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## *Paul Rosenfeld, Ph.D.*

Chemical Fate and Transport & Air Dispersion Modeling

*Principal Environmental Chemist*

**Risk Assessment And Remediation Specialist**

### **Education**

Ph.D. Soil Chemistry, University of Washington, 1999. Dissertation on VOC filtration.

M.S. Environmental Science, U.C. Berkeley, 1995. Thesis on organic waste economics.

B.A. Environmental Studies, U.C. Santa Barbara, 1991. Thesis on wastewater treatment.

### **Professional Experience**

Dr. Rosenfeld is the environmental chemist at Soil Water Air Protection Enterprise (SWAPE). His focus is the fate and transport of environmental contaminants, risk assessment, and ecological restoration. His project experience ranges from monitoring and modeling of pollution sources as they relate to human and ecological health. Dr. Rosenfeld has investigated and designed remediation programs and risk assessments for contaminated sites containing, petroleum, MtBE and fuel oxygenates, chlorinated solvents, pesticides, radioactive waste, PCBs, PAHs, dioxins, furans, volatile organics, semi-volatile organics, perchlorate, heavy metals, asbestos, PFOA, unusual polymers, and odor. Significant projects performed by Dr. Rosenfeld include the following:

### **Litigation Support**

#### **Client: Buzbee Law Firm (Houston, Texas)**

Serving as expert in catalyst release and refinery emissions cases against BP Texas City. One case settled regarding worker exposure, but ongoing litigation remains involving ~21,500 plaintiffs who have health claims and are seeking remediation from chemicals released from BP facility.

#### **Client: Girardi Keese (Los Angeles, California)**

Serving as expert investigating hydrocarbon exposure and property damage for ~600 individuals and ~280 properties in Carson, California, where homes were constructed above a large tank farm formerly owned by Shell.

**Client: Brent Coon Law Firm (Cleveland, Ohio)**

Served as expert calculating an environmental exposure to benzene, PAHs, and VOCs from a Chevron Refinery in Hooven Ohio. Ran AERMOD to calculate cumulative dose.

**Client: Girardi Keese (Los Angeles, California)**

Served as expert testifying on hydrocarbon exposure to a woman who worked on a fuel barge operated by Chevron. Demonstrated that the plaintiff was exposed to excessive amounts of benzene.

**Client: Lundy Davis (Lake Charles, Louisiana)**

Served as consulting expert on an oil field case representing the lease holder of a contaminated oil field. Conducted field work evaluating oil field contamination in Sulfur, Louisiana. Property is owned by Conoco Phillips, but leased by Yellow Rock, a small oil firm.

**Client: Cox Cox Filo (Lake Charles, Louisiana)**

Serving as testifying expert on multimillion gallon oil spill in Lake Charles which occurred on June 19, 2006, resulting in hydrocarbon vapor exposure to hundreds of workers and residents. Prepared air model and calculated dose. Demonstrated that petroleum odor alone can result in significant health harms.

**Client: Cotchett Pitre & McCarthy (San Francisco, California)**

Served as testifying expert representing homeowners who unknowingly purchased homes built on an old oil field in Santa Maria, California. Properties have high concentrations of petroleum hydrocarbons in subsurface soils resulting in diminished property value.

**Client: Baron & Budd (Dallas, Texas) & Weitz & Luxenberg (New York, NY)**

Serving as consulting expert in MTBE Federal Multi District Litigation (MDL) in New York. Consolidated ground water data, created maps for test cases, constructed damage model, evaluated taste and odor threshold levels.

**Client: Law Offices Of Anthony Liberatore P.C. (Los Angeles, California)**

Served as testifying expert representing individuals who rented homes on the Inglewood Oil Field in California. Plaintiffs were exposed to hydrocarbon contaminated water and air, and experienced health harms associated with the petroleum exposure.

**Client: Baron & Budd P.C. Dallas Texas and Korein Tillery (Madison, County)**

Illinois, Private Wells Analysis: Coordinated data acquisition and GIS analysis evaluating private well proximity to leaking underground storage tanks to support litigation noting that private well owners should be compensated for MTBE testing.

**Client: Orange County District Attorney (Orange County, California)**

Coordinated a review of 143 ARCO gas stations in Orange County to assist the District Attorney's prosecution of CCR Title 23 and California Health and Safety Code violators.

**Client: Environmental Litigation Group (Birmingham, Alabama)**

Serving as testifying expert in a health effects case against ABC Coke/Drummond Co for polluting a community with PAHs, benzene, particulate matter, heavy metals, and coke oven emissions. Created air dispersions models and conducted attic dust sampling, exposure modeling, and risk assessment for plaintiffs.

**Client: Masry Vitatoc (Westlake Village, CA), Engstrom Lipscomb Lack (Los Angeles, CA) & Baron & Budd (Dallas Texas).**

Served as consulting expert in Proposition 65 lawsuit filed against the major oil companies for benzene and toluene releases from gas stations and refineries which contaminated groundwater. Settlement included over \$110 million dollars in injunctive relief.

**Client: Tommy Franks Law Firm (Austin, Texas)**

Served as expert evaluating groundwater contamination which resulted from the hazardous waste injection program and negligent actions of Morton Thiokol and Rohm Hass. Interpreted drinking water contamination and community exposure.

**Client: Baron & Budd (Dallas Texas) and Sher Leff (San Francisco, California)**

Serving as consulting expert for several California cities which have filed defective product cases against Dow Chemical and Shell for 1,2,3-trichloropropane groundwater contamination. Generated maps showing capture zones of impacted wells for various municipalities.

**Client: Baron & Budd (Dallas Texas) and Korein Tillery (Madison County, Illinois)**

Serving as consulting expert for a Class Action defective product Atrazine claim filed in Madison County, Illinois against Syngenta and five other manufactures. The plaintiff class representative is Holiday Shores Water System which is evaluating health issues associated with atrazine, costing out treatment for filtration of public drinking water supplies.

