Tedford & Henry
FIRE SCIENCE LITIGATION℠

Fire Litigation Perspectives

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What Did She Say?

Remarkably, the vocabulary of an average person is between 5,000 and 6,000 words. To help those of you involved in fire investigations and/or litigation increase your vocabulary, here are a few common terms and their definitions:

Area of Origin:
The room or area where a fire begins.

Point of Origin:
The exact physical location where a heat source and a fuel come in contact with each other and a fire begins.

Ignition Temperature:
The minimum temperature a substance should attain in order to ignite under specific test conditions.

Scientific Method:
The systematic pursuit of knowledge involving the recognition and formulation of a problem, the collection of data through observation and experiment, and the formulation and testing of a hypothesis.

Daubert:
A reference to the United States Supreme Court Case of *Daubert v. Merrill Dow Pharmaceuticals,* 509 U.S. 579 (1993), in which the Court held that individuals offered as experts must be qualified to offer their opinions, and that the opinions must be reliable with reliability being premised upon the expert utilizing an accepted methodology in arriving at the opinions.

Welcome to FIRE LITIGATION PERSPECTIVES

This quarterly publication is brought to you by Tedford & Henry, LLP, a singular law firm devoted to fire science litigation. Our readership is growing, as manufacturers and business colleagues find it a resource for fire science issues as well as interesting developments in the law. To subscribe:
www.tedfordhenry.com/newsletter

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Setting the Record Straight:
Fire Science Litigation News

This summer there were a couple of fascinating cases in Kansas, related to fire. The findings go to issues of the reliability of expert testimony. Read on.

McCoy v. Whirlpool Corp.

379 F. Supp. 2d 1187 (D. Kan. 2005): In July, 2005 the United States District Court for the District of Kansas ruled on the admissibility of expert testimony in a fire science case, as well as on the obligation of a plaintiff to prove what is probable, not what is merely possible.

In *McCoy*, homeowners brought a products liability action against the manufacturer of a dishwasher alleged to have caused a house fire. The plaintiffs' experts claimed that the fire originated in the vicinity of the Whirlpool dishwasher, and that no potential cause of the fire other than the dishwasher could be identified in the area of origin. The plaintiffs' experts further opined that a defective wiring condition within the dishwasher gave rise to excessive resistance heating which was capable of causing a fire.

Challenging that the plaintiff's experts' opinions were reliable and that the element of causation could be satisfied by the plaintiffs, the defendants moved to set aside the jury verdict entered in favor of the plaintiffs, and also moved for judgment as a matter of law.

First, the court considered the defendant's challenge to the reliability of the opinions of the plaintiff's experts. The undisputed evidence in the case was that micro-switches within the immediate vicinity of the alleged ignition point would function as thermal fuses when temperatures reached 320°F. No expert could opine how excessive resistance heating in the product in question could raise the temperature to 752°F—the temperature needed to ignite surrounding combustibles. The court considered this an impermissible "analytical gap" between the theory offered and the conclusions, and it disallowed the testimony.

Second, the court held that even if the methodology employed by the plaintiff's expert was reliable, it still failed to establish the requisite causation between the alleged defect and the fire itself. The court likened the plaintiff's causation theory to a *res ipsa loquitur* argument, i.e. absent a defect in the dishwasher, the fire would not have occurred. Contrary to the *Workman* decision discussed below, the court found this *res ipsa* argument "mere speculation" and an insufficient basis for a reasonable jury to find in the plaintiff's favor. Accordingly, the court dismissed the plaintiff's case, finding in favor of the defendants.

Workman v. AB Electrolux Corp.

2005 WL 1896246 (D.Kan.): In August, 2005, the United States District Court for the District of Kansas ruled on three separate, potentially dispositive motions in a fire science case.

In *Workman*, the plaintiff alleged that a freezer located in his garage had malfunctioned and caused a fire. The plaintiff's expert testified that the fire resulted from an internal malfunction within the freezer involving the overheating of the fan motor and a related internal short circuit condition. The plaintiff's expert cited "melted copper splatter" on the inside surface of the freezer as evidence of an internal source of heat and ignition.

These conclusions were contrary to the defendant's belief that the fire started within a truck parked in the garage.

First, the court denied the defendant's Motion to Dismiss; said motion being premised upon a spoliation claim. The court found that the plaintiff had spoliated the evidence by disposing of the truck before giving notice of the fire to either defendant. Consequently, the defendants were unable to contest the plaintiff's claim that the fire could not have started within the truck. The sanction imposed was the disallowance of testimony from one of the plaintiff's fire investigators.

Second, the court denied the defendant's Motion to Preclude. Through that motion, the defendant challenged the reliability of opinions offered by one of the plaintiff's experts. While the court did not conduct a *Daubert* hearing, it considered the defendant's challenge by applying the *Daubert* criteria for reliability. Though noting that the plaintiff's expert failed to (1) identify a specific cause of the fire; and (2) have independent testing conducted, the court deemed the testimony admissible. The court found that the plaintiff's expert had adhered to the methodology endorsed by NFPA 921. The court further found that "independent testing is not the sine qua non of admissibility under *Daubert*."

