

ARSON: THE PROCESS OF ELIMINATION

NFPA 921, Guide for Fire and Explosion Investigations, 2008 Edition, Section 18.2 discusses the use of the Process of Elimination, often referred to as “negative corpus,” in determining the cause of a fire. This method may be relied upon when there is no direct evidence as to the cause of a fire. The process of elimination is sometimes relied upon to determine that the cause of the fire was incendiary (intentionally set) even when there is no objective evidence that an open flame or any other type of incendiary device was used to ignite the fire.

The “Process of Elimination” was first discussed in the 2001 edition of *NFPA 921*. The principal proponents for inclusion of a section entitled “Process of Elimination” in determining the cause of a fire were from the public sector. State and local fire officials argued that a credible determination of an incendiary fire could be made when all accidental causes could be eliminated in the area of origin. Over the years, the language in this section has changed, narrowing, and more clearly defining the circumstances under which the process of elimination could be applied to the determination of the cause of a fire.

The current 2008 edition of *NFPA 921*, Section 18.2.1 makes it very clear that the process of elimination may be used to determine the cause of a fire only “when the origin of a fire is clearly defined...” The text goes on to state “[A] clearly defined origin exists when it is known conclusively to the exclusion of all other potential origins.” (Emphasis added.) “The positive identification of the origin is the most significant factor in determining whether the use of the process of elimination is appropriate. If the origin cannot be positively identified to the exclusion of all other potential areas of origin, no inferences regarding the ignition source should be made.” *Id.*

Section 18.2.1 describes circumstances that prevent the origin from being clearly defined. “Some of the conditions and circumstances that prevent the origin from being clearly defined include the degree and extent of damage (such as those conditions found in fully developed compartment fires), or the adverse effects of fire suppression activities (such as fire scenes where excessive overhaul has occurred).” In these situations the use of the process of elimination as a methodology for determining fire cause is not condoned.

Section 18.2.5 states “[T]he elimination of all accidental causes to reach a conclusion that a fire was incendiary is a finding that can rarely be justified scientifically, using only physical data; however, the elimination of all causes other than the application of an open flame is a finding that may be justified in limited circumstances, where the area of origin is clearly defined and all other potential heat sources at the area of origin can be examined and credibly eliminated.” (Emphasis added.)

There are four essential criteria for the permitted use of the process of elimination in determining the cause of the fire.

1. The area of origin must be clearly defined and known conclusively to the exclusion of all other potential origins;

2. All accidental causes in the clearly defined area of origin must be examined and credibly eliminated;

3. The scientific method must be used in the analysis which eliminated all accidental causes and the remaining ignition source must be consistent with all known facts;

4. Whenever an investigator proposes the elimination of a particular system or appliance as the ignition source on the basis of appearance or visual observation, the investigator should be able to explain how the appearance or condition of that system or appliance would be different from what is observed, if that system or appliance were the ignition source for the fire.

NFPA 921, Section 18.2.3.

A determination of the area of origin in a structure which is heavily damaged by fire is difficult and often in the eye of the beholder. The greater the fire damage the less likely it becomes that the area of origin can be determined with precision. After flashover, full room involvement or a total burn, the use of the process of elimination should not be used as a basis for determining a cause of a fire unless there is a credible eye witness to the incipient stages of the fire.

In the 2001 edition of *NFPA 921* where the process of elimination was first discussed, fire investigators were allowed to consider a list of potential indicators that were not directly related to combustion to support their opinion that a fire was incendiary. These indicators were generally conditions or circumstances that, in and of themselves were not directly related to the fire, but could be used by the investigator to develop ignition hypotheses. These indicators included such evidence as the removal of “normal” building contents reasonably expected to be in the structure prior to the fire or fires in secluded locations or where the view was hidden from observation. The current edition of *NFPA 921*, however, has eliminated the use of such “other evidence” in the determination of fire causation. It is also important to understand that motive evidence has never been allowed to be considered in the determination of fire causation.

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