies for several gas turbine, combined cycle, and coal-fired power generation facilities. The primary considerations were environmental impact, technical feasibility of the site, and relative economics (multiple projects).
- Prepared EPA, BLM, and state permit applications for wastewater discharges and air emissions from several gas turbine, combined cycle, and coal-fired power generation facilities (multiple projects).

- Prepared EPA / other federal lead agency Environmental Impact Statements for several gas turbine, combined cycle, and coal-fired power generation facilities (multiple projects).
- Performed calculations, assisted in the development of computer simulation models, and wrote reports (published by the Electric Power Research Institute and the State of California) which pertained to the relative economics associated with the use of wet, wet/dry, and dry cooling tower systems to dissipate waste heat from the thermal process associated with geothermal power plants.
- Performed calculations, assisted in the development of computer simulation models, and wrote reports which pertained to the relative economics associated with the use of wet, wet/dry, and dry cooling tower systems to dissipate waste heat from the thermal process associated with nuclear power plants.
- Performed calculations, assisted in the development of computer simulation models, and wrote reports which pertained to the relative economics associated with the use of wet, wet/dry, and dry cooling tower systems to dissipate waste heat from the thermal process associated with fossil-fueled power plants.
- Assisted other engineers in evaluating the technical and economic feasibility of constructing a grassroots wood-burning power plant.
- Assisted other engineers in evaluating the cost of nuclear fuel for a nuclear power plant.
- Analysis of air pollution control equipment and compliance with Clean Air Act

#### Brown & Root, Inc. - Halliburton (1979-80)

Senior Engineer / Project Manager  
Brown & Root  
Houston, Texas

- Coordinated the site selection and environmental permits for a grassroots coal-fired power plant. The primary considerations were environmental impact, technical feasibility of the site, and relative economics. This included the collection of baseline environmental data.
- Reviewed various environmental permit applications for a grassroots coal-fired power plant.
- Assisted in the development of standardized licensing and permitting support documents to be used on all fossil-fueled power plant projects (air pollution control, water and wastewater treatment, waste management, etc.)

#### Pace Consultants and Engineers (1980-83)

Project Manager and Practice Leader  
Pace Consultants  
Houston, Texas

- Conducted site selection studies for grassroots chemical plants which included site economics, potential environmental impact, and logistical considerations (multiple projects).
- Studied the feasibility and associated economics of various methods of managing and disposing of hazardous wastes in the liquid, sludge, and solid forms (multiple projects).
- Prepared multi-client studies that reviewed the feasibility and economics associated with alternative methods of recycling toxic solvent wastes.
- Prepared multi-client studies that reviewed the feasibility and economics associated with alternative methods of disposing of toxic wastes in incinerators, landfills, treatment units, deep well injection, etc.
- Prepared a feasibility study for the destruction of toxic wastes using at-sea incineration technology.

- Provided recommendations to clients who were contemplating entry into the commercial hazardous waste market (multiple projects).
- Prepared EPA, other federal, and state permit applications for wastewater discharges and air emissions from chemical plants (multiple projects).
- Assisted other engineers in the evaluation of coal-gasification facilities in terms of market penetration.
- Constructed supply/demand curves for establishing the pricing of commercial waste management services.

#### NUS Corporation - Halliburton (1983-90)

Manager of Business Development  
 Regional Manager  
 Director of Regional Business Development  
 General Manager  
 NUS Corporation  
 Houston, Texas

- Managed the regional business development program which included sales, marketing, and proposal preparation for multi-disciplinary environmental studies, permits, conceptual design, engineering design, and remedial construction.
- Managed a 55-person staff of engineers, scientists, technicians, and support staff in the execution of various engineering and scientific studies, permits, conceptual design, engineering design, and remedial construction. Facilities included landfills, wastewater treatment systems, air pollution control systems, etc. at chemical plants, refineries, fossil-fueled power plants, and energy production facilities.
- Principal-in-Charge for an environmental upgrade program for a major chemical plant in Texas City.
- Principal-in-Charge for RCRA Part A and Part B permit applications for refineries in the Gulf Coast region (multiple projects).
- Principal-in-Charge for the conceptual design of a wastewater treatment upgrade program for a major chemical plant.
- Principal-in-Charge for air emissions and ambient air quality testing for a major chemical complex.
- Principal-in-Charge for the remediation and closure of a refinery landfarm (multiple projects).
- Principal-in-Charge for the remediation and closure of a waste disposal area for a chemical plant.
- Provided oversight for remedial investigations and feasibility studies for CERCLA sites (multiple projects).
- Provided oversight for vadose zone and groundwater investigations (multiple projects).
- Project Manager for a major engineering study of the necessary upgrades of a major refinery in Mexico to comply with mirror US regulations.

#### Roy F. Weston (1990-91)

Project Director  
 Roy F. Weston  
 Houston, Texas

- Served as Project Director for a wastewater treatment feasibility study for a major petrochemical plant.



- Prepared a corporate business plan for pursuit of the Mexican environmental engineering services market.
- Prepared a summary plan for the environmental upgrade of a refinery.

#### M. W. Kellogg (1991-92)

Environmental Program Manager  
M W Kellogg  
Houston, Texas

- Project Manager for an environmental engineering feasibility study of technical options for the management and disposal of refinery wastes at several refineries and production facilities.
- Provided managerial oversight of the Benzene-NESHAP upgrade program for seven major refineries.
- Project Manager for a state-of-the-art environmental engineering study for the American Petroleum Institute on pollution prevention for refinery crude oil units.
- Lead Engineer in the preparation of the 1992 Strategic Business Plan and the development of a project management system for environmental projects.
- Prepared the environmental engineering portion of a proposal for a turnkey \$14 billion international LNG complex.

