

## Accidental or Incendiary?

An important part of any fire investigation is the determination of whether the fire was accidental or incendiary. The answer to this seemingly simple question impacts the overall direction a fire investigation and the insurance claim handling will take. One would like to believe that for an experienced fire investigator, this should be a relatively easy question to answer. While in many cases this can be a straight forward determination, this is not always the case. The following provides examples of cases where a blind adherence to rules of thumb and a lack of critical thinking resulted in a flawed and incorrect determination.

The popular teachings for fire investigators include the fact that multiple points of origin are an indicator of an incendiary fire. In most cases this is true. I had the opportunity to investigate a fire where there were multiple points of origin. However, there was no other evidence to suggest that this fire was incendiary. Closer examination revealed that all the points of origin were in the vicinity of electrical outlets. Interviews with the homeowners revealed that there had been a lightning storm on the night of the fire. They further reported seeing sparks coming out of the electrical outlets shortly before the fire was discovered. The conclusion that I reached was that a lightning strike had caused a power surge in the residence with subsequent arcing at outlets throughout the home, igniting multiple fires.

At another residential fire, the cause was quite obvious. A hole was burnt through the dining room floor directly above the gas hot water heater in the basement. While examining the water heater I noticed that planks of wood flooring had been placed up against the water heater and that there was no flue piping. This led me to believe that the fire may not have been an accident, since in this day and age no one would install a gas water heater without installing a flue (or would they?). I interviewed the owner of the home; she informed me that the water heater was 5 years old and she did not recall there ever having been a flue. Upon further questioning, the homeowner admitted to having headaches while at home. I concluded that this was indeed an accidental fire, caused by the ignition of the dining room flooring due to long term exposure to the hot flue gases from the water heater. I further concluded that the homeowner was quite fortunate that the missing flue only caused a fire, since the potential for a much more serious accident was present.

I was called upon to investigate a fire on behalf of an electrician who had recently installed a new service and outdoor raceway at a residence. The investigators for the homeowner's insurance company had concluded that the fire was the result of a problem with the connection to the ground rod and that there had been an

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overcurrent on ground, which generated the heat to ignite the fire. I noted that while the end of the ground wire attached to the ground rod had melted, the other end, where the wire was secured to the raceway, was unremarkable. If there had been an overcurrent, the entire length of the wire would have experienced this overcurrent. The lack of damage at the raceway indicated that in fact there had not been an overcurrent. I observed that bales of straw had been placed against the foundation at the time of the fire. I started digging through these bales and discovered a flat plastic “pancake” on the ground, underneath the straw. A hydrocarbon detector indicated the possible presence of a combustible material. A sample was collected, which came back positive for gasoline! It turned out that the “accidental” fire where they were looking to subrogate the electrician was in fact an incendiary fire designed to look like an electrical fire. Unfortunately, the original investigators bought into this narrative, resulting in the insurer paying out on a claim that should have been denied and the electrician and his insurer incurring unnecessary expense to defend the claim.

As the above examples illustrate, not every fire follows the rules of thumb that many fire investigators were taught. It is important to bring an open mind to a fire investigation. In addition, one should be prepared to question the popular teachings and instead use science and critical thinking to arrive at supportable conclusions. You should expect nothing less from your fire investigator!

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