



**Causey Engineering
LLC**

Gerald J. Hietpas, PE
President

Causey Engineering LLC

"Forensic and Investigative Services"

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Curriculum Vitae

BARBARA A. TRENARY, CIH, BS



Ms. Trenary is an Associate of Causey Engineering, LLC. Causey Engineering has for over 30 years been providing forensic and investigative engineering services and litigation support, specializing in industrial and construction engineering, operations, safety, patents, and regulations. Ms. Trenary has particular experience in the fields of comprehensive Industrial Hygiene and Safety, in the industrial, commercial and public sectors.

Education:

Colorado State University

BS, Industrial Hygiene/Chemistry, 1979
with Honors

University of Washington

Certificate: Management, Business Skills
for Software Professionals, 1999

Certificate: Finance for Non-Financial
Managers, 1999

AICHE Professional Development

Professional Training in Health,
Environmental and Safety Topics

Continuing Education

Technical Training in Risk Assessment,
Hazardous Waste, Asbestos, and other
Biological, Chemical, and Forensic Topics

Registrations:

CIH – Certificate in Industrial Hygiene # 3678

Experience Summary:

Certified Industrial Hygienist and Operations Manager with over 30 years of experience in the fields of comprehensive industrial hygiene, litigation support, hazardous materials, ambient and indoor air monitoring, environmental remediation, operations management, training, and program development and evaluation. Accomplishments include successful operations and projects, project turnarounds, creating and managing health and safety policies and procedures at four Fortune 200 companies and at governmental and municipal project sites.

Site experience includes occupational environments, incl. steel and oil refining, chemical manufacturing, wastewater treatment plants, primary and secondary smelters, nuclear waste, and wood. Have worked in commercial, residential and occupational settings, both remedial and green construction and construction defects. Department of Defense and

Department of Energy project experience base includes VOCs, particles, chemical and biological agent exposure assessments to workers and the public; human health risk assessment; training; nuclear decontamination and decommissioning; and RI/FS/RD/RA.

Technical experience includes comprehensive IH; assessments of indoor air quality and microbiological contamination, remedial design; health and safety planning for operations and hazardous materials projects; assessment of biological weapons and chemical agents and design of engineering controls; mold and IAQ assessments and remedial design; emergency response plans; training design and conduct; and programmatic and compliance audits.

Employment History:

Causey Engineering LLC, Austin, TX 2010 to Present

Forensic Expert: Provide Forensic and investigative work related to Industrial Hygiene and Occupational Safety. Causey Engineering provides engineering analysis, governmental regulation investigation and research, accident reconstruction and litigation support primarily related to oil and gas, refineries, chemical and petrochem plants, central power stations, electronic manufacturing, food processing, pulp and paper, lumber manufacturing, industrial and residential construction, and warehousing.

Trenary & Associates, LLC, Seahurst, WA Established March, 2000 to Present

Principal: Consulting Firm

Nuclear Waste Operations, American Ecology, Boise, ID 2000 – 01

President: Nuclear and Hazardous Waste Disposal Firm

Prezant Associates Inc., Seattle, WA 1998 – 00

Chief Operating Officer: Industrial Hygiene Firm

Fluor Daniel Environmental, Corporate Headquarters, Irvine, CA 1995 – 98

Director, Health & Safety and Project Manager: International Construction Firm

Dow Environmental, Bellevue, WA 1991 –95

Director, NW Operations: Environmental Remediation Firm

MK Environmental (Washington Group Int'l), Bellevue WA and Boise ID 1985- 91

Sr. Industrial Hygienist, Manager, Environmental Health Services: Environmental Remediation and International Construction Firm

Hewlett-Packard Corporation, Boise, ID 1981-84

Health and Safety Manager: Printed Circuit Board and Printer Divisions

IBM, Longmont, CO 1978-79

Industrial Hygienist: Electronics Manufacturer

Selected Project Experience:

