



**Causey Engineering
LLC**

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President

Causey Engineering LLC

"Forensic and Investigative Services"

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Curriculum Vitae

DWIGHT B. PFENNING, PhDChE, P.E.

Dr. Pfenning is an Associate of Causey Engineering LLC. Causey Engineering has for over 18 years been providing forensic and investigative engineering services and litigation support, specializing in industrial, utility and construction issues.

Dr. Pfenning is a leading expert on process safety, the formation and dispersion of vapor clouds, fires and explosions and the flammability of materials.

As part of his practice, he is the president of and a senior consultant for Energy Analysts, Inc., a safety engineering consulting firm with it's own testing facilities for burners, fire and explosions. His clientele include government agencies, appliance manufacturers, and petrochemical companies. In addition to consultation on safety engineering issues, he provides litigation support. Dr. Pfenning is a NAFE Fellow.

Education:

University of Oklahoma, Norman, OK
Engineering

University of Oklahoma, Norman, OK
Master of Science in Chemical Engineering

University of Oklahoma, Norman, OK
Bachelor of Science in Petroleum Engineering

Registration:

Professional Engineer: Currently registered in Oklahoma

Work Experience:

Causey Engineering LLC, Austin, TX 2003 to Present

Forensic Expert: Provide Forensic and investigative work related to burners, fire, and explosions. 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 construction, and warehousing.

Energy Analysts, Inc., Norman, OK 1990 to Present.

President: Provide safety and forensic engineering consulting, litigation support, and Expert Witnessing.

Jones and Neuse, Inc., Austin, TX 1990-1997.

Senior Consultant: Managed a safety engineering consulting division.

Energy Analysts, Inc., Norman, OK 1977-1990.

Vice-President: Provided safety engineering consulting.

University Engineers, Inc., Norman, OK 1970-1977.

Consulting Engineer: Provided safety engineering consulting and participated in the design, construction and operation of a desalination plant.

Flame Dynamics Laboratory, University of Oklahoma, Norman, OK 1967-1970.

Member of Technical Staff: Performed research on fires and flammability of materials.

Bell Telephone Laboratories, Murray Hill, NJ 1963-1967.

Member of Technical Staff: Worked in a computer programming research department.

United States Air Force 1959-1963.

Commissioned Officer: Did numerical weather prediction.

Professional Memberships:

NSPE National Society of Professional Engineers

AIChE American Institute of Chemical Engineers

ASME American Society of Mechanical Engineers

Sigma XI

API American Petroleum Institute (Committee on Safety and Fire Protection)

ASSE American Society of Safety Engineers

AGA American Gas Association (Supplemental Gas Committee)

NAFE National Academy of Forensic Engineers (Fellow)

Safety and Forensic Experience:

Dr. Pfenning consults with clients on burners, fires, explosions, flammability of materials, fire protection and safety issues. Additionally he is responsible for hazard analysis and risk assessment modeling.

Examples of projects Dr. Pfenning is or has been responsible for include the following:

- Investigated to determine cause and origin of dust explosions and subsequent fires in grain elevators.

- Performed analysis and testing of oil mist fires to determine causes of releases.
- Performed analysis and tested butane cigarette lighters for possible a) ignition source for an apartment fire, b) explosion source for a personal injury, and c) an ignition source for a gasoline fire causing personal injury.
- Served on a subcommittee of Safety and Fire Protection Committee of the American Petroleum Institute to revise API Recommended Practice 2216 - "Ignition of Flammable Vapors from Hot Surfaces".
- Performed tests on water heaters for efficacy of codes for installing the water heaters on a heightened base to prevent ignition potential.
- Conducted tests on residential furnaces for combustion problems leading to production of carbon monoxide.
- Performed actual-size fire tests of agricultural buildings (hog barns and chicken houses) to demonstrate the burning characteristics with and without materials in question as to fuel contribution and fire spread.
- Performed actual-scale tests on storage configuration of cardboard boxed bedroom furniture to determine the fire spread in an arson case in a large hotel in Puerto Rico.
- Performs fire investigation of residences and commercial buildings on behalf of a major furnace manufacturer when their heating equipment is alleged to be the origin of or contributor to a fire (Also, investigates the conditions that exist when carbon monoxide is reported causing injury or death).
- Performed large scale testing of newly developed fire extinguishment agents of large pool (40 feet X 40 feet) fires of liquified petroleum gases.
- Investigated and reconstructed full-scale fire tests of a gasoline spill, dispersion of the vapor, ignition, and fire development involving a lawn mower (performed a three dimensional computer reconstruction of scene to provide insight as to sequence of events leading to the fire).
- Investigated fires as to cause and origin where the fuel source was either natural gas or propane.
- Conducted a study on the cause, origin, and growth of a fire in a large crude oil production facility in Canada. Loss of equipment in the fire caused large revenue losses.
- Designed and executed various fire scenarios for the purpose of gathering data and training the Will Rogers World Airport Fire and Rescue team.
- Performed analysis of the effect of skin lotions on the human body when the person is exposed to fire conditions.
- Manages a complete facility for constructing actual or scale model fire testing. The test facility includes a metal building for conducting small tests and a large scale facility for reconstruction of large actual-size fires, gas releases and explosions.