#### McLaren/Hart Environmental Engineering (1992-94)

Regional Manager  
McLaren/Hart Environmental Engineering Company  
McLaren/Hart de Mexico  
Houston, Texas

- Managed three offices with a 25-person staff of engineers, scientists, technicians, and support staff in the execution of various engineering and scientific studies, regulatory compliance audits, due diligence assessments, permits, conceptual and engineering design, and remedial construction. Facilities included industrial and manufacturing sites, orphan sites, pipelines, chemical plants, refineries, and energy exploration sites.
- Project Manager for exposure and human risk assessment studies for contaminated oilfield properties (multiple projects).
- Project Manager for the site assessment, human health risk assessment, engineering feasibility study, and remedial construction of a contaminated oilfield property in a residential subdivision.
- Principal-in-Charge for regulatory compliance and site assessment work for a pipeline company.
- Project Manager for a remedial investigation of a benzene release from an oil and gas field production facility.
- Reviewed remediation plans for a CERCLA site.
- Project Manager for due diligence assessments, regulatory assessments, risk audits, process safety management studies, technical audits, and regulatory compliance audits for industrial and manufacturing facilities (steel production, refining, petrochemical, specialty chemicals, automotive, and glass manufacturing) in Mexico (multiple projects), including air pollution, wastewater, and waste management systems.

- Developed hybrid US-Mexican environmental regulatory compliance audit protocols.
- Conducted first process safety management study/Haz-Ops study for a glass manufacturing facility in Mexico under new Mexican federal guidelines.
- Conducted comprehensive environmental assessments (air, wastewater, and hazardous waste media) of two major refineries and production areas in Mexico, including the technical and financial requirements to upgrade the complexes to meet US environmental standards.
- Project Manager for the planning, site characterization studies, remedial investigations, and remediation plans for clean-up of several contaminated industrial sites in Mexico.
- Key participant and featured speaker in the First International Symposium on Environmental Auditing in Mexico.
- Taught various training seminars on project management, environmental regulations, environmental control technologies, regulatory compliance audits, process safety management, waste minimization/pollution prevention, and environmental Total Quality Management (TQM) in Mexico.

#### 3TM International, Inc. (1994-present)

President and Principal Engineer  
3TM International / Terra Technologies  
Houston, Texas

- Project Manager for the environmental site assessment and due diligence assessment for the acquisition of 26 oil and gas properties for a major products pipeline company.
- Project Manager for the collection of environmental and geotechnical subsurface soil samples using direct push technology/cone penetrometer technology for a US DOD site (multiple projects).
- Project Manager for the collection of environmental and geotechnical subsurface soil samples using direct push technology/cone penetrometer technology for a US DOE site.
- Project Manager for the collection of environmental and geotechnical subsurface soil samples using direct push technology/cone penetrometer technology for hazardous waste and municipal waste landfills (multiple projects).
- Project Manager for the collection of environmental and geotechnical subsurface soil samples using direct push technology/cone penetrometer technology for spills sites (multiple projects).
- Project Manager for the collection of environmental and geotechnical subsurface soil samples using direct push technology/cone penetrometer technology for a nitrate contaminated site.
- Project Manager for the collection of environmental sediment samples in a bay in Texas using direct push technology/cone penetrometer technology.
- Project Manager for the collection of environmental baseline data using direct push technology and other techniques for a major refinery, terminals, and service stations in the Pacific Rim.
- Project Manager for the site characterization of service station sites in Texas (multiple projects).
- Project Manager for the site characterization of contaminated oilfield properties using direct push technology (multiple sites).
- Project Manager for the site characterization of a contaminated product pipeline property using direct push technology.

- Project Manager for the site characterization of contaminated oilfield properties, spill sites, creosote facilities, pipeline, and vacant properties using electromagnetic imaging (multiple projects).
- Technical Manager for the collection of soil and groundwater samples at dry cleaning facilities (multiple projects).
- Technical Manager for the collection of subsurface soil gas and indoor ambient air quality samples at a high school.
- Technical Manager for the excavation and removal of contaminated soil (multiple projects).
- Technical Manager for the conducting of laboratory bench-scale treatability studies aimed at evaluating in-situ chemical treatment of soils and groundwater contaminated with BTEX, chlorinated hydrocarbons, and other contaminants (multiple projects) using hydrogen peroxide, Fenton's Reagent, Oxi, sodium and potassium permanganate, and other reagents.
- Technical Manager for the preparation of cost estimates to treat contaminated soil and groundwater using in-situ chemical treatment and other technologies (multiple projects).
- Technical Manager for the in-situ chemical treatment of soils and groundwater contaminated with BTEX, chlorinated hydrocarbons, and other contaminants using high pressure jetting and low pressure injection of reagents (multiple projects).
- Technical Manager for the in-situ chemical treatment of soils and groundwater contaminated with hexavalent chrome using high pressure jetting and low pressure injection of reagents (multiple projects).
- Project Manager and provided expert engineering testimony for environmental toxic tort cases involving the following toxic chemicals: PCBs, Dioxins/Furans, Volatile and Semivolatile Hydrocarbons, Polycyclic Aromatic Hydrocarbons, Toxic Metals and Metalloids, Radionuclides, Biological Agents, and other substances. These cases involved releases of these contaminants from a source into the atmosphere, surface water, groundwater, surface soils, and/or subsurface soils and subsequent impact upon human and ecological receptors.
- Project Manager and provided expert engineering testimony for environmental toxic tort cases in which I calculated the pro forma cost associated with decontamination and restoration programs for contaminated soils, sediments, and groundwater and indoor living environments at residences and buildings.
- Evaluated widespread releases of PCBs, Dioxins, and chlorinated solvents throughout a large residential community; environmental media assessed included soil, sediments, airborne dust, household dust, surface water, and groundwater.
- Evaluated widespread releases of Dioxins throughout a residential community and creek system; environmental media assessed included soils and sediments.
- Evaluated widespread releases of Agent Orange and Dioxins throughout a residential community; environmental media assessed included surface soils and indoor household dust.
- Evaluated widespread releases of creosote materials, polycyclic aromatic hydrocarbons, and Dioxins throughout a large residential community; environmental media assessed included soil, sediments, airborne dust, household dust, ambient air, surface water, and groundwater (multiple sites and projects).
- Prepared management summary reports for assessing the technical merits of the case for several creosote sites throughout the US.
- Evaluated widespread releases of creosote materials and polycyclic aromatic hydrocarbons throughout a small residential community located in the Everglades; environmental media assessed included soil, sediments, airborne dust, household dust, surface water, and groundwater.

