



Bundy, Gale & Shields, LLC



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Curriculum Vitae

WILLIAM E. GALE, Jr., Ph.D., P.E., C.S.P., C.F.E.I., C.F.I.I.

Fire and Explosion Investigator
Forensic Engineering Consultant
Loss Prevention and Failure Analysis Specialist

Academic Background

- B.E. Stevens Institute of Technology, Hoboken, NJ, June, 1968
Emphasis on Chemical Engineering
- M.S. University of California, Berkeley, CA, May, 1988
College of Engineering, Department of Civil Engineering
Emphasis on Material Science, Marine Construction, and
Fire Safety Engineering Science
- Ph.D. University of California, Berkeley, CA, December, 1993
Ad Hoc Interdisciplinary Program
Fire Safety Engineering Science
Ph.D. Dissertation Subject: *Fire and Life Safety /Risk Management*

Professional Registrations

Professional Fire Protection Engineer - State of California[†]
Professional Mechanical Engineer - State of California
Professional Mechanical Engineer - State of Alaska
Certified Safety Professional (C.S.P.) - Nationally Recognized
Certified Fire and Explosion Investigator (C.F.E.I.) - Nationally Recognized
Certified Fire Investigation Instructor (C.F.I.I.) - Nationally Recognized
Private Investigator (P.I.) – State of Oregon (inactive)

[†] Dr. Gale was among the first one hundred engineers in the United States to become professionally registered in fire protection engineering. He holds State of California FPE Registration Number 72, awarded in January 1976.

Professional Affiliations

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| Member | National Fire Protection Association (NFPA) |
| Member | Society of Fire Protection Engineers (SFPE) |
| Member | American Institute of Chemical Engineers (AIChE) |
| Member | Society for Risk Analysis (SRA) |
| Member | American Society of Safety Engineers (ASSE) |
| Member | International Association of Arson Investigators (IAAI) |
| Member | California Conference of Arson Investigators (CCAI) |
| Member | National Association of Fire Investigators (NAFI) |
| Member | Combustion Institute |
| Provisional Member | American Academy of Forensic Science (AAFS) |
| Former Member | American Society of Civil Engineers (ASCE) -- Committee on Reliability of Offshore Structures |
| Former Member | Marine Technology & Management Group, UC Berkeley |
| Former Member | NFPA Committee #17 (Dry Chemical Systems) NFPA Committee # 17A (Wet Chemical Systems) |
| Former Member | American Petroleum Institute Committee on Safety and Fire Protection (API - COSFP) |
| Former Member | California State Fire Marshal's Fire Extinguisher Advisory Committee |

Professional Experience

Dr. Gale has forty years of professional experience in project engineering, design and construction, and loss prevention consulting, both domestically and overseas. He is an engineering specialist in all aspects of loss prevention, hazard and failure analysis, risk management and safety, including risk assessment, process safety management, facility safety, and major incident investigations involving fires, explosions and releases of hazardous materials. An experienced origin and cause investigator, Dr. Gale is certified by the National Association of Fire Investigators (NAFI) as a Certified Fire and Explosion Investigator (CFEI) and a Certified Fire Investigation Instructor (CFII). He is also certified by the Board of Certified Safety Professionals as a CSP in Engineering Aspects and is a registered Professional Engineer (PE).

Dr. Gale's engineering experience spans both the realms of the owner-operator and the designer-constructor, affording him a detailed working knowledge and insight from each perspective. He is frequently consulted on major fire and explosion losses, and is recognized as an expert in safe operating procedures (SOP) and human & organizational error (HOE). His broad-ranging experience includes petroleum refineries and offshore platforms, solvent extraction and bio-diesel operations, co-generation and power plants, semi-conductor manufacturing and chemical plants, mining operations and merchant vessels, commercial warehouses, apartments, high rise buildings, as well as numerous residential fires and explosions. Dr. Gale has provided international loss prevention engineering and risk management consulting services since 1991 and is a principal of **Bundy, Gale & Shields, LLC**, international fire investigators and loss prevention consultants. Prior to becoming a full-time consultant, Dr. Gale was employed by Bechtel where he founded and managed Bechtel's Loss Prevention Group in San Francisco. He left Bechtel in 1990 as Chief Loss Prevention Engineer to establish his own consulting practice. Preceding his ten years with Bechtel, Dr. Gale worked as both an employee of and consultant to a number of Fortune 500 companies, including Chevron Oil Corporation and Brown & Root, Inc.

Fields of Experience include:

- Origin and Cause (O&C) investigations involving all types of industrial, commercial, institutional and residential occupancies, ranging from process and manufacturing facilities, warehouses and cold storage buildings, schools and hospitals, to apartment buildings and high-rise condo units, historic buildings under renovation, and single family homes of all sizes and values
- litigation support and technical consultation, fact investigation, fire and explosion investigations, forensic and failure analysis, and expert testimony; hazardous and reactive materials and plant operations, dust explosion investigations
- facility loss prevention engineering for large industrial, commercial, institutional, and military projects, including special high-valued facilities, e.g., semiconductor plants, co-generation facilities, textile manufacturing and mill operations
- facility and process safety for petroleum refineries & petrochemical plants, chemical plant operations, marine terminals & offshore platforms, LNG/CNG & NGL facilities, pipeline and marketing terminals, service stations
- product liability issues, construction/manufacturing defect assessment and standard-of-care analysis, codes and standards application and compliance
- hazard analysis and risk assessment studies, including scenario evaluation and ranking, Hazard and Operability (HAZOP) Studies, and other predictive hazard analysis methods and investigative techniques
- federal and state risk management and prevention program compliance, e.g., OSHA-PSM, EPA-RMP, OPA and OSPR; Chemical Safety Board investigations
- evaluation of human factors, Human and Organizational Error (HOE) and safe operating practices (SOPs) in accident causation; determination of Root Cause
- assessment of conceptual and detailed loss prevention design criteria for new construction and revamp projects; standard of care evaluations
- life safety and fire loss prevention surveys and facility safety audits; origin and cause investigations, root-cause analysis, and incident reconstruction, program development and plan review
- material selection and design for fire resistive construction; fire protection of construction elements, fireproofing/firesafing design
- system design evaluation of smoke, fire and gas detection, fire alarm signaling systems, fire and explosion suppression systems, fire sprinkler systems, commercial kitchen fire suppression system failure analysis
- large and small scale fire testing; CFD computer fire modeling, demonstrative evidence and trial preparation assistance

