

January 5, 2005

The Tenth Circuit's Analysis of a Questionable Fire Causation Theory **Truck Insurance Exchange v. Magnetek, INC.**

by Brian P. Henry

Introduction

A recent federal appellate decision has highlighted a court's discretion to bar the admission of fire causation theories based on scarce evidence or unproven scientific theories. The Tenth Circuit holding in the case of *Truck Insurance Exchange v. MagneTek, Inc.*, 360 F.3d 1206 (2004), demonstrates the ability of parties to successfully champion the high threshold of scientific proof needed to admit expert opinions under the *Daubert* standard.



In February, 2004, the United States Court of Appeals for the Tenth Circuit held in *MagneTek* that a particular theory of fire causation advanced by the plaintiff failed to meet the standards for reliability as outlined in *Daubert*. Although mislabeled by the plaintiff in *MagneTek* as "pyrolysis," the scientific viability of the theory of long-term, low-temperature ignition of combustible materials through pyrophoric heating has been debated for years. The Tenth's Circuit review of the issue serves to illustrate how unproven theories or "junk science" can be challenged successfully by defense counsel to limit or eliminate the admission of such theories into evidence.

Factual Background

On November 9, 1988, a fire destroyed a restaurant in Lakewood, Colorado, a restaurant insured by Truck Insurance Exchange. Following that fire, an investigation was conducted to determine the origin and cause of the fire. Two separate investigating entities, Phoenix Investigations (hired by Truck Insurance Exchange), and the West Metro Fire Protection District were initially involved. After examining the burn patterns, debris, and other physical evidence, investigators from both West Metro and Phoenix concluded that the origin of the fire was between a basement storeroom ceiling and the kitchen floor.

In the debris in the basement, the investigators located a fluorescent light fixture manufactured by MagneTek, Inc. Three separate investigators concluded that the light fixture somehow had started the fire as there were no other apparent heat sources in the area of origin. As for an ignition source, the investigators focused on the fixture's electrical ballast, the device they suspected generated the heat which caused the fire.

After that initial determination, the light fixture was turned over to Phoenix Investigations and Ponderosa Associates, another investigation company hired by Truck. The fixture was disassembled, and the ballast was examined. It was determined that the ballast was manufactured with a thermal protector, a device designed to cut off power to the fixture in the event of overheating. The thermal protector was designed to operate if the temperature at the fixture exceeded 232° F. Knowing that 232° F is an insufficient temperature to ignite the known combustibles in the area of origin, Truck's investigators conducted a number of tests and concluded that the overheated light fixture caused the fire through a process known as "long-term, low temperature ignition," inappropriately labeled "pyrolysis" by the parties in the case.

Truck Insurance Exchange filed a subrogation lawsuit against MagneTek to recover more than \$1,000,000.00 in damages Truck had paid to its insured. At trial, MagneTek challenged the reliability of the theories advanced by Truck's experts to explain the cause of the fire. Additionally, MagneTek challenged the notion that there were no other possible ignition sources for the subject fire other than the MagneTek light fixture. Accordingly, MagneTek moved to exclude the opinions of Truck's experts, citing the standards set forth in *Daubert v. Merrell Dow Pharmaceuticals, Inc.*

Understanding the Theory of Long-Term, Low Temperature Ignition of Combustibles

Although identified to the district court and the Tenth Circuit by the parties in *MagneTek* as "pyrolysis," the theory the plaintiff sought to advance was "long-term, low temperature ignition" of combustibles. Simply put, the theory posits that the ignition temperature for wood (or any combustible) can be lowered through long-term exposure to low-grade heat. Typically, this theory is used to explain how an ignition source usually incapable of generating enough energy to cause the ignition of a combustible such as wood can, nonetheless, be the cause of a fire.

To properly challenge this theory of limited scientific merit, some basic fire science concepts must be understood. First, every fire has both an origin and a cause. While those two terms are defined very specifically in *NFPA 921: Guide for Fire*

Explosions and Investigations, the "origin" of a fire is the location where ignition first occurs, and the "cause" of a fire is the circumstances allowing ignition to occur.

Additionally, almost every substance has a specified "ignition temperature," the temperature at which the substance ignites and ignition can be sustained. The typical "first fuel" (first combustible ignited) in a case in which this theory is advanced is wood in the form of structural members. The parties in *MagneTek* agreed amongst themselves that the ignition temperature of wood was approximately 400°F or greater.

Putting these fire science elements into place, experts are occasionally faced with a situation where there are no apparent competent ignition sources in a defined area of origin. When the available combustible in the area is wood, the theory of long-term, low temperature ignition assists the experts in leaping over that evidentiary gap, despite the available ignition source normally being incapable of causing the ignition of wood.

Specifically, like a newspaper browning in the sunlight over a period of time, all substances "pyrolyze" when exposed to heat. Pyrolysis of combustibles occurs in every fire, and is a term which describes the chemical change in a combustible occurring as a result of exposure to heat. The "long-term, low temperature ignition" theory posits that wood can ignite at temperatures much lower than 400°F if the wood is exposed to low heat over an extended period of time. That exposure "pyrolyzes" the wood, creating a charred surface, thereby theoretically lowering the ignition temperature of wood. That "lowered" ignition temperature of wood theoretically allows the wood to ignite even when the available ignition source has a maximum operating temperature of less than 400°F.

Since the maximum operating temperature of the electrical ballast in the *MagneTek* light fixture was 232°F due to the presence of a thermal protector designed to shut off power if the temperature exceeded that level, the plaintiff's experts in *MagneTek* were forced to rely on this theory to justify their conclusions as to the cause of the fire. Appropriately, the Tenth Circuit disagreed that the theory met the threshold requirements outlined in *Daubert*, and precluded the evidence from admission.

