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Fitting a Square Peg Into a Round Hole – Fire Classification Under *NFPA 921*

By: Brian P. Henry and Andrew L. Smith

Introduction

This article will explore an important, but largely ignored, topic in *NFPA 921* – should fire investigator experts classify fires? Does a classification of a fire as incendiary serve a purpose? Why did the NFPA implement authoritative guidelines permitting fire investigators the ability to separate fires into one of four distinctly defined categories? These important questions will be explored in detail below.

To begin, we must first ask ourselves why we investigate fires. As a society, we investigate a fire to find the root cause to prevent the fire from happening again. Public welfare and safety are huge concerns. Fire investigation implicates potential criminal responsibility. Some say the purpose of fire and explosion investigations is much broader than just determining the cause of a fire or explosion incident. The goal of any particular fire investigation is to come to a correct conclusion about the features of a particular fire or explosion incident that resulted in death, injury, damage, or other unwanted outcome.

Brief History of *NFPA 921*

To better understand this largely unnoticed issue, a brief recitation of the history of the fire investigation guidelines is necessary. Beginning in 1992, the National Fire Protection Association (“NFPA”) created *NFPA 921, a Guide for Fire and Explosion Investigations*. *NFPA 921* was initially introduced as a mechanism to cut through guesswork, and provide a framework for evaluating fire science expert opinions. *NFPA 921* is not a code or a standard, but rather a set of authoritative guidelines for fire investigation. *NFPA 921* was developed by the Technical Committee on Fire Investigations composed of attorneys, fire investigators, and experts to assist in improving the fire investigation process and the quality of information on fires resulting from the investigative process.

Although highly criticized over the years, the statistics do not lie. The number of arson fires across the country continue to decrease.

Year	Number of fires	Property loss (\$ millions) (1)
2005	31,500	\$664
2006	31,100	755
2007	32,500	733
2008	30,500	866
2009	26,500	684
2010	27,500	585
2011	26,500	601
2012	26,000	581
2013	22,500	577
2014	19,000	613 ₁

Introduction of Fire Classification Guidelines

According to *NFPA 921*, the proper methodology for a fire or explosion investigation is to first determine and establish the origin(s), then investigate the cause(s), including the circumstances, conditions, or agencies bringing the ignition source, fuel, and oxidant together.² In sum, *NFPA 921* offers guidance on how to determine the origin and cause of a fire. Hence, origin and cause experts are retained to investigate these very issues and prepare written expert reports based on scientific methods to explain where and how fires start. Indeed, in the initial versions, *NFPA 921* made no mention of fire classification or the analysis of human motive and behavior, but that soon changed.

Fire classification was introduced to *NFPA 921* through the inclusion of several paragraphs in Chapter 19. Then, in 2014 Chapter 20 was added and devoted entirely to “Classification of Fire Cause.” The guidelines note the rationale behind adding this new Chapter: “[c]lassification of a fire cause may be used for assignment of responsibility, reporting purposes, or compilation of statistics.”³ Chapter 20 now provides four distinct fire cause classifications: accidental, natural, incendiary, or undetermined.⁴ Of particular importance, especially in the world of insurance claim handling, the term “incendiary” is defined as “a fire that is deliberately set with the intent to cause the fire to occur in an area where the fire should not be.”⁵

¹ *Fire Loss in the United States During 2014* by Hylton J.G. Haynes.

² *NFPA 921* at § 4.1.

³ *Id.*

⁴ *Id.*

⁵ *NFPA 921* at § 3.3.108.

The Difference: Cause vs. Classification

A key distinction of this topic focuses on the difference between determining the *cause* of a fire and the establishing the *classification* of a fire. According to the recently-added Chapter 20, “[d]etermining the cause of a fire and classifying the cause of the fire are *two separate processes that should not be confused* with each other.”⁶ (Emphasis added).

