



### F18 The Need for Scientifically Educated Persons at the Sharp End of Scene Investigations

*Peter R. De Forest, DCrim\*, Forensic Consultants, PO Box 141, Ardsley, NY 10502; and John J. Lentini, BA, Scientific Fire Analysis, LLC, 88005 Overseas Highway, #10-134, Islamorada, FL 33036*

After attending this presentation, attendees will have an increased appreciation of the importance of a scientific education to underpin training in both fire scene investigation and crime scene investigation. This presentation will examine the changes in fire investigation techniques and hopefully propose a model for inducing similar changes in the investigation of crime scenes that do not involve fires.

This presentation will impact the forensic science community by promoting an understanding of the need for scientific expertise and of fire and crime scenes. This presentation will examine how fire investigation has changed and will propose a model for changing crime scene investigators as well.

Errors that occur with respect to determinations of cause and origin in fire investigations are far more likely to be the result of problems with the scene investigation than with the analysis fire debris samples in the laboratory. This has long been the case. It is attributable to a lack of the necessary scientific expertise at the many fire scenes. Historically, where such expertise was unavailable, the vacuum was filled by non-scientist investigators utilizing naïve “rules of thumb” to substitute for scientific understanding. In an ongoing repeating pattern, more experienced investigators taught these rules to less experienced personnel. These rules of thumb, based on a fundamental misunderstanding of fire behavior, were first debunked in the early 1990s, and by 2000, the document that debunked them, the National Fire Protection Association (NFPA) 921, *Guide for Fire and Explosion Investigations*, can be said to have become “generally accepted.”

Apprentice-style training, described above, is starting to give way to a demand for more scientific training, but we are not there yet. In 2009, NFPA 1033, *Standard for Professional Qualifications for Fire Investigator*, added a list of specific subjects in which a fire investigator was required to have knowledge beyond the high school level. That list was expanded to 16 subjects in 2014.

There is still no requirement for a fire investigator to possess a bachelor’s degree in anything, and that is unlikely to change soon due to cost considerations. It is unlikely that fire investigation agencies can attract talented college graduates for the meager salaries they offer; however, some unqualified investigators have been weeded out through the use of NFPA 1033, where adverse counsel has probed the investigator’s basic knowledge. A fire investigator who does not know the basic units of energy, the basic units of power, or the difference between energy and power is per se unqualified. Rather than challenging investigators’ methodology, these new challenges are of the investigator’s qualifications. If an investigator can be shown in a pre-trial proceeding, either a deposition or a preliminary hearing, to lack the requisite knowledge, the case is likely to be dismissed or to be settled.<sup>1</sup>

There is no such standard to which crime scene investigators are held. While it is fairly obvious that fire, a complex phenomenon involving chemistry and physics, requires at least some scientific knowledge, that is often not the perception in ordinary crime scenes, despite the need to understand basic physics, evidence collection and preservation, and documentation. This presentation will suggest ways to improve the quality of personnel on crime scenes, but there may be the same problems that are experienced in fire investigations (i.e., when a scientist can earn twice as much money in a non-law-enforcement position, that is likely to be the career path he or she chooses).

A person can be taught to perform routine or repetitive tasks, but in order to do those tasks well, it is necessary for the person to understand the scientific principles behind that training. This is difficult to accomplish without a scientific education.

#### Reference(s):

- <sup>1</sup> Lentini, J.J. What fire litigators need to know in 2017. *The SciTech Lawyer*. 2017 13: 4, Summer 2017, 18.

#### Scientific Investigation, Fire Scenes, Crime Scenes