Representative Hazard Analysis and Risk Assessment Projects

- a major LNG/LPG receiving terminal modernization in Georgia;
- a new crude oil pipeline and marine terminal in Russia;
- a new pipeline and gas compression/treating facility in Thailand
- a new crude oil pipeline and pump stations in Washington
- a MTBE/Methanol loading terminal in Qatar
- expansion of an existing gas receiving and treating plant in Thailand
- a new barge-mounted CNG transport system
- life safety analysis for a Taiwan semi-conductor tool manufacturing plant
- OSPR risk assessment of petroleum product pipelines in California waters
- loss prevention and life-safety review of new and existing offshore platforms in the Gulf of Mexico
- HAZOP studies for numerous petroleum refinery processing units in California

Employment History

Formerly Chief Loss Prevention Engineer for Bechtel; formed and managed the Bechtel Petroleum/Bechtel National Loss Prevention Engineering Group and served as principal consultant on in-house projects with regard to fire protection and safety-related design matters from 1980 - 1990. Supported a variety of projects in all business-line areas. Functional manager of loss prevention engineers assigned to specific projects, forecast manpower and staffing requirements, and maintained company's leadership role and position of technical excellence with regard to loss prevention engineering technology. Represent company in professional organizations and conferences; provide technical support to in-house counsel on various litigation actions. Member of the American Petroleum Institute's Task Force that developed a new recommended practice (RP) for the fire protection of liquefied petroleum gas (LPG) storage facilities, API RP-2510A.

Highlights of Bechtel Work History (1980-1990)

- develop new methodology to quantify the term "adequate ventilation," subsequently adopted by the American Petroleum Institute, Institute of Petroleum (U.K.) and Canadian authorities.
- technical specialist for two multi-million dollar fire loss investigations and litigation defense cases involving Canadian tar sand mining and upgrading operations
- develop RMPP/PSM methodology for major California oil refineries
- fire protection and safety design, specifications, and drawings for over a one billion dollar grass-roots gas-to-gasoline facility in New Zealand
- fire protection and safety design, specifications, and drawings for an integrated modular oil and gas gathering center, North Slope of Alaska
- lead systems safety engineer for D.O.D. - S.D.I. laser defense project
- lead engineer of Safety Analysis Review (SAR) team for D.O.E. facilities
- project fire-safety engineer for the design and construction of a new high energy anechoic chamber for military systems
- off-project safety consultant for a new grass roots heavy oil upgrader facility in Canada
- instrumental in establishing fire safe design criteria and UBC code analysis for construction and approval of Alaska North Slope oil and gas processing modules
- worked closely with the late Professor R. Brady Williamson on risk assessment methods

Provided loss prevention engineering and risk management services for:

- the world's largest barge-mounted sea water treatment plant for water injection service on the North Slope of Alaska
- several offshore oil and gas production platforms for various clients in California and Australian waters
- several major refinery expansions and a grass-roots 100,000 BPD refinery
- several pipeline pumping/compressor station facility expansions and new construction for major oil companies and public utilities.
- feasibility studies and risk assessment for new LPG and LNG marine terminals, and a barge mounted transportation system for high pressure compressed natural gas (CNG).
- several DOD and DOE projects involving weapon systems and power plants

Prior Experience

Brown & Root, Inc., San Francisco, CA. (1976 - 1980)

Staff engineering specialist and discipline manager of fire protection engineering. *British Petroleum North Slope Project*: responsible for fire protection related design and system startup for the original North Slope oil and gas gathering centers. *Petroleous Mexicanos - Bay of Campeche* development: established minimum safety design criteria for offshore platform layout and fire protection. *Chevron Oil - Casa Blanca Platform Project, Madrid, Spain*: resident senior fire protection engineer responsible for all fire protection engineering design, drawings, and specifications for Spain's first fixed offshore production platform.

The FPE Group, San Francisco, CA. (1973 - 1976)

Staff consultant and fire protection specialist for oil and gas facilities. Conceptual and detailed design for a variety of projects, including several new offshore production platforms and mobile drilling units. Conducted fire loss prevention surveys in a wide range of facilities, including commercial buildings, health care facilities & hospitals, computer facilities, as well as heavy industries, such as foundries. Resident consultant engineer in New Plymouth, New Zealand on the *Maui A gas condensate production platform design for Shell, B.P., & Todd*. Worked closely with the Ansul Company in testing new fire extinguishing agents and application systems development. Designed and specified fire protection systems and equipment for facility protection, including fire sprinkler system and fire detection and alarm systems for commercial, industrial, and institutional applications.

Standard Oil Company of California (Chevron), S.F., CA (1968 - 1973)

Staff fire protection engineer in the corporate engineering fire protection group, specializing in oil and gas production and processing facility fire protection. Performed numerous fire loss prevention surveys of company facilities, both onshore and offshore, including oil and gas production platforms, drilling rigs, refineries, marketing terminals, gas plants, and pipeline stations. Conducted major fire loss investigations, taught oil and gas fire school field training sessions for the Western Oil & Gas Association, and developed new corporate design practices and standards related to fire protection and loss prevention engineering.

Prior Chevron positions included reservoir Development Engineer, and oil field Design & Construction Engineer. Development engineering activities included subsurface formation evaluation, well logging, bottom hole location analysis, and well drilling and completion programs. Design and construction involved design of oil field production and secondary recovery equipment for both rural production leases and urban drill sites, including large capacity pumps, field gas compressors, gas treating plants, motor control centers, oil dehydration and treating facilities and storage tank-farms.

Dr. Gale began his professional career forty years ago in 1967 with Standard Oil Company as an engineering trainee in a student summer-jobs program at the Perth Amboy, N.J. refinery. He performed a variety of duties dealing with energy conservation, pressure vessel certification and fire protection. Since that time he has been involved in numerous petroleum refinery, chemical, and petrochemical plant projects as well as incident investigations of all kinds.