- Performed over 1200 indoor air quality assessments for commercial, multi-family, developer and residential parties. Worked with building envelope engineers and architects to investigate cause and origin of mold, bacteria and volatile organic compounds (VOCs). Design and implement sampling strategies and prepare remediation protocol and reports.
- Performed over 600 investigations of wood rot, post-fire conditions, identification of malodors, sewerage backup, and meth labs, and developed remediation plan.
- Performed site boundary and personal air sampling for hexavalent chromium at CCA (copper chromium arsenate) wood treatment facilities across the United States. Conducted filter stability studies and developed exposure minimization techniques.
- Provided litigation support and acted as consulting and/or testifying expert for over sixty lawsuits or legal disputes regarding construction defects for chemical constituents or water/sewerage intrusion that resulted in indoor biological growth and alleged health symptoms, exposures to VOCs or asbestos, and other "toxic torts".
- Performed airborne area and personnel particle measurement (total and PM10 and PM2.5) and morphological assessment for milling processes at a drywall manufacturing plant with adverse working conditions. Developed control plan.
- Project Manager and Health and Safety Manager for a Radium remedial construction site, a radioactive waste soil solidification/stabilization project at a Superfund site. Managed dust control within regulatory compliance. Performed ambient air monitoring for TSP, PM10 and PM2.5, total metals, and radioactivity. Taught construction safety.
- Assessed airborne emissions (TSP and PM10 for Pb, Cd, and As) for slag piles and idled equipment at a copper smelter.
- Authored a comprehensive Exposure Assessment Strategy for Tank Farm vapor exposures at a Nuclear Reservation. Audited compliance and developed corrections.
- Performed industrial hygiene assessments and IH monitoring at aircraft, lift manufacturing, timber processing and treatment, electronics manufacturing, and biotechnical plants.
- Established Health and Safety programs, policies and procedures at four Fortune 200 companies. Trained personnel and audited program effectiveness.
- Created HAZWOPER course material, reference library, PPE bank and taught using hands-on exercises.
- Performed analysis and assessment of recommended corrective actions relative to health and safety at the Hanford Tank Farm.
- Project Manager for testing of field detection instruments for biological agents.
- Investigated a potential anthrax contamination mail room for the US Postal Service.
- Project oversight for decon and demolition of internally contaminated ventilation ducts
- Performed probabilistic human health risk assessment for exposure scenarios to sarin, VX, mustard, solvents, metals and pesticides. Work published in the Journal of Risk Analysis.
- Performed Health & Safety audit of programs, procedures, accident experience, medical monitoring, exposure records, ergonomic programs, and training compliance, and prescribed corrective actions.
- Consultant for the successful development of an ergonomics tool for an aircraft facility.

- Built and managed MK's asbestos group. Managed over 60 design and abatement projects without an OSHA violation.
- Managed an AIHA and NVLAP accredited lab for asbestos and metals.
- Provided health and safety technical expertise over 15 years for hazardous waste remediation projects ranging from RI/FS/RAs, facility D&D, underground tank removal, bioremediation, groundwater contamination, equipment decon, clearing and grubbing, Contaminants included lead and other heavy metals, petroleum hydrocarbons, PCBs, pesticides, poison gases, VOCs and SVOCs, explosives, and chemical and biological agents.
- Health and Safety Manager for the construction and operation of a groundwater treatment plant
- Project Manager for metals recycling facility for a Landfill Superfund site
- Health and Safety Manager for installation and operation of a soil vapor extraction system.
- Health and Safety manager for a drilling project to install 38 seven foot diameter caissons for soil vapor extraction system.
- Health and Safety Consultant over a three year period for a steel and shipbuilding company. Issues included confined space entry, asbestos, PCBs, bilge contaminants, solvent exposures, training, and accident investigation.
- Health Risk Assessor at a site with buried drums and organic soil contamination. Modeled soil, groundwater, surface water, sediment contamination to determine relationship to toxicity values and exposure assessment for industrial and residential receptors.
- Project Manager, decommissioning of tanks storing 1,2-dichloropropene and chloropicrin. Work was done in Level A and B PPE, confined space entry procedures, and an absorption system to treat vapors from tank cleanout and transport tanker filling. Wastes were manifested and shipped interstate for incineration.
- Project Manager for bioremediation of petroleum hydrocarbon contaminated soil.
- Project Manager for a series of projects at a State Federal Facilities Unit involving a secondary aluminum smelter (recycling) site with surface water, sediment, soil and surficial heavy metal and PCB contamination issues.
- Project Manager for gas manufacturing, included various RCRA compliance issues, water discharge quality to POTW and storm sewers.
- Health and Safety Manager for Department of Defense project, authored HASP and supported investigation of soil and groundwater contamination at the explosives washout lagoons. Contaminants included TNT, DNT, HMX, RDX and Octagen.
- Project Manager, for RCRA Audit and Corrective Measures. An audit of pesticides formulation facility included soil, groundwater, site operations and waste handling. Prepared work plan to remove an underground bulk DDT storage vault.
- Project Manager for a multiple site project to qualify State subcontractors for abatement oversight at over 60 sites including prisons, hospitals, and schools.
- Health and Safety Manager, authorized HASP and provided on-site support at 12 SWMUs at a primary explosives manufacturing plant. Contaminants included lead azide, mercury fulminate and lead styphnate.
- Health and Safety Manager, for a former train switching yard. Issues included PCB contamination, widely-dispersed asbestos, surficial and subsurface diesel spills, buried storage tank cars, and debris.
- Health and Safety Manager, for characterization and decontamination of a formulation facility of banned pesticides.