Understanding the Daubert Standard

In *Daubert v. Merrell Dow Pharmaceuticals*, 509 U.S. 579 (1993), the United States Supreme Court articulated a set of criteria that dictates the admissibility of expert opinions, evidence, and scientific findings. Prior to *Daubert*, the admissibility of scientific evidence was traditionally governed by a common law rule, commonly referred to as the *Frye* test. Under the *Frye* test, expert scientific evidence was admissible only if the principles on which it was based had gained "general acceptance" in the scientific community. Despite its widespread adoption (and continued use in some jurisdictions today), the *Frye* standard was viewed by many as unduly restrictive as it often functioned as a bar to testimony based on credible yet novel scientific approaches and beliefs.

In *Daubert*, the Supreme Court analyzed the role of the *Frye* test in light of the 1973 adoption of the Federal Rules of Evidence. The *Daubert* court focused on the idea that testimony must be grounded in the established methods and procedures of science, and held that admissible evidence must possess the requisite scientific validity to establish evidentiary reliability. The *Daubert* holding drew a clear line between scientific and nonscientific testimony, stating that "scientific methodology . . . is based on generating hypotheses and testing them to see if they can be falsified; indeed, this methodology is what distinguishes science from other forms of human inquiry."

To assist the trier of fact, the *Daubert* court identified several factors that could support a finding that the scientific principles in question are reliable and, thus, admissible:

- 1) If the theories and techniques employed by the scientific expert have been tested;
- 2) If they were subjected to peer review and publication;
- 3) If the techniques employed by the expert have a known error rate;
- 4) If they were subject to standards governing their application; and
- 5) If the theories and techniques employed by the expert enjoyed widespread acceptance.

In *MagneTek*, the Tenth Circuit analyzed whether Truck's experts' opinions on pyrolysis had been subjected to testing and whether those beliefs had undergone to peer review and publication. Finding that the peer review was of limited value, and that there is no "widespread acceptance" of the theory, the Tenth Circuit disallowed the expert testimony.

The MagneTek Analysis

Although never allowed to testify, Dr. Joe Romig, the primary expert offered by Truck, intended to opine that heat from the ballast, varying between 180°F and 300°F, was sufficient to cause wood in the ceiling to ignite. That ignition, however, was premised upon long-term, low-grade heat from the ballast forming pyrophoric carbon on the wood and the carbon “self-heating” over time. According to Romig, that self-heating of the carbon caused the wood to ignite, despite the temperature from the ballast falling well short of the 400°F ignition temperature of the wood.

Truck introduced three articles which allegedly supported Romig's opinion. However, the Tenth Circuit observed that each article “cast doubt on the general scientific acceptance, the methodology, and the adequacy of the experimentation underlying pyrolysis” Specifically, the Court noted that each article spoke in generalities, and that the articles themselves noted the uncertainty of the theory. In fact, the Court pointed out that one of the articles was actually entitled “Pyrophoric Carbon: The Jury is Still Out.” Finally, Romig himself noted that the process depended upon many “quantitatively unidentified” factors. In view of the articles’ and Romig’s lack of certainty, and the lack of community support for the theory, the Tenth Circuit found that the district court did not abuse its discretion in holding that the pyrolysis theory was unreliable.

In its final conclusion, the Tenth Circuit noted that the theory of long-term, low-temperature ignition of wood was interesting, and one which may *eventually* be sufficiently tested and researched to serve as the basis for an expert opinion under Rule 702. However, the Tenth Circuit was clear in its opinion that the theory has yet to reach that point and that, as a consequence, expert opinions based on the theory should be carefully scrutinized.

Use of *MagneTek* by Defense Counsel

Attorneys are often faced with novel theories offered as support for expert opinions. While those theories should not to be automatically discredited, they should be closely examined to ensure that the requirements of *Daubert* are satisfied. Defense counsel should utilize *Daubert*, and now *MagneTek* in the appropriate circumstance, to their advantage by challenging experts not only on those experts’ stated opinions, but also on the science underlying those opinions.

All too often, attorneys accept at face value the opinions of experts without a challenge to the underlying scientific principles, despite the fact that such challenges can result in the total preclusion of an opponent’s scientific theory. Counsel should strive to counter unproven or scientifically attenuated theories with the procedural tools at their disposal. In the context of fire science litigation, steps must be taken to ensure that anecdotal or experiential bases for fire causation theories are supported by accepted scientific proof when the causation theory seems tenuous.

Illustrating this point, *MagneTek* calls into question the future viability of the “pyrolysis” theory as an explanation for fire causation. More broadly, the decision casts doubt on any theory of fire causation that is not supported by science. Despite the fact that the theory of long-term, low temperature ignition of combustibles presently enjoys only limited support in literature and remains fraught with scientific uncertainty, plaintiffs may attempt to use the theory to defeat a prohibitive temperature gap in a theory of fire causation.

In countering such attempts, *MagneTek* can be used to demonstrate that the cause of a fire, a key element in a fire science case, cannot be proven with the theory in the absence of further testing which supports the concept. As noted by the Tenth Circuit, the theory may eventually be sufficiently tested and researched to serve as a basis for expert testimony. Until that time comes, however, the theory should be challenged whenever presented.

BRIAN P. HENRY, TEDFORD & HENRY, LLP, HARTFORD, CONNECTICUT

Published by DRI_Happenings

Powered by IMN