Representative Litigation Support and Consulting Engagements

- **Abeyta Nelson, P.C. (Yakima, WA)** – a products defect and personal injury case stemming from an explosion involving the mixing and ignition of propane and oxygen
- **ACE Westchester Specialty Claims** – investigation of a \$ multi-million fire loss involving NBC Universal’s TV transmission station and equipment on top of Mt. Loma Prieta, Los Gatos, CA
- **Adams and Reese (New Orleans)** – a +\$300 million refinery explosion and fire in the FCC involving multiple fatalities; investigation of a large fire loss involving an historic racetrack
- **Alaska National Insurance** – investigation of a restaurant fire involving a LP-gas range
- **Alexander, Holburn, Beaudin & Lang** – \$30 million dollar fire loss in a Canadian lumber mill
- **Allied Insurance Group** -- service station fire/fatality investigation
- **Allswang, Smith & Walsh** – wrongful death action involving a mentally challenged victim
- **Alper & McCulloch** – two separate fire incidents involving restaurant kitchen fires and commercial cooking fire suppression system design and certification issues
- **Anderson, McPharlin & Connors** – personal injury from an explosion in a petroleum storage tank
- **Applied Materials** – Loss Prevention Consultant for life safety and fire protections systems in a new semiconductor manufacturing tool facilities in Taiwan and Santa Clara
- **Architectural Diagnostics, Ltd. (Honolulu)** – construction defects in two high rise towers
- **ARCO Legal Department** – refinery fire investigation involving a delayed coker
- **Barger & Wolen** – marine litigation fire investigation/engineer support
- **Barnhorst, Schreiner & Goonan** – product liability action resulting from water damage to a high rise office building from sprinkler system failure
- **Bartlett, Kirch & Lievers** – a product liability action stemming from personal injuries in a fire involving the mixing and use of flammable liquids for use as a solvent
- **Bays Deaver Lung Rose & Baba (Honolulu)** – multi-million dollar condo fire in Hawaii
- **Bearnson & Peck** – multiple fatality garden apartment fire investigation in Logan, Utah
- **Bechtel Corporation** – litigation support in two actions involving major fire losses involving a fluid coker and tar sands unit in synthetic petroleum refineries; liaison with the firms of:

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| Thelen, Marrin, Johnson & Bridges (U.S.) | Field & Field Perraton (Canada) |
| Maxon Young and Lloyds of London (Insurance) | Code Hunter Wittmann (Canada) |
| Singleton Urquhart Macdonald (Canada) | |

- **Bechtel Construction (BECON)** – investigation a multiple fatality explosion in a polyesters fiber manufacturing facility
- **Bechtel Environmental** – Loss Prevention and risk analyses consulting for OSPR compliance regarding several petroleum products pipelines near marine waterways
- **Bechtel Offshore** – Loss Prevention and risk analyses consulting for offshore production platforms in the Gulf of Mexico
- **Bechtel Power Inc.** – performing technical support involving issues of code compliance re: cable and cable tray fire protection in nuclear power plants
- **Bickel & Associates** – multi-million dollar condo fire in San Francisco Pacific Heights
- **Bishop Barry Howe Haney & Ryder** – litigation support in several refinery asbestos litigation cases
- **Bisnar|Chase** – product liability action involving a portable camping catalytic heater
- **Bledsoe, Cathcart, Diestel, Livingston & Pedersen** – destruction of a luxury home alleging spontaneous combustion of oil soaked rags; fire in a residential high rise apartment building
- **BoatU.S., Marine Insurance Claims (MIS TEAM)** – investigation of a fire aboard the yacht “C’EST LA VIE” caused by spontaneous combustion of oil stain-soaked rags
- **Boccardo Law Firm** – investigation of the 1/07/05 Los Gatos, CA Auto Mall natural gas explosion and fire
- **Borton, Petrini & Conron** – residential apartment complex fire involving wrongful death
- **Bouhey, Garvie & Bushner** – fire investigation in a residential apartment unit
- **Bragg & Dziesinski** – personal injury action involving injuries received from a kitchen stove-top fire; investigation of a residential aquarium fire; product liability action involving a surge suppressor in a house fire; product liability action involving a beverage dispenser in a restaurant fire; a radio station wild-land fire; investigation of telephone vault cable damage from a steam leak; Lodi delta marina fire investigation; residential fire at a private school on 17-mile drive in Carmel, a warehouse fire in Emeryville, CA
- **Branson Law Firm** – a civil action involving a natural gas explosion during a construction project; gas explosion in a hunting cabin resulting in two fatalities; personal injury action involving expulsion of caustic solution from a tallow tank; wrongful death action involving high tension power lines; personal injury action involving rupture of a high pressure gas line; wrongful death in a natural gas plant explosion
- **Brown Peterson & Marks/Brown Brown & Klass** – investigation of the Harris Grade wildland and peat bog fire involving several civil actions from associated fatal automobile accidents
- **Bullivant Houser Bailey** – investigation of a cold storage warehouse ESFR sprinkler system; investigation of a fire involving charcoal lighting fluid; condo fire sprinkler investigation
- **Burnet, Duckworth & Palmer** (Canadian Law Firm) – investigation of a major school fire; investigation of a manufacturing plant explosion and fire involving magnesium dust and TCE storage
- **Burnham & Brown** – investigation of a fire in a large aircraft hangar under renovation; investigation of a South of Market (SF) apartment complex fire
- **Burr, Pease & Kurtz** (Anchorage, AK) – investigation of a fire involving polymeric roof coating
- **Butler, Snow, O’Mara, Stevens & Cannada** – explosion and fire in a large rubber recycling plant resulting in five fatalities and several injuries
- **Cardozo, Curtis & Arata** – vehicle fire and personal injury suit involving refueling
- **Callahan, McCune & Willis** – investigation of a \$40 million winery warehouse fire in Napa Valley, CA
- **Carlson, Calladine & Peterson** – investigation of two explosions involving rocket fuel production; investigation of a +\$100 million Mare Island, California wine warehouse fire and related code issues