- Evaluated widespread releases of benzene and other volatile organic compounds throughout a residential community; environmental media assessed included soil, soil gas, and ambient indoor air.
- Evaluated widespread releases of benzene and other volatile organic compounds throughout the campus of a major high school; environmental media assessed included soil, soil gas, and ambient indoor air.
- Evaluated widespread releases of VOCs, sulfur compounds, and carbon black throughout a residential area; environmental media assessed included ambient air and indoor dust.
- Evaluated the releases of toxic mold and other biological agents throughout a residential area; environmental media assessed included soil, sediments, airborne dust, household dust, and surface water.
- Evaluated the releases of toxic mold and other biological agents, metals, and other substances from poultry operations; environmental media assessed included soil, sediments, airborne dust, household dust, and surface water.
- Evaluated the widespread release of chlorinated solvents, including DNAPL, into the groundwater beneath a large residential community; source of solvents was an adjacent petrochemical company that had impacted four aquifers.
- Evaluated widespread release of hexachlorobenzene, other chlorinated hydrocarbons, and hydrocarbons into public waterways and estuaries; source of the contamination was a large petrochemical company.
- Evaluated the release of chlorinated solvents by a dry cleaning operation onto commercial and residential property.
- Evaluated the contamination of private ranch land with petroleum hydrocarbons and brines from oil producing facilities; environmental media assessed included soils, groundwater, and surface water.
- Evaluated the contamination of private properties with chlorinated hydrocarbons from an electric component manufacturing facility.
- Developed cost estimates to remediate and/or restore contaminated properties, including soil, groundwater, and residences as a result of various type of contamination, including hydrocarbon, chlorinated solvent, PAHs, Dioxins, and PCBs (multiple projects).
- Evaluated the release of petroleum hydrocarbons from underground storage tanks into surrounding soil, groundwater, ditches, and utility corridors.
- Evaluated the release of pesticides from the aerial application of pesticide-coated rice seed and tail water in an agricultural environment (multiple projects).
- Evaluated the release of pesticides from a pesticide manufacturing facility into surrounding soils and sediments; environmental media assessed included soils, sediments, and indoor dust.
- Evaluated the release of brine from a saltwater pipeline into a protected estuary.
- Evaluated the release of odor and biological pathogens from an open sewage lagoon into a residential community.
- Evaluated the releases of various chemicals from commercial landfills.
- Evaluated the release of crude oil from a breach in a crude oil pipeline onto private property.
- Forensic identification of sources of contamination for PAHs, PCBs, Agent Orange, Pesticides, and Dioxins/Furans using chemical fingerprinting techniques (multiple projects).

- Preparation of pro forma cost estimates to restore contaminated private properties following the failure of a crude oil tank as a result of damage by Hurricane Katrina.
- Preparation of pro forma cost estimates to restore private property that became contaminated from historical oilfield operations (multiple projects).
- Preparation of pro forma cost estimates to restore two large refinery complexes in New Jersey by the remediation of contamination and the construction of productive wetlands.
- Preparation of engineering cost estimates to restore hundreds of impacted properties in Ecuador that became contaminated from historical oilfield operations (public estimate was \$27 billion).
- Preparation of technical review of expert reports involving the nature and extent of soil and groundwater contamination at oil and gas properties.
- Preparation of engineering cost estimates to remediate and restore oil field sites.
- Evaluation of emissions from a fossil-fueled power plan in Ohio.
- Technical engineering expert for US Economic Opportunity Commission.
- Preparation of engineering cost estimates to treat frack water and produced water at various shale play sites (multiple projects).
- Collection of household attic dust samples for major pesticide litigation.
- Preparation of expert report involving alleged exposure to contaminated construction dust and debris.
- Management consulting support to small private oil company.
- Remediation of soils and restoration of private property impacted by frack-out during the installation of a pipeline.

PUBLICATIONS / PROFESSIONAL PAPERS

## Books...

Horsak, R. "Chapter 5: Water Utilization, Management, and Treatment," Textbook: Hydraulic Fracturing Operations: Handbook of Environmental Management Practices, Scrivener/Wiley Publishers, Published in 2015.

Horsak, R. "Cross in the Background," WestBow Press, Biography/Autobiography/Memoir, Published in July 2010.

Horsak, Bedient, Hamilton, Thomas, et al "Chapter 8 – Pesticides" Environmental Forensics, Published in December 2005.

## Other...

Horsak, R. and Quereshi, J. "Design and Installation of Innovative Transportable Municipal Wastewater Treatment Systems in Pakistan," Skype presentation to Conference on Water Security and Sustainable Growth, PCRWR and Riphah International University Institute of Public Policy, Islamabad, Pakistan, August 23-25, 2016.

Horsak, R. "Applying Uncertainty to Construction Cost Estimates for Disaster Preparedness," University of Houston Graduate Engineering Program, February 27, 2016.

Horsak, R. "Applying Uncertainty to Construction Cost Estimates," San Jacinto College Construction Management Program, November 5, 2015

Dahlgren, Dr. James, Horsak, R. "Cancer Incidence in Coal Combustion Waste Landfill Workers (Particulate Impact)" being published, 1Q2016.