**Client: Weitz & Luxenberg (New York, NY)**

Serving as expert on Property Damage and Nuisance claims resulting from emissions from the Countywide Landfill in Ohio. The landfill had an exothermic reaction or fire resulting from aluminum dross dumping, and the EPA fined the landfill \$10,000,000 dollars.

**Client: Baron & Budd (Dallas Texas)**

Serving as consulting expert for a groundwater contamination case in Pensacola Florida where fluorinated compounds contaminated wells operated by Escambia County.

**Client: Environmental Litigation Group (Birmingham, Alabama)**

Serving as an expert on property damage, medical monitoring and toxic tort claims that have been filed on behalf of over 12,000 plaintiffs who were exposed to PCBs and dioxins/furans resulting from emissions from Monsanto and Cerro Copper's operations in East Sauget, Illinois.

**Client: Environmental Litigation Group (Birmingham, Alabama)**

Served as an expert on groundwater case when Exxon Mobil and Helena Chemical released ethylene dichloride into groundwater resulting in a large plume. Prepared report on the appropriate treatment technology and cost, and flaws with the proposed on site remedy.

**Client: Environmental Litigation Group (Birmingham, Alabama)**

Serving as an expert on air emissions released when a Bartlo Packaging Incorporated facility in West Helena Arkansas exploded resulting in community exposure to pesticides and smoke from combustion of pesticides.

**Client: Omara & Padilla (San Diego, California)**

Served as testifying expert on nuisance case against Nutro Dogfood Company that constructed a large dog food processing facility in the middle of a residential community in Victorville California with no odor control devices. The facility has undergone significant modifications including installation of a regenerative thermal oxidizer.

**Client: Environmental Litigation Group (Birmingham, Alabama)**

Serving as an expert on property damage and medical monitoring claims that have been filed against International Paper resulting from chemical emissions from facilities located in Bastrop Louisiana, Prattville, Alabama, and Georgetown South Carolina.

**Client: Estep and Shafer (West Virginia)**

Served as expert running various air models to calculate acid emissions dose to residents resulting from emissions from a coal fired power plant in West Virginia.

**Client: Watts Law Firm (Austin, Texas), Woodfill Pressler (Houston, Texas), Woska & Ass. (Oklahoma)**

Served as testifying expert on community and worker exposure to CCA, creosote, PAHs, and dioxins/furans from a BNSF and Kopper's Facility in Somerville, Texas. Conducted field sampling, risk assessment, dose assessment and air modelling to quantify exposure to workers and community members.

**Client: Environmental Litigation Group (Birmingham, Alabama)**

Served as expert regarding community exposure to CCA, creosote, PAHs, and dioxins/furans from a Louisiana Pacific wood treatment facility in Florala, Alabama. Conducted blood sampling and environmental sampling to determine environmental exposure to dioxins/furans and PAHs.

**Client: Sanders Law (Colorado Springs, Co) and Vamvoras & Schwartzberg (Lake Charles, Louisiana)**

Serving as expert calculating chemical exposure to over 500 workers from large ethylene dichloride spill in Lake Charles, Louisiana, at the Conoco Phillips Refinery.

**Client: Baron & Budd P.C. (Dallas, Texas)**

Served as consulting expert in a defective product lawsuit against Dow Agrosience focusing on Clopyralid, a recalcitrant herbicide that damaged numerous compost facilities across the United States.

**Client: Sullivan Papain Block McGrath & Cannavo (NY, NY) and The Cochran Firm (Dothan, MS)**

Served as expert regarding community exposure to metals, PAHs PCBs, and dioxins/furans from the burning of Ford Paint Sludge and municipal solid waste in Ringwood, New Jersey.

**Client: Rose, Klein Marias (Los Angeles, CA)**

Serving as expert in Proposition 65 cases, each one citing an individual facility in the Port of Oakland. Prepared air dispersion and risk models to demonstrate that each facility emits diesel particulate matter that results in risks exceeding 1/100,000, hence violating the Proposition 65 Statute.

**Client: Rose, Klein Marias (Los Angeles, CA)**

Serving as expert in 55 Proposition 65 cases, each one citing an individual facility in the Port of Los Angeles and Port of Long Beach as the defendant. Prepared air dispersion and risk models to demonstrate that each facility emits diesel particulate matter that results in risks exceeding 1/100,000, hence violating the Proposition 65 Statute.

**Client: Graham & Associates (Calabasas, CA)**

Served as expert in a case in which General Motors is the plaintiff and BP Arco is the defendant. Conducted air models to demonstrate that sulfur emissions from the BP Arco facility formed sulfuric acid, destroying paint on over 350 automobiles.

**Client: Rose, Klien Marias (Los Angeles, CA) and Environmental Law Foundation (San Francisco, CA)**

Served as expert in a Proposition 65 case against potato chip manufacturers. Conducted an analysis of several brands of potato chips for acrylamide concentration and found that all samples exceeded Proposition 65 No Significant Risk Levels.

**Client: Gonzales & Robinson (Westlake Village, CA)**

Served as testifying expert in a toxic tort case against Chevron (Ortho) for allowing a community to be contaminated with lead arsenate pesticide. Created air dispersion models, soil vadose zone transport models, and evaluated bioaccumulation of lead arsenate in food.

**Client: Environment Now (Santa Monica, CA)**

Served as expert for Environment Now to convince the State of California to file a nuisance claim against the automobile manufactures to recover MediCal damages from expenditures on asthma-related health care costs.