Publications:

"Radiative Transfer from Laminar Diffusion Flames", Ph.D. dissertation prepared for School of Chemical Engineering and Materials Science, University of Oklahoma, May, 1970.

"A System Approach to LNG Fire Safety", prepared for the 7th International LNG/LPG Conference (Gastech 79); November, 1979 (with H. H. West and L. E. Brown)

"Extinguishment of Gas Well Blowout Fires Using Water Spray", prepared for the American Petroleum Institute Committee on Safety Protection; September, 1984 (with D. Evans)

"Final Report for Blowout Fire Simulation Tests", NBS-GCR-85-484, National Bureau of Standards, Gaithersburg, Maryland, 200899, January 1985.

"Water Sprays Suppress Gas-Well Blowout Fires", prepared for "Oil and Gas Journal", Vol. 83, No. 17; April, 1985 (with D. Evans)

"Structure and Radiation Properties of Large-scale Natural Gas/Air Diffusion Flames", prepared for "Fire and Materials", Vol. 10; 1986 (with J. P. Gore, G. M. Faeth, and D. Evans)

"Radiant Heat Fluxes from 100-200 MW Natural Gas/Air Diffusion Flames", prepared for the Fall Technical meeting, Eastern Section of the Combustion Institute; December, 1986 (with J. P. Gore, G. M. Faeth, and D. Evans)

"Potential Fire Hazards of Lowering Gasoline Volatility", prepared for American Petroleum Institute; January, 1988 (with D. W. Johnson and S. B. Millsap)

"Atmospheric Release Tests of Monomethylamine", prepared for "Journal of Loss Prevention", 3: 77, 1990 (with R.J. Lantzy, R.D. Meyers, and S.B. Millsap).

"Sour-Gas Pipeline Risk-Analysis Procedures Ensure System Safety", prepared for "Oil and Gas Journal", June 3, 1991 (with M. Mannan and C. D. Zinn).

"A Structured Approach for Vapor Dispersion Modeling of Pure and Multicomponent Mixtures", prepared for AIChE Process Plant Safety Symposium, February 18, 1992 (with M. Mannan).

"Effective Process Safety Information Management", prepared for AIChE Process Plant Safety Symposium, February 19, 1992 (with M. Mannan).

"Causes of Pipeline Failure and Prevention and Mitigation Procedures", prepared for the Conference on Pipeline Risk Assessment, Rehabilitation and Repair, Houston, Texas, May 18-21, 1992 (with M. Mannan and H. West).

"LNG Containment Release; Comparison of NFPA-59A and 49-CFR-193", prepared for Petro-Safe '94, Houston, Texas, January 25-27, 1994 (with H. West)

"Fire Modeling for Process Industry Applications", presented for Petro-Safe '95, Houston, Texas, February 1, 1995 (with R.G. Rein)

"Guidelines for Safe Process Operations and Maintenance", Center for Chemical Process Safety of the American Institute of Chemical Engineers, New York, NY, 1995 (with M. Mannan, H. West, and W. Varnado)

"Effects of Heat Flux from Natural Gas Explosions on Personnel Protective Equipment", prepared for American Gas Association 1998 Operations Conference, Seattle, Washington, May 17-19, 1998

Forensic Experience

Cases Worked are over 100, Depositions Given are over 25, Trial Testimony Given over 10.

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.