Finally, the court denied the defendant's Motion for Summary Judgment, which included the argument that the plaintiff's theory amounted to "the classic product liability tautology: the alleged defect caused the fire, and the fire is proof of a defect." However, the court found that there existed direct and circumstantial evidence to support the plaintiff's claims, including the plaintiff's negligence/*res ipsa loquitur* ("the thing speaks for itself") claim. Significantly, courts have yet to coalesce around a clearly defined set of principles in applying the doctrine of *res ipsa loquitur* to fire science litigation.

Guest Articles

The practice of fire science litigation is dependent on the expertise and strong thinking of associates in this exacting field. These knowledgeable individuals have authored fire-related articles which we have posted in their entirety on the Tedford & Henry Web site. Read excerpts of those informative articles here in Perspectives, and then get the full story at ***www.tedfordhenry.com/articles***

Heavy Equipment, Electrical Circuits and Fires

We are fortunate to have added a guest article to our Web site dealing with the issue of fires resulting from electrical circuits in heavy equipment. Ron Parsons of the Wright Group, Inc. has written the first of a series of articles, which will be highlighted in future newsletters relating to this topic. In the first installment, Mr. Parsons identifies three electrical circuits which he has determined from experience as being leading causes of fires in these products. His article discusses the various circuits, their failure modes, references to applicable SAE Standards, and an introduction to circuit protection and design.

Mr. Parsons has promised future articles to further elaborate on alternative ways to design and protect high current circuits from unusual and known failure modes.

Resistance heating can be caused by several events consisting of poor connection, loose connections, contaminated connections, and cross section reduction of the current-carrying cable.

A loose or poor connection will cause increased heating at the point of the poor or loose connection. This poor contact will allow the formation of oxide to occur. As the resistance increases, the heat increases, which continues the promotion of oxide. The oxide conducts current, but offers higher resistance than the base metal of the original material. The interface where the oxide occurs, creates a localized heating event. This heating event can become sufficient to produce temperatures that can ignite combustible materials if they are in the vicinity. Wiring insulation is a first material that can be ignited. Typically the insulation will burn away from the high resistance connection and often self extinguishes. Other materials in the area may be second or third fuels which may allow the fire to continue.

Ground faults can occur in the high current-carrying circuits as a result of gradual deterioration of the insulation of the conductor from environmental and/or design related issues of the clamping mechanisms and the configuration of the overall circuit. A ground fault typically occurs as a casual event, which allows intermittent contact of a conductor with a ground path. The intermittent contact can allow for the melting of the copper conductors against the ground path and arcing to occur at that location. The arcing produces temperatures well in access of 1000 degrees, and, as a result of the arcing, sparks can be ejected.

For the rest of this article go to:
www.tedfordhenry.com/articles

The Wright Group has offices in North Uxbridge, Massachusetts and Plano, Texas.

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Guest Articles,
continued

Control of Electrostatic Hazards—Containers for Powders

This is an excerpt from an article written by the Vice President of Technology of Chilworth Technology, Inc.—a leading fire investigation and hazard assessments company based in Plainsboro, New Jersey. The author, Vahid Ebadat, Ph.D. is a regular speaker at training courses around the country on gas and vapor flammability, dust explosions, and the control of electrostatic hazards.

Dr. Ebadat is a member of the NFPA 77 Technical Committee on Static Electricity among other prestigious seats. The detailed article provides a number of practical approaches for eliminating or controlling electrostatically initiated fire and explosions.

Read it in its entirety on the Tedford & Henry Web site.

Containers of various sizes, shapes, and materials of construction are often utilized in the manufacturing and processing industries for the transport and storage of flammable powders. Additionally when handling solvent wet or dry powders it is convenient to use an inner liner (loose) in the container.

With a few exceptions, all powders including chips and granules readily become charged during operations/ processes such as pouring, sieving, blending, milling, etc. When a highly charged powder is transferred into a container depending on a number of factors such as "conductivity" of the container; container size; "volume resistivity" of the powder; "electrostatic chargeability" of the powder; particle size; rate of powder transfer to/from the container; etc. the following electrostatic discharges may occur:

1. **Spark discharges involving electrically ungrounded conductive containers.** Spark discharges can potentially ignite flammable gas, vapor, and dust cloud atmospheres.
2. **Cone (Bulking) discharges on the powder surface.** Cone discharges can potentially ignite flammable atmospheres with minimum ignition energy less than about 25mJ.
3. **In the case of an insulating container, electrostatic discharges from the powder may lead to polarization across the container wall and to the risk of a Propagating Brush Discharge (PBD).** PBDs can readily ignite most flammable gas, vapor, and dust cloud atmospheres. PBDs can also cause physiological harm to personnel.
4. **Insulating containers can be charged externally by rubbing and give rise to brush discharges.** Brush discharges can readily ignite certain flammable atmospheres with minimum ignition energy less than about 4mJ (e.g. solvent vapor atmospheres).