“Cause” is defined as “[t]he circumstances, conditions, or agencies that brought about or resulted in the fire or explosion incident, damage to property resulting from the fire or explosion incident, or bodily injury or loss of life resulting from the fire or explosion incident.”⁷ On the other hand, “classification” is not actually a defined term in the general definitions section of Chapter 3 of *NFPA 921*. Rather, fire classification is mentioned first in Chapter 20, which states “[d]ifferent jurisdictions may have alternative definitions that should be applied as required. The cause of a fire may be classified as accidental, natural, incendiary, or undetermined.”⁸ According to the Meriam-Webster Dictionary, classification is further defined as “the act or process of putting people or things into groups based on ways that they are alike.” This begs the question, why not explicitly define fire classification anywhere in *NFPA 921*?

Up until the introduction of Chapter 20, origin and cause experts were instructed to focus on two key issues: origin and cause. However, with the introduction of Chapter 20, the NFPA provided a framework and began encouraging fire investigators to also determine the classification of fires into one of four defined and limited categories. Nevertheless, we must ask ourselves, is having fire investigators classifying fires a good thing for society or the insurance world? Are fire investigators even adequately qualified to opine as to classification based on the definitions provided? Did the Technical Committee on Fire Investigations foresee all of the issues and problems associated with classifying fires into one of four distinct categories?

Practical Considerations of Fire Classification

The focus of this article is to determine whether a fire investigation expert should be permitted to opine as to whether a fire is incendiary or otherwise classify a fire. Below is a list of the pertinent issues and considerations in evaluating the answer to the fire classification dilemma.

What purpose does fire classification serve? According to the NFPA, classification of fire serves three important purposes: assignment of responsibility, reporting, or compilation of statistics. Society is infatuated with maintaining and reporting statistics. By providing four clean, distinct classification categories, we can now track fire statistics more easily than ever before. However, who is really keeping the statistics on the classification of fires?

⁶ *NFPA 921* at § 20.1.

⁷ *NFPA 921* at § 3.3.25.

⁸ *NFPA 921* at § 20.1.

The reporting argument is better served in the public domain when fire departments, fire marshals, arson task forces, or the Bureau of Alcohol, Tobacco, Firearms and Explosives investigate fires. Statistics can then be used to implement state or local legislation, evaluate public policy, and change regulations of certain types of fires. Indeed, this was exactly the case with a sudden increase in residential dryer fires several years ago based upon public agency reports. In 2006-2010, there were 16,950 home structure fires per year reported to fire departments where clothes dryers or washing machines were the equipment involved in ignition, with associated annual losses of 34 civilian deaths, 430 civilian injuries, and \$209 million in direct property damage.⁹ Dryers alone accounted for 92% of these fires and 87% of the reported deaths.¹⁰ The leading factor reported as contributing to ignition was failure to clean.¹¹ These estimates were based on data from the U.S. Fire Administration's National Fire Incident Reporting System and the National Fire Protection Association's annual fire department experience survey.¹²

But what about the private domain? What about private origin and cause investigators retained by insurance carriers? No one in the private side of fire investigations keeps track or compiles classification statistics anywhere in the country. So how can we justify permitting private fire investigators the ability to classify fires?

Classification does assign responsibility. Was the fire accidental or was another human involved in intentionally setting the fire? An incendiary classification implicates potential reporting issues and criminal exposure for crimes such as arson. However, even without a classification, depending upon the origin, cause, and evidence obtained at the scene or through witness interviews, a prosecutor, insurance carrier, or other individual or entity can still potentially determine whether a fire was intentionally set. A classification of incendiarism is not somehow the gold standard or rubber stamp. Irrespective of fire classification, insurance claim coverage decisions and arson prosecution decisions can still be reached based on the overall available evidence.