- **Carlton Fields** – residential fire involving fire alarm system response performance
- **Carroll Warren & Parker** – fatal residential natural gas explosion in Mississippi
- **Clapp, Moroney, Bellagamba and Vucinich** – multiple fatality apartment complex fire investigation; an infant fatality apartment complex fire investigation
- **Clapp, Peterson & Stowers (Fairbanks, Alaska)** – a residential apartment complex fire investigation in Alaska; a products liability action involving thermoelectric generators used in the Yukon Measurement and Debriefing System [YMDS], a war simulator and training system utilizing mountain-top instrument PODS
- **Cobian & Valls** – fire investigation involving a wood processing and storage warehouse in San Juan, PR
- **Cosgrave, Vergeer & Kester** – apartment complex fire involving several fatalities
- **Cosgrove, Flynn & Gaskins** – civil action involving a natural gas explosion in a mobile home
- **Cox, Wootton, Griffin & Hansen** – fire investigation involving a plastic recycling plant
- **Cozen & O'Connor** – apartment complex fire involving several fatalities; natural gas compressor explosion and fire; explosion and fire in a furniture stripping facility; investigation of a school fire involving hazardous materials; municipal offices building fire loss and fire protection analysis; investigation of a roof-top air conditioning unit fire in an professional and medical office complex; Chili's restaurant kitchen fire; water damages case involving the failure of fire sprinkler system riser's thrust block tie-rod connectors
- **Crosby, Heafy, Roach & May** – civil action involving a major refinery fire; personal injury and product liability action involving failure of a fire extinguisher
- **Cuff, Robinson & Jones** – explosion investigation involving the use of MEK to remove epoxy
- **Culbreth Schroeder** – residential fire investigation involving an electric clothes dryer
- **Dechert, Price and Rhoads** – product liability action involving a \$1 Billion textile mill fire
- **Delaney, Wiles, Hayes, Gerety, Ellis & Young** (Anchorage, AK) – see **Burr, Pease & Kurtz**
- **Dickinson, Wright, Moon, Van Dusen & Freeman** – major refinery fire and wrongful death involving product liability issues re: piping components
- **Dorsey & Whitney** – major fatal explosion in a aerosol canister filling plant involving EtO
- **Drath, Clifford, Murphy, Wennerholm & Hagen** – investigation of a brewery/restaurant fire
- **Dreyer, Babich, Buccola & Callaham** – personal injury investigation involving hydrostatic testing of a newly installed 24-inch water main and fire hydrant system
- **Dunlap & Soderland** – investigation of a leaking fire sprinkler system in a large condominium complex near Seattle
- **Electric Insurance Company** – investigation of a museum fire in a cold storage vault for old cellulous nitrate films; investigation of several residential fires allegedly involving various kitchen appliances
- **Farmers Insurance Company** – fire investigation of a 12 unit San Francisco 1907 Victorian apartment complex; a multiple fatality apartment complex fire in Daly City; an infant fatality fire in a garden apartment complex; a personal injury apartment fire in San Francisco; an apartment complex fire in Pittsburgh; a residential gas explosion in Los Altos, CA; a residential quadraplex fire and its propane system in Scotts Valley, CA; a residential fire in Newman, CA, allegedly involving a oil-filled radiator heater; an alleged lithium battery fire in Vacaville, CA; residential gas fire in Fresno, CA; mobile home gas explosion in Marysville, CA, residential gas fire in Sacramento, CA; residential fire in San Mateo, CA
- **Federated Insurance Company** – Burger King restaurant fire in Visalia; restaurant fire in Fresno
- **Field and Field Perraton** (Calgary) – civil action involving a fire in a large furniture manufacturing complex involving polyurethane foam/textiles
- **Field and Field Perraton** (Edmonton) – several civil actions involving timber harvesting machinery fires (Timber Feller-Bunchers)
- **Field Warwick & Sanders** – residential fire involving a propane-fueled floor furnace

- **Fisher Law Offices/ Richard White Law Offices** – construction defect action involving fire sprinkler and alarm system deficiencies in large residential apartment complexes
- **Foley & Lardner** – multi-million dollar manufacturing facility fire loss involving propane cylinder storage
- **Foley & Mansfield** – litigation support in a asbestos litigation case involving several Iranian refineries
- **Foley McIntosh, Frey & Claytor** – investigation of a multiple-alarm medical center fire
- **Fonda & Hilberman** – civil action stemming from burn injuries in a residential apartment fire
- **Ford, Walker, Haggerty & Behar** – product liability action involving a LP-Gas fueled barbecue fire; fire investigation involving a commercial nut processing facility in LA; personal injury case involving release of high temperature steam from a butterfly valve; fire involving hot work in a oil refinery; infant-death fire investigation involving multi-purpose butane lighter
- **FPL Energy, LLC** – investigation of a fire in a 1.8 MW wind turbine on a 65 meter high tower
- **Frazer Greene Upchurch & Baker** – fatal toxic gas release in a sodium hydrosulfite plant
- **Frilot Partridge LLP** – analysis of maximum incident radiant heat from a refinery fire incident
- **Frilot, Partridge, Kohnke & Clements** – products liability action involving ignition of gasoline
- **Garvey Schubert Barer** – investigation of a 4-alarm fire in a oil recycling plant
- **Gelfand & Glaser** – wrongful death action involving an explosion in a compressed gas facility
- **Genetech** – Loss Prevention consulting on a new warehouse containing hazardous materials
- **Gibbes, Graves, Mullins, Ferris, Hortman & Harlow** – personal injury action involving explosion of a 55 gallon drum; product labeling at issue
- **Gibson Law Offices** – multi-alarm large-loss fire investigation involving a hotel and adjacent residence
- **Gibson & Robb** – fire investigation involving destruction of a coastal transport freighter
- **Glaspy & Glaspy** – investigation of a fatal incident involving the explosion of an air compressor receiver
- **Gordon & Rees** – residential fire involving a propane-fueled barbecue
- **Gordon Thomas Honeywell Malanca Peterson & Daheim** – construction defects case involving investigation of a fire sprinkler system in a condominium complex
- **Graham & James** – apartment complex fire involving two infant fatalities; fire in a large commercial fish processing vessel
- **Grotefeld & Deneberg** – investigation of two fires involving the largest coal ship-loader on the west coast
- **Gwilliam, Ivory, Chiosso, Cavalli & Brewer** – civil action stemming from the over-pressurization of a low pressure gas distribution system resulting in several fires; multiple fatality fire involving a petroleum refinery crude oil distillation column naphtha line
- **Hagens Berman** – multiple fatality explosion and fire in a polysilicon manufacturing plant
- **Hamilton Beach Proctor-Silex** – residential fire investigation and product liability analysis
- **Hardin, Cook, Loper, Engel & Bergez** – hazardous material release action; personal injury action in a major petroleum refinery
- **Hamilton Beach Proctor Silex** – residential fire investigation involving kitchen appliances
- **Hancock, Rothert & Bunshoft** – plaintiff in a marina fire involving loss and damage to several luxury yachts
- **Hatch, Allen & Shepherd** – fatal fire investigation involving a “hot-oiler” truck during offloading
- **Hennelly & Grossfeld** – fire investigation involving a solar power electric generating plant
- **Hewitt & Prout** – explosion investigation involving an underground gasoline storage tank
- **HEXCEL Corp.** – consulting services regarding marketing opportunities in loss prevention
- **Hoffman & Grantham** – a products liability action involving a bathroom fan fire

