



Fact Sheet



Public Affairs Division - Washington DC

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Fire Research Laboratory

The Bureau of Alcohol, Tobacco, Firearms and Explosives' (ATF) Fire Research Laboratory (FRL) opened in 2003. It is the world's only large-scale research laboratory dedicated to fire-scene investigations. FRL scientists utilize its unique structure and sophisticated instrumentation to investigate fire-scene phenomena, conduct forensic fire science and engineering tests, and analyze fire growth and dynamics questions.

The FRL one-of-a kind facility includes state-of-the-art hood and exhaust systems, data acquisition systems and instrumentation that allow researchers to measure data such as the heat release rate, burning rate, heat flux and temperature of burning materials. The facility offers a range of capabilities for fire scientists, from bench-scale fire measurement instruments to a 16,900-square-foot burn room that can accommodate a three-story structure. Its reconfigurable small-scale test areas and bench-scale test equipment allow investigators to predict large-scale fire behavior and perform computer fire modeling for use during fire-scene reconstruction and test validation. The FRL facility provides a controlled environment in which to test fire investigation theories, reconstruct and test key aspects of fire scenarios, and evaluate the potential cause of fires that fire investigators encounter in the field. As the premiere fire science research facility, the FRL serves as a national and international model for forensic fire research and for the development of research protocols. The laboratory is an internationally recognized research and education center for fire cause investigations and fire scene reconstructions. The following are some of the facility features:

- Electrical testing laboratory to perform forensic examinations and facilitate testing and failure analysis of residential and commercial electrical products, components, equipment and wiring.
- State-of-the-art control room; fire safety suppression system; and onsite air and water pollution treatment facilities.
- Classroom and training areas for fire investigation and education programs.
- Support facilities such as shop areas, instrumentation and conditioning rooms and construction/test materials and evidence storage.

- Dedicated space for visiting professors, guest researchers or graduate students who are conducting fire investigation-related research.
- Environmental systems that process and cleanse exhaust air prior to release into the atmosphere.
- Water treatment facilities that eliminate the impact of runoff into the community by collecting and recycling water that is used to suppress test fires.
- Data collection for up to 2,300 instruments in each reconstruction experiment and a sixteen (16) channel digital video recording system that includes high definition video.

The FRL is accredited to conduct investigations related to fire scene reconstructions by the American Society of Crime Lab Directors – Laboratory Accreditation Board (ASCLD/LAB). ASCLD/LAB assesses a laboratory's capability using the International Organization of Standardization (ISO/IEC) 17025 General requirements for the competence of testing and calibration laboratories and the ASCLD/LAB International Supplemental requirements for forensic laboratories.

FRL scientists specialize in fire protection; mechanical, structural, chemical, electrical and materials engineering; physics; and metallurgy. They attend comprehensive fire, safety and emergency response training programs at the Maryland Fire and Rescue Institute (MFRI) that are similar to those required of industrial fire brigades and emergency response teams. The MFRI program is compliant with occupational safety and health regulations and with National Fire Protection Association standards.

FRL scientists are able to test industrial electrical components, determine their potential role in the cause of fires, analyze timelines, assess witness statements and correlate fire scene damage to fuel loads and ventilation that are present at the time of a fire. They work with ATF certified fire investigators, prosecutors and the fire investigation community conducting research and providing case support. FRL Engineers conduct scientific research that validates fire scene indicators and improves fire scene reconstruction and fire evidence analysis. This information is used to develop improved investigative and prosecutorial procedures and advance fire investigation expertise and serves as a central repository for fire investigative research data. The FRL staff also provides specialized training in fire investigation and analysis to the fire science community and is responsible for many highly regarded publications.

The FRL works in close cooperation with the National Institute of Justice to support joint research initiatives that are designed to improve fire scene investigation, reconstruction and analysis.

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