Is fire classification truly necessary to further the science of fire investigation? According to the Merriam-Webster Dictionary, "science" is defined as "knowledge about or study of the natural world based on facts learned through experiments and observation." Some might say fire classification is not a true science, but instead should be characterized as deductive reasoning or "top-down" logic. Fire investigation focuses on the forensic analysis of a fire, not criminality. Fire investigation employs the methodology of the scientific method. The determinations of origin and cause also must be based on the scientific method pursuant to *NFPA 921*.

On the other hand, fire classification is instead a common sense observational assessment of a fire. By straying away from the pure scientific method, the fire

⁹ *Home Fires Involving Clothes Dryers or Washing Machines*, National Fire Protection Association Fire Analysis and Research Division (2012).

¹⁰ *Id.*

¹¹ *Id.*

¹² *Id.*

investigation could subject itself to risks associated with inaccuracy and the inability to reliably and objectively test findings. Interestingly, unlike the chapters of *NFPA 921* concerning origin and cause, Chapter 20 concerning fire classification makes no reference to the scientific method. Arguably, the classification of a fire fails to satisfy the requirements of a forensic discipline.

Does a fire classification pass the stringent requirements of expert testimony under *Daubert*? In *Daubert v. Merrell Dow Pharmaceuticals*, the U.S. Supreme Court held a trial judge has a duty to closely scrutinize evidence to eliminate so-called “junk science.”¹³ State courts throughout the country have also adopted similar standards for expert testimony. Courts must also examine proffered expert witness testimony under Rule 702 of the Federal Rules of Evidence:

A witness who is qualified as an expert by knowledge, skill, experience, training, or education may testify in the form of an opinion or otherwise if:

- (a) the expert’s scientific, technical, or other specialized knowledge will help the trier of fact to understand the evidence or to determine a fact in issue;
- (b) the testimony is based on sufficient facts or data;
- (c) the testimony is the product of reliable principles and methods; and
- (d) the expert has reliably applied the principles and methods to the facts of the case.

Under this standard, is testimony about fire classification given by an origin and cause expert tantamount to the same “junk science” we now seek to exclude at trial? Many factors in Rule 702 must also be examined in determining the admissibility of expert testimony, as noted below.

How does a fire classification assist a jury? Typically, the jury is responsible for determining the “ultimate issues.” Certainly, an expert may testify as to facts related to the evidence uncovered at the scene or the fire or tests performed related to samples of evidence. But ultimately it is the jury’s responsibility to reach the determination of whether or not a fire was intentionally set. For instance, most courts prohibit an expert from providing testimony about the *mens rea*, or state of mind, of a criminal defendant. How is an expert testifying a fire was intentionally set by a human any different? Such testimony takes away from the jury’s ability to reach conclusions based on factual information provided throughout trial.

¹³ 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed. 2d 469 (1993).

Many courts have held psychological opinion testimony about intent is not helpful to determine whether the actor was capable of forming specific intent.

In our view, psychiatric opinion testimony is not helpful on whether a person capable of forming a specific intent did in fact formulate that intent. Though a subjective state of mind may at times be difficult to determine, there is no mystery to *mens rea*, the latinism notwithstanding. Jurors in their everyday lives constantly make judgments on whether the conduct of others was intentional or accidental, premeditated or not. Thus, to do something intentionally is to do it with the purpose of accomplishing that something. To set a person on fire with the purpose of ending that person's life is to torch with intent to kill. The psychiatrist may look at what the defendant said and did to give an opinion whether the torching was done with intent to kill or to hurt, but the factfinder can do this too; indeed, it is the factfinder's job to do it, not the expert's as a thirteenth juror.¹⁴

Is testimony regarding fire classification unfairly prejudicial? Under Rule 403 of the Federal Rules of Evidence, the court may exclude relevant evidence if its probative value is substantially outweighed by a danger such as unfair prejudice, confusing the issues, or misleading the jury. This analysis goes hand-in-hand with whether fire classification is helpful to the jury. Expert testimony is truly a weapon. Jurors give significant weight to expert opinions, and experts can even be viewed as a “thirteenth juror.” Is fire classification testimony truly helpful? Are the opinions supported by the evidence? Is the fire investigator qualified to give the specific proffered testimony?