Horsak, R. "Calculating Cost Contingencies for Water and Wastewater Treatment Systems," United Nations World Water Day 2015, Houston, Texas USA, March 27, 2015.

Horsak, R. "Use of Statistical and Stochastic Methods to Estimate the Cost of Responding to Natural Disasters," University of Houston Graduate Program, February 28, 2015.

Horsak, R. "The Use of Electro-Coagulation Technology to Treat Hydrofracturing Flowback Water and Other Oil and Gas Field Wastewaters," United Nations World Water Day, 2014, Houston, Texas USA, March 22, 2014.

Horsak, R. "Applying Stochastic Processes to Engineering Economics," University of Houston Graduate Program, October 13, 2012.

Horsak, R., DiGiglia, M., Corley, D. "Addressing Oil Field Legacy Sites: Using Stochastic Cost Estimating Techniques to Evaluate Potential Financial Risk," Presented at Environmental Challenges and Innovations Conference, Gulf Coast 2012, Texas Association of Environmental Professionals, October 11, 2012.

Horsak, R., and Brassow, C. "Summary of Advances in Frac Water Treatment and Hydrocarbon Recovery from Oil-Based Drilling Fluids," Presented at Environmental Challenges and Innovations Conference, Gulf Coast 2012, Texas Association of Environmental Professionals, October 11, 2012.

Horsak, R. "Using Monte Carlo Analysis to Estimate Remediation Costs for Contaminated Oilfield Sites," AACE International Annual Conference, San Antonio, Texas, July 8 – 11, 2012.

Horsak, R., Zlotnik, E, and Sanchez, A., "The Relevancy of Background Concentrations of Polychlorinated Dibenzo-Dioxins (PCDDs) in Toxic Tort and Property Contamination Cases," presented at the Environmental Challenges and Innovations Conference, Texas Association of Environmental Professionals, February 10, 2011, Houston, Texas.

Johnson, G., Horsak, R. and Gary A., "Fuzzy-C-Means Clustering: An Alternative to PCA-Based Receptor / Mixing Models for PCDD/PCDF (Dioxin/Furan) Fingerprinting," presented at Dioxin 2010 Conference, September 14, 2010, San Antonio, Texas.

Horsak, R., "Limitations of Using In-Situ Chemical Oxidation in Remediating Pesticide-Contaminated Sites," presented at the annual conference, Texas Association of Environmental Professionals, Environmental Challenges and Innovation Conference, February 11, 2010, in Houston, Texas.

Horsak, R. and Tomson, M., "The Use of In-Situ Oxidation to Treat the Pesticide Fipronil," to be published in Environmental Forensics Journal.

Horsak, R. "The Role of Contaminant Half-Life in Performing Risk Assessments," presented at Texas Association of Environmental Professionals Environmental Challenges and Innovations Conference, February 16, 2009 in Houston, Texas.

Horsak, R. and Woodward, R. "Persistence and Residual Toxicity of Fipronil Degradates Call Into Question Traditional Half-Life Safety Factors," presented at Association for Environmental, Health and Sciences (AEHS) Annual Conference; March 10-13, 2008 in San Diego, California.

Horsak, R., "Use of Monte Carlo Cost Analyses in Estimating Oilfield Site Restoration," presented at Texas Association of Environmental Professional Annual Meeting, February 21, 2008 in Houston, Texas.

Woodward, R. and Horsak, R. "Fipronil Residues Remaining in Heavy Clay Soils Seven Years After Application Affect Non-Target Arthropods," presented at Texas Association of Environmental Professional Annual Meeting, February 21, 2008 in Houston, Texas.

Horsak, R. and Woodward, R. "Fipronil Residues Remaining in Heavy Clay Soils Seven Years After Application Affect Non-Target Arthropods," American Chemical Society Annual Conference, Boston, Massachusetts, presented August 23, 2007.

Horsak R., "Use of Contaminated Household Dust as an Evaluation Metric for Human Health Risk Assessments," Texas Association of Environmental Professionals Annual Conference, Houston, Texas, February 15, 2007.

Dahlgren, J. Horsak, R., et al "Residential and Biological Exposure Assessment of Chemicals from a Wood Treatment Plant" Science Direct / Chemosphere, January 17, 2007.

Johnson, G., Hansen, L., Hamilton, C., Hermanson, M., Horsak, R., and O'Keefe, P., "Distinguishing Between Two Types of Aroclor 1254: Considerations for Environmental Forensics Investigations," SETAC North America 26<sup>th</sup> Annual Meeting, November 13-17, 2005.

Bedient, P., Horsak, R., Schlenk, D., Hovinga, R., and Pierson, J., "Environmental Impact of Fipronil to the Louisiana Crawfish Industry," Environmental Forensics, September 2005.

Horsak, R.D., "Assessment of Pesticide-Contaminated Sites in the United States: What We Have Learned Since the 1970s" presented at Intersol 2005 Fifth International Conference-Exhibition on Soils, Sediments, and Water in Paris, France in April 19-21, 2005.

Dahlgren, J., Horsak, R.D., et al "Exposure Assessment of Residents Living Near a Wood Treatment Plant" Environmental Research, 92/2003-99-109, November 4, 2002.

Horsak, R.D., "In-Situ Chemical Treatment of Contaminated Soils and Groundwater Using High Pressure Injection," Ground Water Protection Council Annual Forum, Ft. Walton Beach, Florida, September 24-27, 2000.