**Client: Trutanich Michell (Long Beach, California)**

Served as expert representing San Pedro Boat Works in the Port of Los Angeles. Prepared air dispersion, particulate air dispersion, and storm water discharge models to demonstrate that Kaiser Bulk Loading is responsible for copper concentrate accumulating in the bay sediment.

**Client: Azurix of North America (Fort Myers, Florida)**

Provided expert opinions, reports and research pertaining to a proposed County Ordinance requiring biosolids applicators to measure VOC and odor concentrations at application sites' boundaries.

**Client: MCP Polyurethane (Pittsburg, Kansas)**

Provided expert opinions and reports regarding metal-laden landfill runoff that damaged a running track by causing the reversion of the polyurethane due to its catalytic properties.

## **Risk Assessment And Modeling**

**Client: ABT-Haskell (San Bernardino, California)**

Prepared air dispersion model for a proposed state-of-the-art enclosed compost facility. Developed odor detection limits to predict 1, 8, and 24-hour off-site concentrations of sulfur, ammonia, and amine as well as prepared a traffic analysis.

**Client: Jefferson PRP Group (Los Angeles, California)**

Evaluated exposure pathways for chlorinated solvents and hexavalent chromium for human health risk assessment of Los Angeles Academy (formerly Jefferson New Middle School) operated by Los Angeles Unified School District.

**Client: Covanta (Susanville California)**

Prepared human health risk assessment for Covanta Energy focusing on agricultural worker exposure to caustic fertilizer.

**Client: CIWMB (Sacramento California)**

Used dispersion models to estimate traveling distance and VOC concentrations downwind from a composting facility for the California Integrated Waste Management Board.

**Client: Carboquimeca (Bogotá, Columbia)**

Evaluated exposure pathways for human health risk assessment for a confidential client focusing on significant concentrations of arsenic and chlorinated solvents contaminating groundwater used for drinking water.

**Client: Navy Base Realignment and Closure Team (Treasure Island, California)**

Used Johnson-Ettinger model to estimate indoor air PCB concentrations and compared estimated values with empirical data collected in homes. Negotiated action levels with DTSC.

**Client: San Diego State University (San Diego California)**

Measured CO<sub>2</sub> flux from soils amended with different quantities of biosolids compost at Camp Pendleton to determine CO<sub>2</sub> credit values for coastal sage under fertilized and non-fertilized conditions.

**Client: Navy Base Realignment and Closure Team (MCAS Tustin, California)**

Evaluated cumulative risk of a multiple pathway scenario with a child resident and a construction worker's exposure to air and soil via particulate and vapor inhalation, incidental soil ingestion, and dermal contact with soil.

**Client: MCAS Miramar (San Diego, California)**

Evaluated exposure pathways of metals in soil, comparing site data to background data. Risk assessment incorporated multiple pathway scenarios assuming child resident and construction worker exposure to particulate and vapor inhalation, soil ingestion, and dermal soil contact.

**Client: Naval Weapons Station (Seal Beach, California)**

Used a multiple pathway model to generate dust emission factors from automobiles driving on dirt roads. Calculated bioaccumulation of metals, PCBs, dioxin congeners and pesticides to estimate human and ecological risk.

**Client: King County, Douglas County (Washington State)**

Measured PM<sub>10</sub> and PM<sub>2.5</sub> emissions from windblown soil treated with biosolids and a polyacrylamide polymer in Douglas County Washington. Used Pilat Mark V impactor for measurement and compared data to EPA particulate regulations.

**Client: King County, Seattle, Washington.**

Conducted emission inventory for several compost and wastewater facilities comparing VOC, particulate, and fungi concentrations to NIOSH values estimating risk to workers and individuals at neighboring facilities.

## **Air Pollution Investigation and Remediation**

**Client: Republic Landfill (Santa Clarita, CA)**

Managed a field investigation of odor around a landfill during 30+ events. Using hedonic tone, butanol scale, dilution-to-threshold values, and odor character to evaluate odor sources and character and intensity.

**Client: California Biomass (Victorville, CA)**

Managed a field investigation of odor around landfill during 9+ events. Using hedonic tone, butanol scale, dilution-to-threshold values, and odor character to evaluate odor sources, character and intensity.

**Client: ABT-Haskell (Redlands, California)**

Assisted in permitting a compost facility that will be completely enclosed with a complex scrubbing system using acid scrubbers, base scrubbers, biofilters, heat exchangers and chlorine to reduce VOC emissions by 99 percent.

**Client: Synagro (Corona, California)**

Designed and monitored 30-foot by 20-foot by 6-foot biofilter for VOC control from an industrial composting facility in Corona, California, reducing VOC emissions by 99 percent.

**Client: Jeff Gage, (Tacoma, Washington)**

Conducted emission inventory at industrial compost facility using GC/MS analyses for VOCs. Evaluated effectiveness of VOC and odor control systems and estimated human health risk.

**Client: Daishowa America (Port Angeles Mill, Washington)**

Analyzed industrial paper sludge and ash for VOCs, heavy metals and nutrients to develop a land application program. Metals were compared to federal guidelines to determine maximum allowable land application rates.

**Client: Jeff Gage (Puyallup Washington)**

Measured effectiveness of biofilters at composting facility and ran EPA dispersion models to estimate traveling distance of odor and human health risk from exposure to volatile organics.

## **Surface Water, Groundwater, and Wastewater Investigation/Remediation**

**Client: Confidential (Downey, California)**

Managed groundwater investigation to determine horizontal extent of 1,000 foot TCE plume associated with a metal finishing shop.

**Client: Confidential (West Hollywood, California)**

Designed soil vapor extraction system that is currently being installed for confidential client. Managed groundwater investigation to determine horizontal extent of TCE plume associated with dry cleaning.

**Client: Synagro Technologies (Sacramento, California)**

Managed groundwater investigation to determine if biosolids application impacted salinity and nutrient concentrations in groundwater.