Is an origin and cause expert qualified to opine as to classification of a fire? An incendiary classification requires a determination the fire: (1) was deliberately set; (2) with the intent to cause the fire to occur; (3) in an area where the fire should not be.¹⁵ How is an origin and cause expert qualified to opine as to human intent? Human intent requires an assessment of psychology, psychiatry, motivation, socioeconomics, and social sciences, with which a typical fire investigator has no experience. Most origin and cause experts have education in engineering, fire science, or rely on prior working experience as a firefighter, fire marshal, ATF agent, detective, or similar role. They simply do not have the education necessary to evaluate human behavior or the thoughts a person goes through in deciding to intentionally start a fire.

Moreover, *NFPA 1033: Standard for Professional Qualifications for Fire Investigators*, a national standard outlining what qualifications all fire investigators must have, does not require any training or education in the subjects a fire investigator would rely upon to assess intent. One could make a strong argument fire investigators are

¹⁴ *State v. Provost*, 490 N.W.2d 93, 101-102 (Minn. 1992).

¹⁵ *NFPA 921* at § 3.3.108.

unqualified to assess psychological factors, cognitive comprehension, group dynamics, affluence, education, gender, or employment. Nonetheless, Chapter 11 instructs fire investigators to assess these very topics, known as “fire-related human behavior.”

More complex fire investigations may also require evaluation of other factors outside the expertise or knowledge of a fire investigator. The motive element in the “arson tetrahedron” can be quite a quagmire. Insurers and Special Investigative Units must frequently examine financial motive through researching bank accounts, credit cards, retirement accounts, utility bills, mortgage statements, tax records, proof of income, liens, and all kinds of other personal and business records. It may seem axiomatic, but origin and cause experts are not accountants or forensic economists. Likewise, an assessment of motive may be based on domestic issues, thrill-seeking, revenge, vandalism, sexual gratification or perversion, or any array of other factors one might think of, which are far outside the scope of a forensic examination of a fire scene. Interestingly, however, *NFPA 921* also specifically addresses these motive elements, although not in the origin, cause, or classification chapters.¹⁶

Whether a fire is accidental or incendiary requires some form of evaluation of human intent and reasoning. By way of example, consider a fire involving a mother who leaves French fries cooking in vegetable oil on an electric stovetop unattended. How would the fire investigator assess the mother’s intent to leave the stove unattended without evidence of an accelerant or other indicia of a quintessential incendiary fire? Based on the definitions of the four classifications provided in *NFPA 921*, it is impossible to separate forensic analysis of the fire scene and the more subjective and amorphous analysis of human behavior and intent. A fire investigator is certainly qualified to opine as to the former, but how can we justify giving fire investigators free rein to give expert testimony as to the later?

Does *NFPA 921* implicate the assessment of human intervention in areas besides fire classification? The 2014 version of *NFPA 921* is riddled with provisions implicating the assessment of human behavior and human intervention during the course of a fire investigation. For example:

11.1 Introduction. The initiation, development, and consequences of many fires and explosions are either directly or indirectly related to the actions and omissions of people associated with the incident scene. As such, *the analyses of fire-related human behavior will often be an integral part of the investigation.* (Emphasis added).

Chapter 21 specifically references a fire investigator’s analysis of “the degree to which *human fault* contributed to any one or more of the causal issues.”¹⁷ (Emphasis added). “This feature deals with the *human factor* in the cause or spread of fire or in

¹⁶ *NFPA 921* at § 24.4.9.

¹⁷ *NFPA 921* at § 21.1.1.

bodily injury and loss of life. It encompasses acts and omissions that contribute to a loss (responsibility), such as incendiarism and negligence.”¹⁸ (Emphasis added).