- **Holland & Hart** – investigation of a gas explosion and fire in a Montana industrial park; +100,000 acre wildland fire in New Mexico
- **Horak, Talley, Pharr & Lowndes** – tank explosion in a petrochemical plant causing two deaths
- **House, Kingsmill & Riess** – large residential apartment complex fire in Texas
- **Hoyle, Morris & Kerr** – expert in several civil actions stemming from a large fire in a chemical reprocessing plant
- **Industrial Indemnity** – various industrial fire losses
- **Jenkins, Goodman & Neuman** – products liability action involving a 20 lb. propane tank
- **Jenkins Goodman Neuman & Hamilton** – products liability action involving an apartment fire in Hawaii; products liability action involving a condo fire from a chiminea
- **John Wiley Law Offices** – upscale SF condo high-rise fire investigation and water damages analysis
- **Jones, Clifford, McDevitt & Johnson** – Investigation of a fatal fire involving cleaning of a gasoline tank in a petroleum bulk plant
- **Jones & Scheich** – intentional tort action involving a vapor release and fire in a refinery alkylation unit resulting in personnel injuries
- **K&L Gates** – residential fire investigation involving gas utility service riser
- **Kelley, Drye & Warren** – fire investigation involving a mobile home manufacturing plant; investigation of a fire involving destruction of the town library in upper New York
- **Kerr & Wagstaffe** – investigation of a wine warehouse fire (see **Carlson, Calladine & Peterson**)
- **Kilmer, Voorhees & Laurik** – arbitrator in a case involving a fire in heavy mobile equipment
- **LaFollette Johnson** – RV fire allegedly involving a leaking propane refrigerator (tendered to DNB)
- **LaPlante & Spinelli** – products liability action involving a thermostatic gas control valve
- **Lane, Powell, Spears & Lubersky** – apartment complex fire involving several fatalities
- **Larry N. Kloenhammer** – luxury home fire during remodeling resulting in subrogation
- **Larson & Burnham** – civil action involving a fatality during a pipeline pigging and purging operation involving a vacuum truck
- **Larson Hart & Shepherd** – multiple fatality explosion and fire in a polysilicon manufacturing plant [see Hagens Berman]
- **Law Office of Cary Dictor** – fire investigation involving transportation of goods by moving van
- **Law Office of Kenneth W. Turner** – residential house natural gas explosion investigation in Los Altos
- **Law Office of Neil Jon Bloomfield** – investigation of a restaurant kitchen fire
- **Law Office of William Delaney and Law Office of Timothy Jarres** – plaintiff in civil action involving a fire in a foam plastics manufacturing plant
- **Lazano, Smith & Smith** – civil action involving inadequately designed fire water system
- **Lempres & Wulfsberg** – high-rise tower construction defects case involving firesafing
- **Leon & Leon** – fire investigation of two commercial structures in Oakland, CA
- **Lewis, D'Amato, Brisbois & Bisgaard** – fire involving above-ground refueling facility; product defect investigation and fire risk analysis for an automobile manufacturer
- **Lewis, Brisbois, Bisgaard & Smith** – product liability re: a propane fueled barbecue fire
- **Liedle, Getty & Wilson, LLP** – fire investigation involving a polyurethane foam manufacturing plant
- **Lieff, Cabraser, Heimann & Bernstein** – class action litigation involving gypsum wall board
- **Lombardi, Loper & Conant** – investigation of a multi-unit apartment complex fire in Sacramento; investigation of a large propane distribution center fire in San Francisco; investigation of a \$multi-million

fire involving a new school under construction in Dublin, CA; fire and personal injury involving propane cylinder filling

- **Louderback & Louderback** – investigation of code issues re: automobile paint spraying shop
- **Lucas & Tonn** – fire investigation in regard to a wood-fueled boiler plant fire in a school
- **Luce Forward Hamilton & Scripps** – investigation of the November, 2004 multiple-fatality gasoline pipeline rupture and fire in Walnut Creek, California
- **Lyddan Law Group** – investigation of the 23,000 acre Copper Hill wildland fire in Santa Clarita, CA
- **Matsubara, Lee & Kotake** (Hawaii) – residential fire involving three homes in Honolulu
- **Maynard, Cooper & Gale** – chemical plant fire involving a urethane manufacturing facility
- **McCormick Barstow** – residential propane explosion and fire injuring two children; mini-mart fire involving a beverage dispenser and ice-cube maker
- **McElroy, Deutsch & Mulvaney** – fire in a luxury Victorian involving analysis of alarm system; fire involving a retail shopping mall; fire in a large industrial multi-occupancy warehouse
- **McGinn & Associates** – explosion and fire in a natural gas liquids (NGL) processing plant
- **McGinn Carpenter Montoya & Love** – large, multiple-injury refinery fire involving a HF-Alkylation Unit
- **McKenna, Long & Aldridge** – investigation of a large-loss wildland fire in Malibu, California
- **Mersereau & Shannon** – + Million \$ fire in a vacant warehouse and associated fire sprinkler system issues
- **Middlebrook, Kaiser & Popka** – explosion and fire resulting from a natural gas pipeline leak
- **Milberg Weiss Bershad Hynes & Lerach** – class action involving product liability issues
- **Miller Canfield Paddock and Stone** – investigation of a multiple-fatality propane gas explosion
- **Minasian, Minasian, Minasian, Spruance, Baber, Meith & Soares** – explosion and fire involving a gas leakage from a plastic underground gas service line
- **Moffatt Thomas Barrett Rock & Fields** – residential house fire investigation near Sun Valley, ID
- **Montgomery, Barnett, Brown, Read, Hammond & Mintz** – action stemming from a large refinery fire and explosion
- **Morgan, Lewis & Brockius** – tank explosion in a petrochemical plant causing two deaths
- **Morgan Miller Blair** – construction defects case involving the Omega Sprinkler recall
- **Morgenstein & Jubelirer** – residential fire investigation involving a laptop computer
- **Morrison & Foerster** – major chemical plant fire and fatalities
- **Murchison & Cumming** – petroleum storage tank explosion and fire during cleaning operations
- **Murphy Pearson Bradley & Feeney** – residential fire involving a newly installed dishwasher
- **Nageley Meredith & Miller** – propane fueled barbecue product liability action
- **National Farmers Union Insurance Company** – fire in a telephone exchange building in Alaska
- **Nelson Kinder Mosseau & Saturley** – fire in a historic building being renovated to loft apartments
- **Nixon Peabody** – two separate fire cases involving 20 lb. portable LP-Gas cylinders
- **Norman, Hanson & DeTroy** – product liability action re: a fire in an LP-Gas fueled barbecue
- **Nyemaster, Goode, West, Hansell & O'Brien** – product liability action re: poultry processing plant fire; a multi-million dollar residential fire in Des Moines; a large-loss fire in a bio-diesel refining plant in Iowa; investigation of a large-loss grain elevator dust explosion; investigation of a large-loss pig-farm fire
- **Pacific Gas & Electric Co.** – fire investigation in a residential dwelling