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SUMMARY OF DEPOSITIONS / EXPERT TESTIMONY AT TRIAL

**Project:** Soil and groundwater contamination of a dry cleaning facility in Baytown, Texas  
**Defendant:** Bay Plaza Realty  
**Firm:** Mr. Robin Morse of Crain, Caton & James and Mr. Carl Brassow of Houston, Texas  
**Services:** Expert reports, deposition, and testimony at trial  
**Contaminants:** Chlorinated solvents  
**Area:** Environmental site assessment, sampling and analysis of contaminated soil and groundwater, remediation using in-situ chemical oxidation

**Project:** Soil and groundwater contamination at a community adjacent to a petrochemical complex in Lake Charles, Louisiana  
**Plaintiff:** Citizens of Mossville Community  
**Firm:** Mr. Hunter Lundy of Lundy & Davis of Lake Charles, Louisiana  
**Services:** Expert reports and deposition  
**Contaminants:** Chlorinated solvents  
**Area:** Environmental site assessment, sampling and analysis of contaminated soil and groundwater

**Project:** Science textbooks for the State of Texas  
**Plaintiff:** Texas Citizens for a Sound Economy  
**Services:** Expert testimony before the Texas State Board of Education  
**Area:** Bias of proposed science textbooks

**Project:** Groundwater contamination at the Senn Ranch in west Texas  
**Plaintiff:** Senn Ranch  
**Firm:** Mr. Bill Robins of Robins, Cloud & Lubel of Houston, Texas  
**Services:** Expert reports and deposition  
**Contaminants:** Petroleum hydrocarbons and salinity  
**Area:** Environmental site assessment, sampling and analysis of contaminated soil and groundwater, cost to remediate contaminated groundwater

**Project:** Soil and groundwater contamination at the Pavestone Corporation site in Katy, Texas  
**Plaintiff:** Katy Land Company and Pavestone Corporation  
**Firm:** Mr. Tom Hoekstra of Godwin-Gruber of Dallas, Texas  
**Services:** Expert reports, deposition, and testimony at trial  
**Contaminants:** Chlorinated and non-chlorinated hydrocarbons, miscellaneous chemicals  
**Area:** Environmental site assessment, sampling and analysis of contaminated soil and groundwater

**Project:** Multi-media environmental contamination near the Kerr McGee Creosote Facility in Columbus, Mississippi  
**Plaintiff:** Citizens of Columbus, Mississippi  
**Firm:** Mr. Hunter Lundy of Lundy & Davis of Lake Charles, Louisiana  
**Services:** Expert reports and deposition  
**Contaminants:** Creosote chemicals, metals, polycyclic aromatic hydrocarbons, pentachlorophenol, Dioxins/Furans  
**Area:** Environmental site assessment, sampling and analysis of contaminated soil, sediment, groundwater, surface water, drinking water, indoor dust

**Project:** Transformer manufacturing facility in Crystal Springs, Mississippi  
**Plaintiff:** Citizens of Crystal Springs  
**Firm:** Ms. Meg McAlister and Mr. Doug Mercier of David Nutt & Associates of Jackson, Mississippi  
**Services:** Expert reports and deposition  
**Contaminants:** PCBs, Dioxins/Furans, chlorinated hydrocarbons  
**Area:** Environmental site assessment, sampling and analysis of contaminated soil, sediment, groundwater, surface water, storm water, drinking water, indoor dust

**Project:** Review of environmental assessment conducted by another consulting firm for an industrial site owner in Houston, Texas  
**Defendant:** Realtors  
**Firm:** Mr. Gary Pate of Kelly, Smith & Murrah of Houston, Texas  
**Services:** Expert reports and deposition  
**Contaminants:** Chlorinated and non-chlorinated hydrocarbons, metals, and miscellaneous contaminants  
**Area:** Environmental site assessment

**Project:** Contamination of rice fields  
**Plaintiff:** Rice farmers of Louisiana  
**Firm:** Mr. Hunter Lundy of Lundy & Davis of Lake Charles, Louisiana  
**Services:** Expert reports, deposition, and testimony at trial  
**Contaminants:** Pesticides and metabolites  
**Area:** Environmental site assessment, sampling and analysis of contaminated soil and groundwater, degradation half-life of pesticides, use of in-situ chemical oxidation to degrade pesticides

**Project:** Contamination of private property  
**Plaintiff:** Homeowners in Corpus Christi, Texas  
**Firm:** Mr. Bob Hilliard of Hilliard & Munoz of Corpus Christi, Texas  
**Services:** Expert report and testimony at trial  
**Contaminants:** Oilfield wastes, refinery wastes, PCBs, pesticides  
**Area:** Environmental site assessment, sampling and analysis of contaminated soil and groundwater, environmental forensics, degradation half-life of hydrocarbon contaminants, Superfund, ATSDR, and probability

**Project:** Contamination of community  
**Plaintiff:** Citizens of Sutton, West Virginia  
**Firm:** Mr. Vince Trevelli of The Calwell Practice of Charleston, West Virginia  
**Services:** Expert report and deposition  
**Contaminants:** Creosote chemicals, metals, polycyclic aromatic hydrocarbons, pentachlorophenol, Dioxins/Furans  
**Area:** Environmental site assessment, sampling and analysis of contaminated soil, sediment, groundwater, surface water, drinking water, indoor dust, background conditions

**Project:** Contamination of community  
**Plaintiff:** Citizens of Greenville, Mississippi  
**Firm:** Ms. Lee Rickard of Cory & Rikard of Jackson, Mississippi  
 Mr. Mike McGartland of McGartland & Associates of Ft. Worth, Texas  
**Services:** Expert report and deposition  
**Contaminants:** Insecticides, herbicides, arsenic  
**Area:** Environmental site assessment, sampling and analysis of contaminated soil, sediment, and surface water; pesticide behavior in the environment

**Project:** Transformer manufacturing facility in Crystal Springs, Mississippi  
**Plaintiff:** Citizens of Crystal Springs  
**Firm:** Ms. Meg McAlister and Mr. Doug Mercier of David Nutt & Associates of Jackson, Mississippi  
**Services:** Expert reports and deposition  
**Contaminants:** PCBs, Dioxins/Furans, chlorinated hydrocarbons  
**Area:** Environmental site assessment, sampling and analysis of contaminated soil, sediment, groundwater, surface water, storm water, drinking water, indoor dust; fingerprinting; contaminant half-life