The guidelines go on to state:

21.2 The Cause of the Fire or Explosion. The determination of the cause of a fire requires the identification of those circumstances and factors that were necessary for the fire to have occurred. Those circumstances and factors include, but are not limited to, the device or equipment involved in the ignition, the presence of a competent ignition source, the type and form of the material first ignited, and the *circumstances or human actions* that allowed the factors to come together to allow the fire to occur. *An individual investigator may not have responsibility for, or be required to address, all of these issues.* (Emphasis added).

21.5.1 Nature of Responsibility. The nature of responsibility in a fire or explosion incident may be in the form of an act or omission. *** *Responsibility may be attributed to a fire or explosion event notwithstanding the classification of the fire cause* ***. Responsibility may be attributed to the *accountable person* or other entity because of negligence, reckless conduct, product liability, arson, violations of codes or standards, or other means. (Emphasis added).

21.5.3 Assessing Responsibility. While it is frequently a court’s role to affix a final finding of responsibility and to assign liability, remedial measures, compensation, or punishment, *it is the role of the person who performs the analysis to identify responsibility so that fire safety, code enforcement, or litigation processes can be undertaken.* (Emphasis added).

These frequent references to human behavior, accountability, and responsibility imply further support to fire investigators to classify fires. Some experts may state they do not classify fires – they merely “assign responsibility.” However, this is nothing more than semantics or academic distinctions. By evaluating fault or responsibility for a fire,

¹⁸ *Id.*

an expert must by definition classify a fire and determine whether the fire was intentionally set. Further, if an origin and cause report states a fire is incendiary, the expert is by definition classifying the fire based of the four term of art classifications listed in *NFPA 921*.

Is there a problem with the fire classification categories? *NFPA 921* provides four distinct categories of classification. But not all fires can be classified under these categories. For example, how do you classify a campfire? We cannot say it is unclassifiable. If so, what would be the point of creating the defined categories in the first place? Not every fire fits neatly into one of the four classifications. Thus, we are left with incomplete guidelines for helping origin and cause investigators undertake the tasks which *NFPA 921* requires of them.

What about the void between arson in the criminal context and the civil context? Arson is a crime frequently defined by statute, and varying from jurisdiction to jurisdiction. Depending upon the statute, arson may require different a different mental state or other elements.

For instance, the Ohio arson statute provides as follows: “[n]o person, by means of fire or explosion, shall *knowingly* *** [c]ause, or create a substantial risk of, physical harm to any property of another without the other person's consent.”¹⁹ (Emphasis added). Further, “[a] person acts knowingly, regardless of purpose, when the person is aware that the person’s conduct will probably cause a certain result or will probably be of a certain nature.”²⁰ On the other hand, in Florida, “[a]ny person who *willfully and unlawfully* *** by fire or explosion, damages or causes to be damaged *** [a]ny dwelling, whether occupied or not, or its contents” is guilty of arson.²¹ (Emphases added). The term “willfully” is not statutorily defined in Florida, but is generally held to mean “intentionally and purposely.”²² However, again, is a fire investigator qualified to opine as to the specific elements or arson, including the criminal defendant’s intent to “knowingly” or “willfully and unlawfully” start a fire?

Conversely, in the civil context we mostly focus on the “intentional acts” exclusion to an insurance policy, which typically requires the insured to take part in intentional or criminal activity to justify denial of an insurance claim. A common intentional acts exclusion reads as follows: “[w]e do not cover any loss caused intentionally by a person named in the Coverage Summary.” The elements and requirements for the arson defense in a bad faith case are completely different from prosecuting an arson case in the criminal context. What happens if an insured is found not guilty of arson in a specific jurisdiction, but the insured’s conduct could satisfy the elements of arson in another state? Should the fire still be classified as incendiary? Should the claim be denied based on the intentional act exclusion?

¹⁹ R.C. § 2909.03(A)(1).

²⁰ R.C. § 2901.22(B).