- **Parichan, Renberg, Crossman & Harvey** – industrial complex fire loss in Fresno, California
- **Perkins Coie** – code compliance investigation re: an Alaskan commercial fish processing plant
- **Pearson & Associates** – flash fire involving a release of silane in a silicon manufacturing plant
- **Peter C. Hsieh, Esq.** – high rise condo water damage case in Honolulu from a failed sprinkler head
- **Pillsbury Winthrop Shaw & Pittman** – large loss fire involving fuel oil storage tank demolition at a power plant
- **Polsky Sanderson (Calgary)** – investigation of a oil-sands mining operations fire near Ft. McMurray
- **Preferred Dealer Protection Claim Center** – investigation of a luxury automobile fire
- **Price, Okamoto, Himeno & Lum** (Honolulu) – see Lempres & Wulfsberg
- **Prout & LeVangie** – wildland fire in Alameda County, CA
- **Reuben & Novicoff** – analysis of an incident on an offshore platform injuring a contract worker
- **Richardson Callahan** – fatal toxic gas release in a sodium hydrosulfite plant (w/Frazer Greene...)
- **Riddell Williams** – products liability case involving a \$1Billion multiple fatality explosion and fire loss in a major automobile manufacturer's power plant; investigation of a major steel mill fire in Dearborn; investigation of a Tennessee school fire; investigation of a multi-million \$ NJ condominium complex fire; products liability action involving a game-box
- **Robins Kaplan Miller & Ciresi** – investigation of a multiple-fatality oil refinery unit explosion and fire
- **Rogers Scott & Helmer** – investigation of a gasoline fueled fire in a drug treatment center
- **Rome McGuigan & Sabanosh** – investigation of a fire in a semi-conduction manufacturing plant
- **Ropers, Majeski, Kohn & Bentley** – product liability action involving steel connectors used in chimneys
- **Rosen & Associates** – investigation of two fires in the largest coal ship-loader on the west coast
- **Rust, Armenis & Schwartz** – product liability case in defense of an LP-gas fueled barbecue manufacturer
- **Safeco Insurance Company** – technical consulting re: a fire involving a kitchen exhaust hood
- **Sandall, Olsen & Ott /White & Baker** – petroleum tank fire involving cleaning operations
- **Sayre & Chavez** – investigation of a multiple-fatality fire in a mobile home on a dairy farm
- **Schirfrin Gagnon Dickey** – investigation of a retail outlet fire in SF Fisherman's Wharf area
- **Selman Breitman** – product liability action involving a packaged fireplace product in a residence
- **Shea & Shea** – residential natural gas explosion investigation; analysis of electrocution of a firefighter
- **Shook Hardy Bacon** – product liability action involving a lightning-caused residential fire in Florida; a large-loss casino/hotel fire in Nevada; a large loss warehouse fire in a historic district of Jeffersonville, IN
- **Simoncini & Wenzel** – investigate explosion and fire from a pipeline failure in one of the world's largest hydrogen plants located in a major petroleum refinery
- **Simoncini & Associates** – a luxury home fire during remodeling involving cause determination; a +\$ million home fire allegedly involving a packaged HVAC unit; investigation of a restaurant rotisserie fire
- **Smith, Anderson, Blount, Dorsett, Mitchell & Jernigan** – fatal explosion incident involving welding on a tire rim; claims dispute involving cutting and welding on hazardous process piping
- **Smith, Sovik, Kendrick & Sugnet, P.C.** – Co-generation plant fire investigation involving a large gas turbine and automatic fire detection/suppression system
- **St. Clair, McFetridge & Griffin** – a major refinery fire litigation and a second action involving a marine wharf and several luxury yachts
- **Stritmatter, Kessler Whelan Withey Colucco** – multiple fatality explosion/fire in a silicon manufacturing facility involving the release of silane, trichlorosilane, and silicon tetrachloride

