



B170 Forensic Science Supporting Emergency Responders: A Working Model

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After attending this presentation, attendees will learn how a forensic science lab can support an emergency response team.

This presentation will impact the forensic community and/or humanity by demonstrating how a forensic lab can become involved in the efforts to improve homeland security.

Portable analytical instruments are available that can perform rapid on-site detection and identification of hazardous chemicals including chemical warfare agents (CWAs) and toxic industrial chemicals (TICs). The challenge in adapting these technologies to the needs of the emergency responder is to make them into tools that can provide lab quality results in the field while remaining both robust and user-friendly. There are challenges and concerns associated with placing sophisticated instrumentation in the hands of emergency responders who may have a limited scientific background. The operator must ultimately be able to provide dependable and representative data that are used to make immediate decisions in an emergency situation. It is critical that this data is transformed into reliable information due to the potential impact of a false positive or false negative result. Some portable instrumentation manufacturers, recognizing that their users may not have a scientific background, provide a reachback service that provides technical support and assistance in identifying compounds. Is there an alternative approach to taking emergency responders and teaching them to be chemists or taking chemists and teaching them to be emergency responders?

This presentation will describe a partnership between a Forensic Science Laboratory, the Centre of Forensic Sciences (CFS), and a first responder team, the Ontario Provincial Police - Provincial Emergency Response Team (PERT) that utilizes the expertise of both groups. PERT was formed as a result of consequences stemming from the terrorist events of September 11, 2001, with an objective to provide rapid mobilization capability to address acts of terrorism involving a Chemical, Biological, Radiological or Nuclear threat (CBRN).

The challenges, strategies and successes of providing training and support to an emergency response CBRN team consisting of police officers using portable GC-MS and FTIR instruments will be discussed. The CFS provides assistance in a number of areas including sampling, operation, data collection and interpretation, validation, quality assurance, field exercises and evaluation of new instruments and technologies. The benefits to PERT include enhanced credibility for their program by partnering with an ASCLD-LAB accredited forensic science laboratory, training and access to experts in many scientific fields. As a result of this program, the CFS is better prepared to act as a resource in response to a mass disaster through a closer relationship with the emergency response community, and has gained opportunities to work with and evaluate portable instruments. The forensic chemist adds to their skill set by becoming proficient in generating reliable data in the field under non-ideal conditions, skills that may one day be used routinely at crime scenes.

The emergency responder may encounter a wide range of chemical hazards at a scene that need to be identified. There is no one 'black box' instrument that can identify all chemicals; a number of complimentary techniques may be required. This presentation will address the suitability and performance of two portable instruments; the Hapsite® GC-MS (Inficon, East Syracuse, NY) and the HazmatID™ FTIR (Smiths Detection, Danbury, CT), for on-site analysis of TICs, CWAs, explosives, white powders and "clan lab" chemicals by emergency responders.

The use of analytical instrumentation in the emergency response field is largely self-regulated, unlike in traditional forensic, environmental and pharmaceutical labs. This will likely change over time as the operation of, and the results generated by these instruments are subjected to closer scrutiny. The CFS\PERT training and development model has been successful in implementing a quality program that is laboratory-based but flexible enough for the field.

Homeland Security, Emergency Responders, Portable Instruments