²¹ Florida Statute § 806.01(a)(1).

²² *State v. Dorsett*, 158 So. 3d 557, 562 (Fla. 2015).

In addition, Chapter 20 provides “[d]ifferent jurisdictions may have alternative definitions that should be applied as required.” What was intended by this language? Does this render the four classifications superfluous depending upon the state’s criminal code and insurance claim regulations and administrative code?

State of Minnesota v. Steven Edwards – A sign of the Future?

The case of *State of Minnesota v. Steven Edwards*, is an interesting criminal case from 2016 involving a charge of arson, stemming from a single-family home fire.²³ This is one of the few cases in the country addressing the above implications and determination of an incendiary fire by an origin and cause expert. In the case, Denise Bryn, a fire investigator for the Minnesota Fire Department, concluded the fire originated in the kitchen, but she classified the fire as undetermined. To the contrary, the homeowner’s insurance carrier Country Financial Claims retained certified fire investigator Mark Bishop, who opined the fire was “the result of a deliberate incendiary act by a person or persons unknown.” He further concluded the fire started above the electric range in the kitchen using available combustibles in the form of letters and bills, which had originally been on top of the refrigerator.

Mr. Edwards filed a motion to exclude the origin and cause report and expert testimony of Mr. Bishop, relying on the following arguments:

1. His opinions were not based on scientifically reliable methodology, the requirement for any forensic expert opinion;
2. The Minnesota Supreme Court has repeatedly recognized expert testimony concerning *mens rea* intent is not helpful to the factfinder and the expert simply acts as a “thirteenth juror;” and
3. His opinions were based on assumptions and common inferences rather than scientific methodology, and have little probative value with substantial potential for prejudice since jurors give significant weight to expert testimony.

Just recently, on March 29, 2016, the court released an order granting the motion to exclude Mr. Bishop’s expert testimony, reasoning his testimony about the incendiary classification of the fire and opinions regarding human intervention with the first fuel would not assist the trier of fact and lacked foundational reliability.

First, the court reasoned “the jury is equally capable of making these common sense observations of the natural world and human behavior” as to whether “the fuel met the burner by human hands and thus the fire was deliberately set.”²⁴ Next, the court concluded the fire classification was not based on Mr. Bishop’s specialized knowledge. “Instead, he used a process of elimination, of which any lay juror is capable, to imagine

²³ Hennepin County Circuit Court, State of Minnesota, Case No. 27-CR-15-6336.

²⁴ March 29, 2016 Court Order, p. 4.

the various ways the fire could have started accidentally, and then rule out each of those possible scenarios.”²⁵

Although *Edwards* is a criminal arson case, the decision on the motion to exclude the State’s origin and cause expert’s testimony could possibly provide a roadmap for how future courts will rule on this issue across the country in the civil context as well. Be on the lookout for more and more *Daubert* challenges and motions *in limine* seeking to exclude fire classification expert opinions as this issue gains recognition in both arson and bad faith cases alike.

Conclusion

In sum, permitting origin and cause experts the ability to classify a fire as accidental, natural, incendiary, or undetermined has significant ramifications in any fire investigation. These issues go far beyond potential criminal exposure for arson as in the *Edwards* case. Arguments can be made for and against inclusion of fire classification in *NFPA 921*, as detailed above. Because of the implications for assessment of human behavior throughout *NFPA 921*, if you are of the opinion fire classification is outside the purview of an origin and cause expert, as an industry we may need to reconsider not only eliminating Chapter 20, but also overhauling the remainder of *NFPA 921*.

So what side of the fence are you on? What do you believe is the true scope and province of a fire investigator’s expertise and purpose in evaluating a fire scene? This topic is sure to “heat up” in the future as fire investigators continue to expand their purported “expert” knowledge in addressing incendiary fire classifications. Will courts follow *Edwards* lead and exclude fire classification testimony? Only time will tell.



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²⁵ *Id.* at p. 6.