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# Shovel Your Way to the Origin and Cause

THE IMPORTANCE OF REMOVING DEBRIS  
TO UNDERSTAND FIRE PATTERNS



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*While technology has advanced many industries, a simple hands-on approach to fire investigation remains one of the most accurate ways to understand fire patterns. This hands-on approach using rakes and shovels to remove debris, coupled with the scientific method, will lead you to the origin and cause.*

## **The Scientific Method**

Let's first review the importance of the scientific method. In 1992 the National Fire Protection Association (NFPA) issued a document to improve fire investigations and the quality of information. Today, the guide is used by public-sector employees who have statutory responsibility for fire investigation, as well as private-sector individuals who conduct investigations for insurance companies or litigation purposes. Since 1992, NFPA 921 has evolved considerably and now applies the scientific method to fire origin and cause investigations.

The scientific method is simply a means of acquiring knowledge through a methodical process. The steps include recognizing the need, defining the problem, collecting the data, analyzing the data, developing a hypothesis, testing the hypothesis, and then selecting the final hypothesis. An accurate interpretation of fire patterns is required during the data collection step.

## **Properly Removing Debris**

Although fire investigation is a science, it's also an art. Like an artist visualizing a painting, the fire investigator must visualize the fire progression and its travel, and then apply fire behavior, all while analyzing the patterns. Pertinent fire patterns located on the floor and along baseboards and walls are typically covered with debris, which can prevent accurate analysis of the patterns. To accurately analyze the patterns, a systematic and detailed process of removing the debris must take place. The tools used during a proper fire investigation can include shovels, rakes, gloves, and other hand tools. The debris removal is a critical step in discovering and interpreting the fire patterns.

Once large debris is removed by hand and shovel, a broom can be used to clean up the charred areas. Charring on the floor can become damaged by the leading edge of the shovel, and caution should be taken while moving the debris. If a broom is used after shoveling, it is a good practice to take photographs and even collect debris samples beforehand.

During the debris removal, the investigator must have a detailed approach to identifying the evidence and components within the debris. Separating the contents from the general fire debris becomes beneficial in reconstructing the contents into the area of origin. Protective patterns are areas that have been covered by a piece of furniture or an object that protects the surface from flame impingement. When recognized, these patterns assist in the placement of the contents in their original pre-fire positions.

Contents analysis, which compares the remaining physical evidence with the contents list provided by the insured, requires a detailed approach and accurate documentation. This

process may include a series of screens and sleuth boxes, and possibly bonsai soil sifters to separate the debris from the content remains. If a contents analysis is desired, it should be coordinated from the onset of the investigation.

Merely kicking around debris and assuming the origin of the fire solely based on the heaviest or deepest charring without debris removal and contents reconstruction is a dangerous practice. It is extremely important to have a complete and accurate investigation at the closure of a claim. Fire investigation without proper debris removal and reconstruction of contents leaves potential for errors and leads to assuming the fire origin and the cause.

Benchmarking studies show that nearly 15 percent of closed claims have missed subrogation opportunities. The numbers can be staggering and costly to the insurance carrier and consumer. A choppy and incomplete origin and cause investigation not only creates holes in your subrogation case, it also delays the discovery of defective products that could be recalled to limit further property damage and the endangerment of lives.

With all the knowledge, experience, and tools used in a fire scene origin and cause investigation, the most important tool can be the shovel. Fire patterns can become deceiving without proper knowledge, training, and experience. Technology may progress at a lightning pace, but the original design and use of the shovel will not. On your next fire loss claim, be sure to contact an experienced Certified Fire Investigator who understands the importance of both the scientific method and the art of debris removal.



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## About the Author

Since starting his career in 1996, Russ Wilson has investigated over 1,500 fires and explosions involving incendiary cause, large loss, commercial structures, heavy equipment, vehicle fires, fire death investigation, fraud, and subrogation. Mr. Wilson is recognized as a Certified Fire Investigator (CFI) through the International Association of Arson Investigators and a Certified Fire & Explosion Investigator (CFEI) through the National Association of Fire Investigators. Founded in 1966, American Structurepoint is your single-source contact from notice of loss through incident resolution. Learn more at [www.structurepoint.com/investigative](http://www.structurepoint.com/investigative).