- Health and Safety Manager for remediation of a large release at a storage tank farm. Developed a fuel oil collection system. Soils had imported uranium mill tailings fill, and low levels of radioactivity.
- Health and Safety Manager for decontamination and demolition of a porcelain manufacturing facility having beryllium. Ambient air monitoring for TSP, PM10, PM2.5, and Be.

Professional Memberships:

AIHA - American Industrial Hygiene Association

ABIH - American Board of Industrial Hygiene

AmIAQ - American Indoor Air Quality Council

Presentations, Publications:

"Assessing Vulnerable Facilities for the presence of *Bacillus anthracis* (Anthrax), Air and Surface Sampling Guidance" University of Minneapolis School of Public Health

Wood Rot – Implications for Assessment and Remediation Strategies, 2007

VOCs – Implications and Strategies for Assessment, 2008

Water Intrusion and Mold Claims in Washington- Sterling Seminars (CLE) 2002, 2004

Liquid Nitrogen Safety, 5 classes – ELDEC Corporation

Plating Chemicals -- Hazards and Environmental Issues – Seattle Plating Association

Chem/Bio Threats – What You Need to Know – Evergreen Safety Council

Type A Threat List Biological Agents – U of W MS-IH Program

What Realtors need to Know About Mold (6) – John L. Scott Annual Convention, Windemere Premier Properties, Hallmark Realty

Mold – the Issue du Jour – Sidley Austin Brown

Elements of Personal Injury in Mold Claims – Short Cressman Burgess

What Home Inspectors Need to Know about Mold – World Inspection Network

What Underwriters Need to Know about Mold – Pemco Insurance Co.

What Appraisers Need to Know Mold – Seattle Chapter, R.E. Appraisers

Sound Mold Remediation Practices – Pro-Tech Construction

Sound Mold Remediation Practices – Pablano Carpet Cleaners

40-hour HAZWOPER, Worker Training (Instructor) – MK Environmental, DEI, FD

8-hour HAZWOPER, Manager & Supervisor Training (Instructor) – MK Environmental, DEI, FD

8-hour Refresher (Instructor) – MK Environmental, DEI, FD

10-hour OSHA Construction Safety (Instructor) – Dow Environmental (DEI)

The Science Behind Environmental Solutions (Faculty) – Executive Enterprises

Applying Science to Environmental Solutions (Faculty) – Executive Enterprises

Remediation Technologies & Pollution Prevention (Faculty) – International Law Institute

Update on RCRA (Speaker) – Air & Waste Mgt. Assoc.

Fundamentals of WA Environmental Law Compliance (Speaker) – Government Institutes, Inc.

Hydrocarbon Contaminated Soils & Ground Water (Speaker) – Assoc. Environmental Health of Soils

Environmental Policy Issues Seminar (Faculty, 2 years) – US EPA Office of Personnel

Site Remediation --Tools, Techniques & Technologies (Faculty). USAF Center for Environmental Excellence

Forensic Experience:

Cases Worked are 60, Depositions Given is 14, Trial Testimony Given is 3.

Use of this CV is prohibited until we have a mutually signed agreement concerning your engagement of Causey Engineering LLC. Pending such, the use of our name is also prohibited, and we reserve the right to accept assignment by others in lieu of your firm.