- **Sweeney & Sheehan** – multiple fatality explosion/fire in a chemical manufacturing plant; multiple fatality dust explosion in a North Carolina pharmaceutical plant
- **Tharpe & Howell** – investigation of a residential fire allegedly involving a propane-fueled HVAC unit
- **Thayer Harvey Gregerson Hedberg & Jackson** – residential fire involving a halogen security lamp
- **Thelen, Marrin, Johnson & Bridges** – fire and personal injury action in a petroleum refinery
- **Thelen, Reid, Brown, Raysman & Steiner** – maritime investigation involving the loss of the Wind Song
- **Thelen, Reid & Priest** – investigation of the largest fire loss in the history of Santa Maria, CA involving the destruction of a fruit packing plant; investigation of a fatal dust explosion in a large recycling plant
- **Tooze, Duden, Creamer, Frank & Hutchinson** – wrongful death action involving the rupture of a LP Gas pipeline in a manufacturing plant due to external impact
- **Tousley Brain Stehpens** – class action litigation involving gypsum wallboard fire ratings
- **Ulmer & Berne** – wrongful death and personal injury action involving the release of liquid sodium in a metals fabrication facility
- **Valerian, Patterson & Stratman** – garden apartment building fire involving a floor furnace
- **Wartnick, Chaber, Harowitz, Smith & Tigerman** – asbestos exposure action
- **Watson & Renner/Yates & Leal** – litigation support in a Superfund Site liability action
- **Wendel, Rosen, Black & Dean** – plaintiff in a product liability action involving a LP-Gas fueled construction heater
- **Whirlpool Corporation** – several products liability cases involving various Whirlpool products
- **Wild, Carter & Tipton** – O&C investigation of a restaurant kitchen fire and failure of wet chemical system
- **William L. Veen Law Offices** – plaintiff in a personal injury suit involving an accident during a turnaround in a petroleum refinery; personal injury action involving a swimming pool filter assembly accident
- **Williams, Kastner & Gibbs** – fire involving carpet cleaning-equipped vehicle
- **Wilson, Elser Moskowitz Edelman & Dicker** – residential fire investigation; explosion and fire investigation involving a gasoline tank truck and passenger car collision near New York City; container ship explosion and fire in the middle-east waters killing four crew members; products liability action involving an induction cook-top in a residential occupancy
- **Wingert, Grebing, Anello & Brubaker** – fire involving ignition during fueling operations
- **Winingham, Roberts, Fama, Kramer & Ramberg** – product liability action involving alleged leakage of side-by-side gasoline-diesel auxiliary fuel tanks mounted on a P/U truck bed
- **Wise, Wiezorek, Timmons & Wise** – fire involving three commercial businesses and residence
- **Wolfe Firm** – fire investigation involving a quick change motor oil facility
- **Wright, Robinson, Osthimer** – investigation of a large fire loss involving a winery warehouse; investigation of a large industrial park and lumber company fire
- **Wulfsberg, Reise, Ferris & Sykes** – investigation of an offshore platform explosion and fire and related design and construction issues

Representative Petroleum and Chemical/Petrochemical Plant Related Experience

Investigations and Projects

- BP-Amoco Refinery Explosion and Fire, Texas City, TX, March, 2005
- Kinder Morgan Pipeline Explosion and Fire – Walnut Creek, CA, November, 2004

- Giant Industries Refinery explosion and fire, Gallup, New Mexico, April, 2004
- Muskeg River Mine propane fire at the Athabasca Oil Sands project, 75 km north of Ft. McMurray, January, 2003
- Murphy Oil Refinery ROSE Unit fire analysis, Meraux, LA, June, 2003
- AGP solvent extraction and bio-diesel manufacturing plant explosion and fire, Sergeant Bluff, Iowa, August, 2003 (multiple fatalities and injuries)
- TOSCO Avon Refinery Crude Unit No. 50 Fire Investigation, Martinez, CA, February, 1999 (multiple fatalities and injuries)
- Concept Sciences, Inc. Chemical Plant Explosion and Fire Investigation, Lehigh Valley Industrial Park, PA, February, 1999 involving reactive chemical (hydroxylamine); five fatalities and multiple injuries
- KOSA/Ticona Polyester Fiber Plant Explosion & Fire Investigation, Selby, North Carolina, September, 1999 involving DMT tank explosion
- Celanese Chemicals, Inc. Bucks, Alabama Plant Hazardous Materials Release Investigation, September, 1999 involving reactive chemicals (sodium hydrosulfite) and the release of sulfur dioxide
- Advanced Silicon Materials, Inc. Plant Fire Investigation, Moses Lake, WA, October, 1998; multiple fatality incident involving the release of highly hazardous materials in a silicon manufacturing plant (silane, trichlorosilane, and silicone tetrahydride)
- El Paso Field Services Chaco Cryogenic NGL Extraction Plant Explosion & Fire Investigation, Farmington, New Mexico, August, 1998
- APG/Accra Pac Group Chemical Plant Explosion and Fire Investigation, Elkhart, Indiana, June, 1997 involving reactive chemicals (ethylene oxide)
- Rhône Poulenc Basic Chemical Plant Fire, Martinez, CA, 1994
- Chevron Richmond Refinery Isomax/TKC Fire Litigation, 1993
- Shell Martinez Manufacturing Complex and Wilmington Complex Risk Management and Prevention Program Projects, 1989-1990
- Chevron El Paso Refinery, TX
Fire Protection System Modernization Project, 1990
- Chevron El Segundo Refinery
No. 4 Crude Unit Modernization and Hazop Project, 1990
- Union Oil Company San Francisco Refinery (Rodeo, CA)
Waste Effluent Treating Facilities Project, 1988-1989

- Shell Norco FCC Fire and Explosion Litigation, Norco, LA, 1988-1990
- Alaska Pacific Refining Inc. Valdez Refinery Project & Loading Wharf
Grass-roots facility design project (canceled), 1987-1988
- Syncrude Fluid Coker Fire Litigation, Fort McMurray, Canada 1987-1994
- EPRI/DOE Advanced Fine Coal Spherical Agglomeration Pilot Plant, Homer City
Prototype design development and hazard analysis (CCFT) project, 1987
- Union Oil Company San Francisco Refinery (Rodeo, CA)
Coking Unit No. 200 Revamp, 1985
- Husky Oil Bi-Provincial Project
Grass Roots Upgrader Facility, 1985-1990
- Chevron Canada Ltd. Burnaby Refinery
Burnaby FCC Modernization Project, 1981
- Valero Refinery (Saber Refining Co.), Corpus Christi, TX.
LPG Storage Facility Fire Protection Modernization Project, 1987
- ARAMCO Ras Tanura Refinery Modernization Project, 1982-1983
- Mobil Oil Gas-to-Gasoline Project complex in New Zealand, 1981-1983
- ARCO Cherry Point Refinery
Coke Calciner Project, 1984
- ARCO Watson Refinery
FCCU Power Recovery Project, 1984
- ARAMCO Qasim Refinery Project
Grass-roots design and construction project (canceled in procurement cycle), 1982-84
- Chevron Sudan Kosti Refinery – Engineering Study, 1982
- Chevron Chemical Co.
Oak Point Expansion Project, 1981
- Shell Oil Co. Martinez Manufacturing Complex
Hydrotreater Modification Project, 1983
LOP Control Center Modification Project, 1980-81
- Chevron Richmond Refinery
Richmond Lube Oil Project (RLOP), 1982-1983
Isomax Control Room Project, 1981
- Standard Oil Co. of California Loss Prevention Survey Experience

(staff Fire Protection Engineer under Donald M. Johnson, 1971-1973)
including: Chevron El Paso Refinery, Chevron Salt Lake City Refinery, Chevron El Segundo Refinery, and the Chevron Richmond Refinery

- Several LNG facility studies/designs including ENRON Gas Elba Island study, ARCO Hainan LNG plant study, Fletcher Challenge LNG Export Terminal feasibility study (New Zealand), and Beca Carter Hollings & Ferner Port Taranaki LPG feasibility study.