**Client: Navy Base Realignment and Closure Team (Treasure Island, California)**

Assisted in the design and remediation of PCB, chlorinated solvent, hydrocarbon and lead contaminated groundwater and soil on Treasure Island. Negotiated screening levels with DTSC and Water Board. Assisted in the preparation of FSP/QAPP, RI/FS, and RAP documents and assisted in CEQA document preparation.

**Client: Navy Base Realignment and Closure Team (MCAS Tustin, California)**

Assisted in the design of groundwater monitoring systems for chlorinated solvents at Tustin MCAS. Contributed to the preparation of FS for groundwater treatment.

**Client: MCP (Walnut, California)**

Conducted forensic surface water and sediment sampling. Designed and conducted bench scale laboratory experiments. Demonstrated that metal and organic contaminants in storm water and sediment from landfill flooded and chemically compromised a polyurethane track.

**Client: Mission Cleaning Facility (Salinas California)**

Prepared a RAP and cost estimate for using an oxygen releasing compound (ORC) and molasses to oxidize diesel fuel in soil and groundwater at Mission Cleaning in Salinas.

**Client: King County, Washington**

Established and monitored experimental plots at a US EPA Superfund Site in wetland and upland mine tailings contaminated with zinc and lead in Smelterville, Idaho. Used organic matter and pH adjustment for wetland remediation and erosion control.

**Client: City of Redmond (Richmond, Washington)**

Collected storm water from compost-amended and fertilized turf to measure nutrients in urban runoff. Evaluated effectiveness of organic matter-lined detention ponds on reduction of peak flow during storm events. Drafted compost amended landscape installation guidelines to promote storm water detention and nutrient runoff reduction.

**Client: City of Seattle (Seattle, Washington)**

Measured VOC emissions from Renton wastewater treatment plant in Washington. Ran GC/MS, dispersion models, and sensory panels to characterize, quantify, control and estimate risk from VOCs.

**Client: Plumas County (Quincy, California)**

Installed wetland to treat contaminated water containing 1% copper in an EPA Superfund site. Revegetated 10 acres of acidic and metal laden sand dunes resulting from hydraulic mining. Installed and monitored piezometers in wetland estimating metal loading.

**Client: Adams Egg Farm (St. Kitts, West Indies)**

Designed, constructed, and maintained 3 anaerobic digesters at Springfield Egg Farm, St. Kitts. Digesters treated chicken excrement before effluent discharged into sea. Chicken waste was converted into methane cooking gas.

**Client: BLM (Kremmling Colorado)**

Collected water samples for monitoring program along upper stretch of the Colorado River. Rafted along river, protecting water quality by digging and repairing latrines.

## **Soil Science and Restoration Projects**

**Client: Kinder Morgan (San Diego County California)**

Designed and monitored the restoration of a 110-acre project on Camp Pendleton along a 26-mile pipeline. Managed crew of 20, planting coastal sage, riparian, wetland, native grassland, and marsh ecosystems. Negotiated with the CDFW concerning species planting list and success standards.

**Client: NAVY BRAC (Orote Landfill, Guam)**

Designed and monitored pilot landfill cap mimicking limestone forest. Measured different species' root-penetration into landfill cap. Plants were used to evapotranspire water, reducing water leaching through soil profile.

**Client: LA Sanitation District Puente Hills Landfill (Whittier, California)**

Monitored success of upland and wetland mitigation at Puente Hills Landfill operated by Sanitation Districts of Los Angeles. Negotiated with the Army Corps of Engineers and CDFG to obtain an early sign-off.

**Client: City of Escondido (Escondido California)**

Designed, managed, installed, and monitored a 20-acre coastal sage scrub restoration project at Kit Carson Park, Escondido, California.

**Client: Home Depot (Encinitas, California)**

Designed, managed, installed and monitored a 15-acre coastal sage scrub and wetland restoration project at Home Depot in Encinitas, California.

**Client: Alvarado Water Filtration Plant (San Diego, California)**

Planned, installed and monitored 2-acre riparian and coastal sage scrub mitigation in San Diego California.

**Client: Monsanto and James River Corporation (Clatskanie Oregon)**

Served as a soil scientist on a 50,000-acre hybrid poplar farm. Worked on genetically engineering study of Poplar trees to see if glyphosate resistant poplar clones were economically viable.

**Client: World Wildlife Fund (St. Kitts, West Indies)**

Managed 2-year biodiversity study, quantifying and qualifying the various flora and fauna in St. Kitts' expanding volcanic rainforest. Collaborated with skilled botanists, ornithologists and herpetologists.

## **Publications**

**Rosenfeld, P.E.** & Feng, L. (2011). *The Risks of Hazardous Waste*, Amsterdam: Elsevier Publishing. In Press.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2011). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Agrochemical Industry*, Amsterdam: Elsevier Publishing. In Press.

Gonzalez, J., Feng, L., Sutherland, A., Waller, C., Sok, H., Hesse, R., **Rosenfeld, P.** (2010). PCBs and Dioxins/Furans in Attic Dust Collected Near Former PCB Production and Secondary Copper Facilities in Sauget, IL. *Procedia Environmental Sciences*. In Press.

Feng, L., Wu, C., Tam, L., Sutherland, A.J., Clark, J.J., **Rosenfeld, P.E.**, (2010). Dioxin and Furan Blood Lipid and Attic Dust Concentrations in Populations Living Near Four Wood Treatment Facilities in the United States. *Journal of Environmental Health*. June 2010.

Cheremisinoff, N.P., & **Rosenfeld, P.E.** (2010). *Handbook of Pollution Prevention and Cleaner Production: Best Practices in the Wood and Paper Industries*, Amsterdam: Elsevier Publishing.