**Project:** High school campus in Beverly Hills, California  
**Plaintiff:** Citizens of Beverly Hills, California  
**Firm:** Mr. Al Stewart and Mr. Jim Piel of Baron & Budd of Dallas, Texas  
**Services:** Expert report and deposition  
**Contaminants:** Benzene, volatile hydrocarbons, phthalate  
**Area:** Environmental site assessment; sampling and analysis of subsurface soil gas and indoor ambient air quality; assessment of the extent of benzene in the subsurface environment and the potential for vapor intrusion; completed pathway assessment

**Project:** Multi-media environmental contamination near the Koppers Creosote Facility in Grenada, Mississippi  
**Plaintiff:** Citizens of Grenada, Mississippi  
**Firm:** Mr. Hunter Lundy of Lundy & Davis of Lake Charles, Louisiana  
**Services:** Expert reports, deposition, and testimony at trial  
**Contaminants:** Creosote chemicals, metals, polycyclic aromatic hydrocarbons, pentachlorophenol, Dioxins/Furans  
**Area:** Environmental site assessment, sampling and analysis of contaminated soil, sediment, ambient air, surface water, drinking water, indoor dust

**Project:** Background Study  
**Plaintiff:** Citizens of Sutton, West Virginia  
**Firm:** Mr. Vince Trevelli of The Calwell Practice of Charleston, West Virginia  
**Services:** Expert report and deposition  
**Contaminants:** Creosote chemicals, polycyclic aromatic hydrocarbons, pentachlorophenol, Dioxins/Furans  
**Area:** Sampling and analysis of soil to determine background conditions

**Project:** Contamination of rural community  
**Plaintiff:** Citizens of Prairie Grove, Arkansas  
**Firm:** Mr. Clayton Davis of Lundy & Davis of Lake Charles, Louisiana  
**Services:** Affidavit and deposition  
**Contaminants:** Poultry wastes, toxic metals, biological agents  
**Area:** Environmental site assessment, sampling and analysis of contaminated soil, sediment, ambient air quality, indoor dust, background conditions

**Project:** Contamination of oilfield property  
**Plaintiff:** Property owner in New Iberia, Louisiana  
**Firm:** Talbot, Carmouche, & Marcello of Baton Rouge, Louisiana  
**Services:** Expert report and deposition  
**Contaminants:** Petroleum hydrocarbons, toxic metals, salinity, radionuclides  
**Area:** Feasibility of remediation of contaminated soil and groundwater; preparation of cost estimates to remediate and decontaminate private land to background levels

**Project:** Contamination of oilfield property  
**Plaintiff:** Property owner in Shreveport, Louisiana  
**Firm:** Talbot, Carmouche, & Marcello of Baton Rouge, Louisiana  
**Services:** Expert report and deposition  
**Contaminants:** Petroleum hydrocarbons, toxic metals, salinity, radionuclides  
**Area:** Feasibility of remediation of contaminated soil and groundwater; preparation of cost estimates to remediate and decontaminate private land to background levels

**Project:** Multi-media environmental contamination near the Kerr McGee Creosote Facility in Columbus, Mississippi  
**Plaintiff:** Citizens of Columbus, Mississippi  
**Firm:** Mr. Bill Duke of the Tollison Law Firm  
**Services:** Expert reports and deposition  
**Contaminants:** Creosote chemicals, metals, polycyclic aromatic hydrocarbons, pentachlorophenol, Dioxins/Furans  
**Area:** Environmental site assessment, sampling and analysis of contaminated soil, sediment, groundwater, surface water, drinking water, indoor dust

**Project:** Contamination of rice fields  
**Plaintiff:** Rice farmers of Louisiana  
**Firm:** Mr. Chris Piasecki of Davidson, Meaux, Sonnier & McElligott of Lafayette, Louisiana  
**Services:** Expert reports and deposition  
**Contaminants:** Pesticides and metabolites  
**Area:** Environmental site assessment, sampling and analysis of contaminated soil, degradation half-life of pesticides

**Project:** Contamination of residential and other public areas  
**Plaintiff:** Citizens of Nitro, West Virginia  
**Firm:** The Calwell Practice and the James Humphreys Law Firm of Charleston, West Virginia  
**Services:** Expert reports and deposition  
**Contaminants:** Agent Orange; 2,4,5-T; Dioxins and Furans  
**Area:** Environmental site assessment, sampling and analysis of contaminated soil and household dust, chemical fingerprinting, engineering cost estimate

**Project:** Contamination of rice fields  
**Plaintiff:** Rice farmers of Louisiana  
**Firm:** Mr. Elwood Stevens of the Crawfish Litigation Group of Lafayette, Louisiana  
**Services:** Deposition and testimony at trial  
**Contaminants:** Pesticides and metabolites  
**Area:** Environmental site assessment, sampling and analysis of contaminated soil, degradation half-life of pesticides

**Project:** Contamination of residential and other public areas  
**Plaintiff:** Citizens of Proctor, West Virginia  
**Firm:** Mr. Chris Regan of Bordas & Bordas  
**Services:** Expert reports and deposition  
**Contaminants:** Carbon black, particulates, sulfur compounds, PAHs, metals  
**Area:** Environmental site assessment, sampling and analysis of ambient air and household environments

**Project:** Contamination of private property  
**Plaintiff:** Brownell Land Company  
**Firm:** Talbot, Carmouche, & Marcello and Weeks-Gonzalez  
**Services:** Expert report and deposition  
**Contaminants:** Hydrocarbons, Metals, Salinity, Radionuclides  
**Area:** Feasibility of remediation of contaminated soil and groundwater; preparation of cost estimates to remediate and decontaminate private land to background levels