Other Large Loss Fire and Explosion Investigations

- Malibu Canyon Wildland Conflagration of October, 2007
- *Just-Foam* polyurethane surf-board blank factory fire, Oceanside, CA, March, 2007
- Robert Lewis Stevenson (RLS) School fire, Pebble Beach, CA, April, 2007
- Residential Propane Gas Explosion and Fire, Arroyo Grande, CA, April, 2007
- Greenwood Plaza fire, Bozeman, Montana, March, 2006
- Wines Central Warehouse fire,¹ Mare Island, Vallejo, CA, Oct., 2005
- Fallon Middle School fire, Dublin, CA, November, 2005
- Hertz Rental Center Propane explosion and fire, S.F., CA, October, 2005
- Gasoline Tank Truck Trailer explosion and fire, Cameron County, TX, February, 2005
- Los Gatos Auto Mall Gas Explosion and Fire, Los Gatos, CA, January, 2005
- The Old Butternut Coffee Building loft apartment renovation project fire, Jan. 2004
- P&W Space Propulsion explosions & fires (amm. perchlorate rocket fuel), Aug. 2003
- Wayne Farms Poultry Processing plant fire, Oakwood, GA, May, 2003
- Woolstock Co-Op Grain Elevator Dust Explosion, Woolstock, IA, Sept., 2002
- Chateau du Triomphe Estate Fire, Dallas, TX, July, 2002 (+ \$50 million loss)
- Casiano Berry Supplies Warehouse Fire (Weyhaeuser), Santa Maria, CA, June, 2001
- USS-POSCO Industries (UPI) Cold Rolling PLTCM Fire Loss Investigation, Pittsburgh, CA, May 31, 2001 (ongoing)
- Double Eagle Steel Coating Company Plant Fire Investigation, Dearborn, MI, Dec, 2001
- Mauna Lani (Hawaii) Condo Fire Investigation, Feb., 2001

¹ The estimated loss in this 240,000 sq. ft. warehouse fire is over \$100,000,000.00.

- Jesse M. Lange Bulk Plant Explosion & Fire Investigation, Chico, CA Feb., 2001
- Willow Street Brewery Fire Investigation, San Rafael, CA, February, 2001
- Intermack Services Ltd. Estate Fire Investigation, Scarsdale, NY, January, 2001
- Frank-Rombauer Cellars Warehouse Fire Investigation, Napa Valley, CA, June, 2000
- Copper Valley Telephone Cooperative Exchange Fire Investigation, Glennallen, AK, April, 2000
- Champion Home Builders -- Titan Manufacturing Plant Fire, Sangerfield, NY, Jan., 1999
- Maersk Tokyo Container Ship Explosion and Fire (near Dubai), Feb., 1999
- UICC's semiconductor fabrication plant fire in Hsinchu, Taiwan, October, 1997
- Mystic Bulk Carriers Gasoline Tank Truck Fire Investigation, Yonkers, NY, Oct., 1997
- Amigo Bag and Linen Recycling Plant Fire, Richmond, CA, September, 1997
- ACME Super Market Fire Investigation, Klugetown Shopping Center, Pompton Lakes, NY, October, 1997
- Oak Tree Apartment Fire Investigation, Seattle, WA, September, 1997
- International Paper Co. Riegelwood, NC Plant Explosion - Fire Investigation, May, 1997
- Lockheed Hangar Fire Investigation, Mountain View, CA, August, 1996
- Jackson Avenue Warehouse Fire Investigation, Edison, NJ, September, 1995
- Paliser Furniture Manufacturing Plant Fire, Airdrie, Alberta (Canada), September, 1990

Special Interest Large Loss Investigations

Fatal Dust Explosions in Polymer Processing Plants

The U.S. Chemical Safety Board [www.csb.gov] has made note of these three large-loss explosion and fire incidents all of which have been linked to the ignition of combustible dust:

- MBA Polymers Plant Explosion & Fire Investigation, Richmond, CA, October, 2000 (one fatality, plant destroyed)
- Rouse Polymeric Plant Explosion & Fire Investigation, Vicksburg, MS, May, 2002; five fatalities, multiple injuries – reported as the single largest industrial loss in Mississippi's history (multiple fatalities and injuries)
- West Pharmaceutical Plant Explosion and Fire Investigation, Kinston, NC, Jan. 2003; (multiple fatalities and injuries – reported loss over \$150 million)

Other Dust Explosion incident investigations

- Woolstock Grain Elevator Explosion (severe), Sept. 2002, Woolstock, IA
- Malden Mills Explosion & Fire Investigation, Methuen, MA, December, 1995 (largest loss in MA history - total losses/claims reportedly exceeded \$1.5 Billion)

Fire incidents involving historic buildings

- Horner Novelty Company fire, Jeffersonville, Indiana²
- The Historic Pajaro Wall Street Inn Residential Hotel (ca. 1912), Watsonville, CA
- The Historic Malden Mills (ca. 1906) fire, Methuen/Lawrence, MA, December, 1995
- The Old Butternut Coffee Building “9ines” Loft Renovation Project, Omaha, NE

Honors

Outstanding Technical Paper - 1986 Bechtel Merit Award Recipient
“Module Ventilation Rates Quantified,” published in the trade journal,
Oil and Gas Journal, December 23, 1985.

Note: The calculation procedure developed by Dr. Gale was adopted by several code & standard writing bodies including the American Petroleum Institute (API RP-500), the National Fire Protection Association (NFPA 30), the Institute of Petroleum (U.K.), and Canadian authorities.

Honors List - 7th Edition of the Piping Handbook, McGraw Hill Publishing, 1999, for contributions made to Chapter C10, "Hazardous Piping Systems"

Website www.FireExperts.com



Fee Schedule and Testimony History on Request

² Fire destroyed an entire city block of ca. 1880 buildings in the historic downtown district in January, 2004