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*Proceedings of the Seventeenth International Conference on Modelling, Monitoring and Management of Air Pollution*, Tallinn, Estonia. 20-22 July, 2009, Southampton, Boston. WIT Press.

Tam L. K., Wu C. D., Clark J. J. and **Rosenfeld, P.E.** (2008) A Statistical Analysis Of Attic Dust And Blood Lipid Concentrations Of Tetrachloro-p-Dibenzodioxin (TCDD) Toxicity Equivalency Quotients (TEQ) In Two Populations Near Wood Treatment Facilities. *Organohalogen Compounds*, Volume 70 (2008) page 002254.

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Hensley, A.R. A. Scott, J. J. J. Clark, **P. E. Rosenfeld** (2007) "Attic Dust and Human Blood Samples Collected near a Former Wood Treatment Facility" *Environmental Research*. 105, pp 194-197.

**Rosenfeld, P.E.**, J. J. J. Clark, A. R. Hensley, M. Suffet. (2007) "The Use of an Odor Wheel Classification for Evaluation of Human Health Risk Criteria for Compost Facilities" –*Water Science & Technology* 55(5): 345-357.

**Rosenfeld, P. E.**, M. Suffet. (2007) "The Anatomy Of Odour Wheels For Odours Of Drinking Water, Wastewater, Compost And The Urban Environment " *Water Science & Technology* 55(5): 335-344.

Sullivan, P. J. Clark, J.J.J., Agardy, F. J., **Rosenfeld, P.E.**, (2007) "Toxic Legacy, Synthetic Toxins in the Food, Water, and Air in American Cities," Elsevier Publishing, Boston Massachusetts.

**Rosenfeld P.E.**, and Suffet, I.H. (Mel) (2007) "Anatomy Of An Odor Wheel" *Water Science and Technology*, In Press.

**Rosenfeld, P.E.**, Clark, J.J.J., Hensley A.R., Suffet, I.H. (Mel) (2007) "The use of an odor wheel classification for evaluation of human health risk criteria for compost facilities." *Water Science And Technology*, In Press.

Hensley A.R., Scott, A., **Rosenfeld P.E.**, Clark, J.J.J. (2006) "Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility." *The 26th International Symposium on Halogenated Persistent Organic Pollutants – DIOXIN2006*, August 21 – 25, 2006. Radisson SAS Scandinavia Hotel in Oslo Norway.

**Rosenfeld, P.E.**, and Suffet I.H. (2004) "Control of Compost Odor Using High Carbon Wood Ash", *Water Science and Technology*, Vol. 49, No. 9. pp. 171-178.

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**Rosenfeld, P. E.**, Grey, M. A., Sellew, P. (2004) Measurement of Biosolids Odor and Odorant Emissions from Windrows, Static Pile and Biofilter. Water Environment Research. 76 (4): 310-315 JUL-AUG 2004.

**Rosenfeld, P. E.**, Grey, M., (2003) Two stage biofilter for biosolids composting odor control. Seventh International In Situ And On Site Bioremediation Symposium. Batelle Conference Orlando Florida. June 2 and June 6, 2003.

**Rosenfeld, P.E.**, Grey, M and Suffet, M. 2002. "Controlling Odors Using High Carbon Wood Ash." Biocycle, March 2002, Page 42.

**Rosenfeld, P.E.**, Grey, M and Suffet, M. (2002). "Compost Demonstration Project, Sacramento, California Using High-Carbon Wood Ash to Control Odor at a Green Materials Composting Facility Integrated Waste Management Board Public Affairs Office, Publications Clearinghouse (MS-6), Sacramento, CA Publication #442-02-008. April 2002.

**Rosenfeld, P.E.**, and C.L. Henry. 2001. Characterization of odor emissions from three different biosolids. Water Soil and Air pollution. Vol. 127 Nos. 1-4, pp. 173-191

**Rosenfeld, P.E.**, and Henry C. L., 2000. Wood ash control of odor emissions from biosolids application. Journal of Environmental Quality. 29:1662-1668.

**Rosenfeld, P.E.**, C.L. Henry and D. Bennett. 2001. Wastewater dewatering polymer affect on biosolids odor emissions and microbial activity. Water Environment Research. 73: 363-367.

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**Rosenfeld, P.E.**, and Henry C. L., 2001. High carbon wood ash effect on biosolids microbial activity and odor. Water Environment Research. Volume 131 No. 1-4, pp. 247-262

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Chollack, T. and **P. Rosenfeld.** 1998. Compost Amendment Handbook For Landscaping. Prepared for and distributed by the City of Redmond, Washington State.

**P. Rosenfeld.** 1992. The Mount Liamuiga Crater Trail. Heritage Magazine of St. Kitts, Vol. 3 No. 2.

**P. Rosenfeld.** 1993. High School Biogas Project to Prevent Deforestation On St. Kitts. Biomass Users Network, Vol. 7, No. 1, 1993.

**P. Rosenfeld.** 1992. British West Indies, St. Kitts. Surf Report, April issue.

**P. Rosenfeld.** 1998. Characterization, Quantification, and Control of Odor Emissions From Biosolids Application To Forest Soil. Doctoral Thesis. University of Washington College of Forest Resources.

**P. Rosenfeld.** 1994. Potential Utilization of Small Diameter Trees On Sierra County Public Land. Masters thesis reprinted by the Sierra County Economic Council. Sierra County, California.

**P. Rosenfeld.** 1991. How to Build a Small Rural Anaerobic Digester & Uses Of Biogas In The First And Third World. Bachelors Thesis. University of California.