**Project:** Contamination of private property  
**Plaintiff:** Private Landowner  
**Firm:** Due, Price, Guidry, Piedrahita & Andrews, PA  
**Services:** Expert report and deposition  
**Contaminants:** Hydrocarbons, Salinity  
**Area:** Feasibility of remediation of contaminated soil and groundwater; preparation of cost estimates to remediate and decontaminate private land to background levels

**Project:** Remediation and restoration of refinery properties  
**Plaintiff:** State of New Jersey vs Exxon  
**Firm:** Kanner & Whitely and Nagel, Rice & Mazie  
**Services:** Expert reports and deposition  
**Contaminants:** Hydrocarbons and Miscellaneous  
**Area:** Preparation of engineering cost estimate to remediate contaminated areas within two refineries and restoration to productive wetlands

**Project:** Nature and extent of contamination at / near the St. Regis Superfund Site  
**Plaintiff:** Citizens of Cass Lake, Minnesota  
**Firm:** Sieben, Grose, et al and Law Office of Don Russo  
**Services:** Sampling and analysis; expert reports and deposition  
**Contaminants:** VOCs, SVOCs, PAHs, CCA, Dioxins/Furans, Pentachlorophenol, Other  
**Area:** Preparation of reports that address the historical operations and current nature and extent of contamination in surface soils, deeper soils, sediments, surface water, groundwater, ecosystems, and household dust media

**Project:** Multi-media environmental contamination at the Durawood Wood Treating Facility in Alexandria, Louisiana  
**Plaintiff:** Citizens of Alexandria, Louisiana  
**Firm:** McKernan Law Firm  
**Services:** Expert reports and deposition  
**Contaminants:** Creosote chemicals, metals, polycyclic aromatic hydrocarbons, pentachlorophenol, Dioxins/Furans  
**Area:** Environmental site assessment, sampling and analysis of contaminated soil, sediment, ambient air, surface water, indoor dust

**Project:** Contamination of private and commercial properties from Citgo oil spill  
**Plaintiff:** Gray Plantation and other citizens near Lake Charles, Louisiana  
**Firm:** Lundy, Lundy, Soileau, & South  
**Services:** Sampling and analysis; expert reports and deposition; testimony at trial  
**Contaminants:** Waste oil, slop oil  
**Area:** Environmental site assessment; sampling and analysis of contaminated soil, sediment, and surface water

**Project:** Contamination of private residences  
**Plaintiff:** Citizens near McIntosh, Alabama  
**Firm:** Reich & Binstock  
**Services:** Expert report and deposition  
**Contaminants:** DDT  
**Area:** Engineering cost estimate to decontaminate and restore houses contaminated with DDT dust

**Project:** Contamination of private residences  
**Plaintiff:** Citizens in Grenada, Mississippi  
**Firm:** Lundy, Lundy, Soileau & South  
**Services:** Expert reports and deposition  
**Contaminants:** Dioxins, PAHs, Toxic Metals, Creosote, Pentachlorophenol  
**Area:** Sampling and analysis, fate and transport, chemical fingerprinting, cost to decontaminate residences, historical contamination levels

**Project:** Contamination of private property and residences  
**Plaintiff:** Citizens of Pineville, Louisiana  
**Firm:** Lundy, Lundy, Soileau & South  
**Services:** Expert reports and deposition, testimony at trial  
**Contaminants:** Dioxins, PAHs, Toxic Metals, Creosote, Pentachlorophenol  
**Area:** Sampling and analysis of multiple environmental media, chemical fingerprinting, nature and extent of contamination, exposure

**Project:** Oil spill and release  
**Plaintiff:** Shell Oil Company  
**Defendant:** Viking Pump Corporation  
**Firm:** Forman, Perry, Watkins, Krutz and Tardy  
**Services:** Forensic review of oil release, deposition, and testimony at trial  
**Contaminants:** Crude Oil  
**Area:** Run to failure practice, spill response, and remediation costs

**Project:** Class Action Certification  
**Plaintiff:** Community of Pineville, LA  
**Firm:** Steve Irving & Associates, et al  
**Services:** Expert reports, deposition  
**Contaminants:** Dioxins, PAHs, wood preserving chemicals  
**Area:** Sampling and analysis, forensic fingerprinting, nature and extent of contamination, exposure assessment

**Project:** Nation-Wide Contamination  
**Plaintiff:** Various Parties in Ecuador, et al  
**Defendant:** Chevron Oil Company, et al  
**Firm:** Multiple  
**Services:** Expert reports, depositions  
**Contaminants:** Oilfield and petroleum hydrocarbons  
**Area:** Engineering cost estimates to remediate and restore contaminated soil, groundwater, and sediment

**Project:** Contamination of Private Property  
**Plaintiff:** Alexandria, Louisiana  
**Firm:** LLSS, et al  
**Services:** Expert reports, deposition  
**Contaminants:** Dioxins, VOCs, SVOCs, PAHs, wood preserving chemicals  
**Area:** Sampling and analysis, forensic fingerprinting, nature and extent of contamination, exposure assessment

**Project:** Arbitration Between Two Industrial Groups  
**Firm:** Yetter-Coleman  
**Plaintiff:** Oxbow / GLC  
**Defendant:** PASE  
**Services:** Expert report, deposition, testimony at arbitration  
**Contaminants:** Opacity, sulfur compounds, particulates, other airborne contaminants  
**Area:** Air pollution control systems, stack corrosion, contract language

**Project:** Salinity Impact of Farmland  
**Firm:** Haik, Minvielle & Grubbs  
**Plaintiff:** Dugas (Farmer)  
**Services:** Expert work, deposition  
**Contaminants:** Salinity, pesticides  
**Area:** Sampling and analysis, nature and extent of contamination, impact on crop yield

**Project:** Creosote Impact of Commercial Property in New York  
**Firm:** Steve Fuchs / Keith Richman of New York  
**Defendant:** Steve Fuchs  
**Services:** Expert report, testimony at trial  
**Contaminants:** Creosote, PAHs, Metals, Pesticides  
**Area:** Sampling and analysis, nature and extent of contamination, chemical fingerprinting

