



Expertise:

- Carbon Monoxide Dispersion
- Code Analysis
- Consumer Products
- Explosion Investigation
- Fire Detection
- Fire Investigation
- Fire Modeling
- Fire Protection Systems
- Fire Reconstruction
- Fire Suppression
- Fire Testing
- Gas Dispersion
- Origin, Cause, and Responsibility
- Self-Heating/Spontaneous Combustion
- Smoke Alarms
- Acoustic Agglomeration/Sonic Deposition
- Sprinkler Systems
- Toxicology
- Accidental/Inadvertent Sprinkler Discharge/Breakage
- Dust Fires/Explosions
- Fire Spread Analysis

Industries:

- Residential
- Commercial
- Industrial

Please contact us to discuss your incident

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Combustion Science & Engineering, Inc.

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Forensic Investigation and Litigation Support

Combustion Science & Engineering, Inc. provides complete support for forensic activities after a loss involving fire, explosion or combustion devices. CSE conducts investigations in accordance with standard accepted methodologies including NFPA 921, the Guide for Fire and Explosion Investigations.

CSE's highly qualified engineers are equipped to handle investigations over a wide range of occupancies and levels of complexity. CSE can determine the origin and cause of a loss, as well as determine the responsibility, and can help formulate comprehensive recommendations and solutions to avoid future losses. CSE engineers are qualified not only to investigate and analyze a fire scene but also to examine consumer products including electrical and gas appliances, automobiles and fire safety devices such as smoke alarms to help determine the origin, cause, and responsibility of the loss after the scene investigation has been completed.

Services

- On-scene documentation
- Evidence storage
- Origin and cause determination
- Evidence collection
- Laboratory examination
- Root cause analysis



Expert Testimony

Forensic loss investigations may result in civil or criminal legal proceedings. CSE's team of forensic engineers is comprised of primarily Masters and Doctorate degreed engineers experienced in navigating the legal environment and providing superior scientific opinions. CSE has built an industry-leading reputation on its ability to provide comprehensive technical opinions and conveying these opinions in a manner that can be easily understood by non-technical individuals such as insurance agents, attorneys, judges, and jurors. From detailed reports to courtroom testimony, CSE can analyze the loss, formulate scientifically-supported opinions, and clearly present those opinions to the court.



Experimental and Examination Facilities

CSE's corporate headquarters in Columbia, Maryland provide an ideal location for its forensic services. Located less than 30 minutes from BWI airport, CSE is easily accessible for hosting evidence inspections and its staff can travel quickly to fire scenes across the country. CSE's facilities include laboratories, experimental, and forensic equipment, which allow for evidence retention and examination as well as standardized and ad-hoc demonstrative testing.

- Secured evidence retention
- Three (3) instrumented calorimeter hoods
- Convective oven
- Bench scale testing
- Full scale testing
- Optical laboratory
- Digital stereo microscope
- Gas chromatography/Mass Spectroscopy (GC-MS)



Computational Facilities

CSE has extensive experience and capabilities for conducting computer modeling of forensic losses. CSE's engineers have performed numerous analyses utilizing state-of-the-art analytical tools including NIST's Fire Dynamics Simulator (FDS). This uniquely positions our staff to have the knowledge necessary to model incidents ranging from small-scale losses to large, multi-building conflagrations. From fire growth and flame spread analyses, to fire protection system analysis, to differential damage determinations, CSE expertly incorporates computer modeling into its analyses to evaluate hypotheses in accordance with NFPA 921. Utilizing multiple computer clusters along with high powered PCs, CSE has the computer capacity to handle even the most complex models.

- Fire Dynamics Simulator (FDS)
- Zone models
- ANSYS
- OpenFOAM
- Consolidated Fire and Smoke Transport (CFAST)
- Egress models
- Computational Fluid Dynamics models
- Extensive CAD and meshing techniques