England Environmental Agency, 2002. Landfill Gas Control Technologies. Publishing Organization Environment Agency, Rio House, Waterside Drive, Aztec West, Almondsbury BRISTOL, BS32 4UD

## **Presentations**

Sok, H.L.; Waller, C.C.; Feng, L.; Gonzalez, J.; Sutherland, A.J.; Wisdom-Stack, T.; Sahai, R.K.; Hesse, R.C.; **Rosenfeld, P.E.** "Atrazine: A Persistent Pesticide in Urban Drinking Water." Urban Environmental Pollution, Boston, MA, June 20-23, 2010.

Feng, L.; Gonzalez, J.; Sok, H.L.; Sutherland, A.J.; Waller, C.C.; Wisdom-Stack, T.; Sahai, R.K.; La, M.; Hesse, R.C.; **Rosenfeld, P.E.** "Bringing Environmental Justice to East St. Louis, Illinois." Urban Environmental Pollution, Boston, MA, June 20-23, 2010.

**Rosenfeld, P.E.** (2009) "Perfluorooctanoic Acid (PFOA) and Perfluorooctane Sulfonate (PFOS) Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States" Presentation at the 2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting, April 19-23, 2009. Tuscon, AZ.

**Rosenfeld, P.E.** (2009) "Cost to Filter Atrazine Contamination from Drinking Water in the United States" Contamination in Drinking Water From the Use of Aqueous Film Forming Foams (AFFF) at Airports in the United States" Presentation at the 2009 Ground Water Summit and 2009 Ground Water Protection Council Spring Meeting, April 19-23, 2009. Tuscon, AZ.

**Rosenfeld, P. E.** (2007) "Moss Point Community Exposure To Contaminants From A Releasing Facility" Platform Presentation at the 23<sup>rd</sup> Annual International Conferences on Soils Sediment and Water, October 15-18, 2007. University of Massachusetts, Amherst MA.

**Rosenfeld, P. E.** (2007) "The Repeated Trespass of Tritium-Contaminated Water Into A Surrounding Community Form Repeated Waste Spills From A Nuclear Power Plant" Platform Presentation at the 23<sup>rd</sup> Annual International Conferences on Soils Sediment and Water, October 15-18, 2007. University of Massachusetts, Amherst MA.

**Rosenfeld, P. E.** (2007) “Somerville Community Exposure To Contaminants From Wood Treatment Facility Emissions” Poster Presentation at the 23<sup>rd</sup> Annual International Conferences on Soils Sediment and Water, October 15-18, 2007. University of Massachusetts, Amherst MA.

**Rosenfeld P. E.** “Production, Chemical Properties, Toxicology, & Treatment Case Studies of 1,2,3-Trichloropropane (TCP)” – Platform Presentation at the Association for Environmental Health and Sciences (AEHS) Annual Meeting, San Diego, CA, 3/2007

**Rosenfeld P. E.** “Blood and Attic Sampling for Dioxin/Furan, PAH, and Metal Exposure in Florala, Alabama” – Platform Presentation at the AEHS Annual Meeting, San Diego, CA, 3/3007

Hensley A.R., Scott, A., **Rosenfeld P.E.**, Clark, J.J.J. (2006) “Dioxin Containing Attic Dust And Human Blood Samples Collected Near A Former Wood Treatment Facility.” APHA 134 Annual Meeting & Exposition, Boston Massachusetts. November 4 to 8<sup>th</sup>, 2006.

**Paul Rosenfeld Ph.D.** “Fate, Transport and Persistence of PFOA and Related Chemicals.” Mealey’s C8/PFOA Science, Risk & Litigation Conference” October 24, 25. The Rittenhouse Hotel, Philadelphia.

**Paul Rosenfeld Ph.D.** “Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, Toxicology and Remediation PEMA Emerging Contaminant Conference. September 19. Hilton Hotel, Irvine California.

**Paul Rosenfeld Ph.D.** “Fate, Transport, Toxicity, And Persistence of 1,2,3-TCP.” PEMA Emerging Contaminant Conference. September 19. Hilton Hotel in Irvine, California.

**Paul Rosenfeld Ph.D.** “Fate, Transport and Persistence of PDBEs.” Mealey’s Groundwater Conference. September 26, 27. Ritz Carlton Hotel, Marina Del Ray, California.

**Paul Rosenfeld Ph.D.** “Fate, Transport and Persistence of PFOA and Related Chemicals.” International Society of Environmental Forensics: Focus On Emerging Contaminants. June 7,8. Sheraton Oceanfront Hotel, Virginia Beach, Virginia.

**Paul Rosenfeld Ph.D.** “Rate Transport, Persistence and Toxicology of PFOA and Related Perfluorochemicals”. 2005 National Groundwater Association Ground Water And Environmental Law Conference. July 21-22, 2005. Wyndham Baltimore Inner Harbor, Baltimore Maryland.

**Paul Rosenfeld Ph.D.** “Brominated Flame Retardants in Groundwater: Pathways to Human Ingestion, Toxicology and Remediation.” 2005 National Groundwater Association Ground Water And Environmental Law Conference. July 21-22, 2005. Wyndham Baltimore Inner Harbor, Baltimore Maryland.

**Paul Rosenfeld, Ph.D.** and James Clark Ph.D. and Rob Hesse R.G. Tert-butyl Alcohol Liability and Toxicology, A National Problem and Unquantified Liability. National Groundwater Association. Environmental Law Conference. May 5-6, 2004. Congress Plaza Hotel, Chicago Illinois.

**Paul Rosenfeld, Ph.D.**, 2004. Perchlorate Toxicology. Presentation to a meeting of the American Groundwater Trust. March 7<sup>th</sup>, 2004. Pheonix Arizona.

Hagemann, M.F., **Paul Rosenfeld, Ph.D.** and Rob Hesse, 2004. Perchlorate Contamination of the Colorado River. Invited presentation to a meeting of tribal representatives, Parker, AZ.