**Project:** Class Action Certification Report  
**Firm:** Woodfill Law Firm of Houston, Texas  
**Defendant:** Dow, Union Carbide, Elkem Metals, et al  
**Services:** Expert report, testimony at deposition  
**Contaminants:** Dioxins/Furans, Metals, VOCs, SVOCs, Silica, other  
**Area:** Sampling and analysis, nature and extent of contamination, radius of influence

**Project:** Remediation and Restoration of Historical Wetlands  
**Firm:** State of New Jersey (Kanner & Whitely)  
**Defendant:** ExxonMobil, et al  
**Services:** Engineering Cost Estimate  
**Contaminants:** Petroleum Hydrocarbons, PCBs, Pesticides, RCRA Metals, Chlorinated Compounds  
**Area:** Engineering cost estimate to remediate soil, sediment, and groundwater contamination and restore portions of the refinery to productive wetlands

**Project:** Remediation and Restoration of Oil and Gas Property  
**Firm:** Gieger, Laborde and Laperouse of New Orleans, Louisiana  
**Defendant:** Sanchez Oil & Gas  
**Services:** Expert reports, testimony at deposition  
**Contaminants:** Petroleum Hydrocarbons, Salinity, Metals, Miscellaneous  
**Area:** Nature and extent of contamination, soil and groundwater contamination, engineering cost estimating

**Project:** Remediation and Restoration of Private Property  
**Firm:** Garcia & Martinez of McAllen, Texas  
**Defendant:** Mo-Vac Services  
**Contaminants:** Salinity, chlorides  
**Area:** Nature and extent of contamination, soil and groundwater contamination, remediation and restoration

**Project:** Contamination of Public and Private Properties from Pesticide Releases  
**Firm:** Lightfoot, Franklin and White of Alabama  
**Defendant:** Hercules, et al  
**Contaminants:** Pesticides, Other  
**Area:** Nature and extent of contamination, household attic dust sampling and analysis, air dispersion modeling

**Project:** Alleged Contamination of Ranch Land by Leaking Petroleum Pipeline  
**Firm:** Hicks-Thomas of Houston, Texas  
**Defendant:** Harvest Pipeline, Arrowhead Gathering, and Conoco-Phillips  
**Contaminants:** Crude Oil, Saltwater, Flushed Soapy Water  
**Area:** Nature and extent of contamination in soil and groundwater, electromagnetic imaging / differential conductivity mapping, soil conditions, remediation and restoration

**Project:** Alleged Contamination of Farmland by Oil and Gas Field Operations  
**Firm:** Gieger, Laborde and Laperouse of New Orleans, Louisiana  
**Defendant:** Sanchez Oil & Gas  
**Services:** Expert reports, testimony at deposition  
**Contaminants:** Petroleum Hydrocarbons, Salinity, Metals, Miscellaneous  
**Area:** Nature and extent of contamination, soil and groundwater contamination, engineering cost estimating

**Project:** Contamination of Private Properties from Pesticide Releases  
**Firm:** Lightfoot, Franklin and White of Alabama  
**Defendant:** Hercules, et al  
**Contaminants:** Pesticides, Associated VOCs  
**Area:** Nature and extent of contamination, household attic dust sampling and analysis, indoor air quality sampling and analysis



**Project:** Contamination of Private Properties from Carbon Black / Sulfur Releases  
**Firm:** Fitzsimmons Law Firm and King & Spalding Law Firm  
**Defendant:** Insurance Carriers  
**Plaintiffs:** Columbian Chemical Company  
**Contaminants:** Carbon Black, Sulfur Emissions  
**Area:** Nature and extent of impact from emissions, impact to ambient air quality

**Project:** Contamination of Private Properties from Pesticide Releases  
**Firm:** Lightfoot, Franklin and White of Alabama  
**Defendant:** Hercules, et al  
**Contaminants:** Pesticides, Associated COCs  
**Area:** Nature and extent of contamination, household attic dust sampling and analysis

## CURRENT PROJECTS

Other projects and litigation cases, currently underway:

### Air Emissions:

Carbon black emissions and impact  
 Coal-fired power plant: fly ash and bottom ash releases  
 Pesticide plant: collection of household attic dust samples and air dispersion modeling  
 Particulate emissions impact to private property and bee farm  
 Particulate emissions impact to private property from metal recycling operations

### Oil and Gas Sector:

Oil and gas operating site: investigation of salinity impacted areas  
 Oil and gas legacy site: investigation of hydrocarbons, salinity, metals, radionuclides in soil / groundwater  
 Oil and gas legacy site: investigation of hydrocarbons, salinity, metals, radionuclides in soil / groundwater  
 Oil and gas legacy site: investigation of hydrocarbons, salinity, metals, radionuclides in soil / groundwater  
 Oil and gas operating site: remediation of impacted soils  
 Oil and gas operating site: remediation of tank battery  
 Release of salinity from commercial saltwater blending facility  
 Release of crude oil and salinity from pipeline  
 Release of crude oil and salinity from pipeline

### Water, Wastewater, and Groundwater:

Engineering cost estimate for wetlands restoration  
 Nature and extent of groundwater plumes at refinery  
 Nature and extent of groundwater plumes at wood treating facility  
 Release of salinity to crawfish farming operation  
 Radionuclides in public water supply drinking water  
 Consultant to treatment of groundwater to produce agricultural irrigation  
 Development of provisional patent to treat metals and radionuclides in water  
 Treatment of oily wastewater at tank cleaning facility

### Solar Power Systems:

Conceptual design of solar power systems  
 Engineering cost estimates of solar power systems

### Miscellaneous:

Forensic investigation of contaminated food

**CONTACT INFORMATION**

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