The full article appears on the Tedford & Henry Web site at *www.tedfordhenry.com/articles*

Chilworth Technology, Inc. is located at 250 Plainsboro Rd. in Plainsboro, NJ.

Vahid Ebadat, Ph.D., can be reached by e-mail at vebadat@chilworth.com

Submit your articles

Tedford & Henry encourages readers of *Perspectives* and the firm's product liability clients and associates to submit topical guest articles for inclusion in this quarterly newsletter and on our Web site.

Contact Brian Henry at 860.293.1200 or e-mail bhenry@tedfordhenry.com

Tedford & Henry: News & Facts

The University of Connecticut School of Law has again invited **Brian P. Henry** to teach Moot Court/Appellate Advocacy in the Winter Term.

Frederick B. Tedford has recently been named to the National Fire Protection Association's (NFPA) Committee on Hazardous Chemicals. NFPA is recognized throughout the world as the leading authoritative source of technical information and advice on fire protection and prevention.

On November 16th, 2005 Tedford & Henry sponsored the First Night Reception for DRI's Biennial Conference on Fire and Casualty. The Defense Research Institute's conference was hosted at the Westin in Chicago, Illinois and offerred two days of topics of interest to representatives of manufacturing industries, particularly relating to product liability and fire and property damage.

Mr. Tedford was a featured speaker at the IAAI (International Association of Arson Investigators) symposium in Massachusetts on November 17th, 2005. His keynote topic was entitled: "An Attorney's Approach to Fire Investigation." Slides from this lecture will be posted on the T&H Web site.

Can you identify this?

Fire science litigators are not always exculpating products or assessing competent ignition sources. On the weekends our principals have been known to haunt estate sales and return to the office on Monday with curiosities that stump the whole staff. ***Can you ID this?***

Here's a clue: *It does, somehow, relate to fire.*

For the answer, visit the page on the T&H Web site where we'll post all such photo puzzles and solutions:
www.tedfordhenry.com/puzzles

What Are the Rules? Recognizing the Importance of NFPA 921

Prior to 1992, the available authoritative resources pertaining to the manner in which fire investigations were to be conducted were limited. Additionally, there was no thorough resource which could serve as a foundation for fire science litigation. Fire investigators generally based their analysis on their experience, education, and knowledge in the field, and attorneys generally based their litigation strategy on those experts' opinions. While certain written resources dealing with fire investigation and litigation concepts did exist, including the National Fire Protection Association's *Fire Litigation Handbook* (1989), DeHaan's *Kirk's Fire Investigation* (1st Ed. 1969), and Patton's *Fire Litigation Sourcebook* (1994), those resources were and are generally considered to be informative, rather than authoritative.

In an effort to improve the fire investigation process and the quality of information obtained from fire investigations, the National Fire Protection Association's Technical Committee on Fire Investigations developed *NFPA 921: Guide for Fire and Explosion Investigations* in 1992. As with all NFPA codes, standards, and guides, *NFPA 921* is a consensus document compiled from information obtained from NFPA members and reviewed by the members themselves. In developing the guide, the goal of the technical committee was "to provide guidance to investigators that is based on accepted scientific principles or scientific research." *NFPA 921*, 921-1 (1995 Ed.).

While characterized by the National Fire Protection Association as a "guide" rather than a "standard," *NFPA 921* has begun to be recognized as a standard for fire investigations by those in the fire science community. In fact, a number of federal courts have identified *NFPA 921* as the "standard" in the fire science community. *See Fireman's Fund v. Canon U.S.A., Inc.*, 394 F.3d 1054, 1058 (8th Cir 2005); *Travelers Prop. & Cas. Corp. v. Gen. Elec. Co.*, 150 F. Supp.2d 360, 366 (D.Conn. 2001); *Royal Inc. Co. v. Daniel*, 208 F. Supp.2d 423 (S.D.N.Y. 2002); *Indiana Ins. Co. v. Gen. Elec. Co.*, 326 F. Supp.2d 844 (N.D. Ohio 2004); *McCoy v. Whirlpool Corp.*, 2003 WL 1923016 (D. Kan. 2003).

NFPA 921 has undergone significant changes in the last thirteen years, maturing into the Fifth Edition, issued in 2004. This latest edition includes twenty-seven chapters on a wide variety of topics, including "Basic Fire Science" in Chapter 5, "Legal Considerations" in Chapter 11, and "Fire Cause Determination" in Chapter 18. Additionally, the guide includes chapters that deal with specific fire science scenarios, including "Explosions" in Chapter 21, "Appliances" in Chapter 24, and "Management of Major Investigations" in Chapter 27. Regardless of the fire science issue presented, *921* provides sound guidance for conducting a thorough and court-approved scientific evaluation.

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Beyond the Flame

T&H attorneys like to take a break from their highly disciplined approach to fire science litigation on occasion. See our staff's Top Netflix® Movie Picks:

- Where's That Fire? (1940)
- Arson Squad (1945)
- Towering Inferno (1974)
- Inferno in Paradise (1988)
- Backdraft (1991)
- Firefighter (1996)
- Collateral Damage (2001)
- Firefight (2003)
- Ladder 49 (2004)