**Paul Rosenfeld, Ph.D.** A National Damage Assessment Model For PCE and Dry Cleaners. Drycleaner Symposium. California Ground Water Association. Radison Hotel, Sacramento, California. April 7, 2004.

**Paul Rosenfeld, Ph.D.** and James Clark Ph.D. Understanding Historical Use, Chemical Properties, Toxicity and Regulatory Guidance of 1,4 Dioxane. National Groundwater Association. Southwest Focus Conference. Water Supply and Emerging Contaminants. February 20-21, 2003. Hyatt Regency Phoenix Arizona.

**Paul Rosenfeld, Ph.D.** Underground Storage Tank Litigation and Remediation. California CUPA Forum. Marriott Hotel. Anaheim California. February 6-7, 2003.

**Paul Rosenfeld, Ph.D.** Underground Storage Tank Litigation and Remediation. EPA Underground Storage Tank Roundtable. Sacramento California. October 23, 2002

**Rosenfeld, P.E.** and Suffet, M. 2002. Understanding Odor from Compost, Wastewater and Industrial Processes. Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association. Barcelona Spain. October 7- 10.

**Rosenfeld, P.E.** and Suffet, M. 2002. Using High Carbon Wood Ash to Control Compost Odor. Sixth Annual Symposium On Off Flavors in the Aquatic Environment. International Water Association. Barcelona Spain. October 7- 10.

**Rosenfeld, P.E.** and Grey, M. A. 2002. Biocycle Composting For Coastal Sage Restoration. Northwest Biosolids Management Association. Vancouver Washington. September 22-24.

**Rosenfeld, P.E.** and Grey, M. A. 2002. Soil Science Society Annual Conference. Indianapolis, Maryland. November 11-14.

**Rosenfeld. P.E.** 2000. Two stage biofilter for biosolids composting odor control. Water Environment Federation. Anaheim California. September 16, 2000.

**Rosenfeld. P. E. 2000.** Wood ash and biofilter control of compost odor. Biofest. October 16, 2000.Ocean Shores, California

**Rosenfeld, P. E. 2000.** Bioremediation Using Organic Soil Amendments. California Resource Recovery Association. Sacramento California.

**Rosenfeld, P.E.,** C.L. Henry, R. Harrison. 1998. Oat and Grass Seed Germination and Nitrogen and Sulfur Emissions Following Biosolids Incorporation With High-Carbon Wood-Ash. Water Environment Federation 12th Annual Residuals and Biosolids Management Conference Proceedings. Bellevue Washington.

**Rosenfeld, P.E.,** and C.L. Henry. 1999. An evaluation of ash incorporation with biosolids for odor reduction. Soil Science Society of America. Salt Lake City Utah.

**Rosenfeld, P.E.,** C.L. Henry, R. Harrison. 1998. Comparison of Microbial Activity and Odor Emissions from Three Different Biosolids Applied to Forest Soil. Brown and Caldwell, Seattle Washington.

**Rosenfeld, P.E.,** C.L. Henry. 1998. Characterization, Quantification, and Control of Odor Emissions from Biosolids Application To Forest Soil. Biofest Lake Chelan, Washington.

**Rosenfeld, P.E.,** C.L. Henry, R. B. Harrison, and R. Dills. 1997. Comparison of Odor Emissions From Three Different Biosolids Applied to Forest Soil. Soil Science Society of America, Anaheim California.

## **Professional History**

Soil Water Air Protection Enterprise (SWAPE); 2003 to present; Founding And Managing Partner

UCLA School of Public Health; 2007 to present; Lecturer (Asst Res)

UCLA School of Public Health; 2003 to 2006; Adjunct Professor

UCLA Environmental Science and Engineering Program; 2002-2004; Doctoral Intern Coordinator

UCLA Institute of the Environment, 2001-2002; Research Associate

Komex H<sub>2</sub>O Science, 2001 to 2003; Senior Remediation Scientist

National Groundwater Association, 2002-2004; Lecturer

San Diego State University, 1999-2001; Adjunct Professor

Anteon Corp., San Diego, 2000-2001; Remediation Project Manager

Ogden (now Amec), San Diego, 2000-2000; Remediation Project Manager

Bechtel, San Diego, California, 1999 – 2000; Risk Assessor

King County, Seattle, 1996 – 1999; Scientist

James River Corp., Washington, 1995-96; Scientist

Big Creek Lumber, Davenport, California, 1995; Scientist

Plumas Corp., California and USFS, Tahoe 1993-1995; Scientist

Peace Corps and World Wildlife Fund, St. Kitts, West Indies, 1991-1993; Scientist

Bureau of Land Management, Kremmling Colorado 1990; Scientist

## **Teaching Experience**

**UCLA Department of Environmental Health (Summer 2003 through 2010)** Teach Environmental Health Science 100 to students, including undergrad, medical doctors, public health professionals and nurses. Course focuses on the health effects of environmental contaminants.

**National Ground Water Association**, Successful Remediation Technologies. Custom Course In Sante Fe, New Mexico. May 21, 2002. Focused on fate and transport of fuel contaminants associated with underground storage tanks.

**National Ground Water Association**; Successful Remediation Technologies Course in Chicago Illinois. April 1, 2002. Focused on fate and transport of contaminants associated with Superfund and RCRA sites.

**California Integrated Waste Management Board**, April and May, 2001. Alternative Landfill Caps Seminar in San Diego, Ventura, and San Francisco. Focused on both prescriptive and innovative landfill cover design.

**UCLA Department of Environmental Engineering**, February 5 2002 Seminar on Successful Remediation Technologies focusing on Groundwater Remediation.

**University Of Washington, Soil Science Program**, Teaching Assistant for several courses including: Soil Chemistry, Organic Soil Amendments, and Soil Stability.

**U.C. Berkeley, Environmental Science Program** Teaching Assistant for Environmental Science 10.

## **Academic Grants Awarded**

**California Integrated Waste Management Board**. \$41,000 grant awarded to UCLA Institute of the Environment. Goal: To investigate effect of high carbon wood ash on volatile organic emissions from compost. 2001.

**Synagro Technologies, Corona California**: \$10,000 grant awarded to San Diego State University. Goal: investigate effect of biosolids for restoration and remediation of degraded coastal sage soils. 2000.

**King County, Department of Research and Technology, Washington State**. \$100,000 grant awarded to University of Washington: Goal: To investigate odor emissions from biosolids application and the effect of polymers and ash on VOC emissions. 1998.

**Northwest Biosolids Management Association, Washington State**. \$20,000 grant awarded to investigate effect of polymers and ash on VOC emissions from biosolids. 1997.

**James River Corporation, Oregon**: \$10,000 grant was awarded to investigate the success of genetically engineered Poplar trees with resistance to round-up. 1996.

**United State Forest Service, Tahoe National Forest**: \$15,000 grant was awarded to investigating fire ecology of the Tahoe National Forest. 1995.

**Kellogg Foundation, Washington D.C.** \$500 grant was awarded to construct a large anaerobic digester on St. Kitts in West Indies. 1993.

## **Cases that Dr. Rosenfeld Provided Deposition or Trial Testimony**

In the Circuit Court of Jefferson County Alabama

Jaeanette Moss Anthony , et al *Plaintiffs* vs Drummond Company Inc., et al. *Defendants*  
Civil action No. CV 2008-2076

In the Ninth Judicial District Court, Parish of Rapides, State of Louisiana

Roger Price, et al., *Plaintiffs*, vs. Roy O. Martin, L.P., et al., *Defendants*.  
Civil Suit Number 224,041 Division G

In the United States District Court, Western District Lafayette Division

Ackle et al., *Plaintiffs*, vs. Citgo Petroleum Corporation, et al., *Defendants*.  
Case Number 2:07CV1052

In the United States District Court for the Southern District of Ohio

Carolyn Baker, et al., *Plaintiffs*, vs. Chevron Oil Company, et al., *Defendants*.  
Case Number 1:05 CV 227

In the Fourth Judicial District Court, Parish of Calcasieu, State of Louisiana

Craig Steven Arabie, et al., *Plaintiffs*, vs. Citgo Petroleum Corporation, et al., *Defendants*.  
Case Number 07-2738 G

In the Fourteenth Judicial District Court, Parish of Calcasieu, State of Louisiana

Leon B. Brydels, *Plaintiffs*, vs. Conoco, Inc., et al., *Defendants*.  
Case Number 2004-6941 Division A

In the District Court of Tarrant County, Texas, 153<sup>rd</sup> Judicial District

Linda Faust, *Plaintiff*, vs. Burlington Northern Santa Fe Rail Way Company, Witco Chemical Corporation A/K/A Witco Corporation, Solvents and Chemicals, Inc. and Koppers Industries, Inc., *Defendants*.  
Case Number 153-212928-05

In the Superior Court of the State of California in and for the County of San Bernardino

Leroy Allen, et al., *Plaintiffs*, vs. Nutro Products, Inc., a California Corporation and DOES 1 to 100, inclusive, *Defendants*.

John Loney, Plaintiff, vs. James H. Didion, Sr.; Nutro Products, Inc.; DOES 1 through 20, inclusive, *Defendants*.

Case Number VCVVS044671

In the United States District Court for the Middle District of Alabama, Northern Division

James K. Benefield, et al., *Plaintiffs*, vs. International Paper Company, *Defendant*.  
Civil Action Number 2:09-cv-232-WHA-TFM

In the Superior Court of the State of California in and for the County of Los Angeles

Leslie Hensley and Rick Hensley, *Plaintiffs*, vs. Peter T. Hoss, as trustee on behalf of the Cone Fee Trust; Plains Exploration & Production Company, a Delaware corporation; Rayne Water Conditioning, Inc., a California corporation; and DOES 1 through 100, *Defendants*.

Case Number SC094173

In the Superior Court of the State of California in and for the County of Santa Barbara, Santa Maria Branch

Clifford and Shirley Adelhelm, et al., all individually, *Plaintiffs*, vs. Unocal Corporation, a Delaware

Corporation; Union Oil Company of California, a California corporation; Chevron Corporation, a California corporation; ConocoPhillips, a Texas corporation; Kerr-McGee Corporation, an Oklahoma corporation; and DOES 1 through 100, *Defendants*.

Case Number 1229251 (Consolidated with case number 1231299)

In the United States District Court for Eastern District of Arkansas, Eastern District of Arkansas  
Harry Stephens Farms, Inc. and Harry Stephens, individual and as managing partner of Stephens Partnership, *Plaintiffs*, vs. Helena Chemical Company, and Exxon Mobil Corp., successor to Mobil Chemical Co., *Defendants*.

Case Number 2:06-CV-00166 JMM (Consolidated with case number 4:07CV00278 JMM)

In the United States District Court for the Western District of Arkansas, Texarkana Division  
Rhonda Brasel, et al., *Plaintiffs*, vs. Weyerhaeuser Company and DOES 1 through 100, *Defendants*.  
Civil Action Number 07-4037

In The Superior Court of the State of California County of Santa Cruz  
Constance Acevedo, et al. *Plaintiffs* Vs. California Spray Company, et al. *Defendants*  
Case No CV 146344

In the District Court of Texas 21<sup>st</sup> Judicial District of Burleson County  
Dennis Davis, *Plaintiff*, vs. Burlington Northern Santa Fe Rail Way Company, *Defendant*.  
Case Number 25,151