

# The Pitfalls, Perils and Reasoning Fallacies of Determining the Fire Cause in the Absence of Proof: The Negative Corpus Methodology

Dennis W. Smith, CFEI, B.A., B.Sc., A.Sc.  
Kodiak Fire & Safety Consulting, USA

## ABSTRACT

The concept of determining the ignition source, or as some would characterize as the “fire cause”, in the absence of proof has long standing in the fire investigation community. This concept has been referred to as “*Negative Corpus*.” Negative Corpus is not a legal term, but a term of art used within the fire investigation community. Generally, Negative Corpus refers to a methodology in which an ignition source is determined without physical evidence of it.

Conclusions regarding the cause of fires and explosions are routinely made by many fire investigators in the absence of physical evidence, or proof. Yet investigators cite their reliance on the “elimination of all other fire causes”, except for the one they proffer, or the “elimination of all accidental causes.” By their nature, claims of an ignition source using are not supported by physical evidence. The only proof or support for many of these opinions using the Negative Corpus Methodology (NCM) is the unsupported belief of the investigator.

NFPA 921, Guide for Fire and Explosion Investigations provides procedural guidance and limitations to the conditions and circumstances to determine the ignition source in the absence of physical evidence. This discussion is entitled the “Process of Elimination.”<sup>1</sup> Unfortunately, the phrase “Process of Elimination” (POE) as well as “the elimination of all accidental causes” have become euphemisms for negative corpus. As a result, there is no assurance that the investigator who states he is using the POE, is abiding by the guidance or limitations discussed in §18.2 of NFPA 921.<sup>2</sup>

While statements such as “I eliminated all accidental causes” may sound like a definitive statement regarding a fire cause, what is really being said? A critical and logically-based review of the NCM in which an investigator eliminates “all accidental causes” shows how specious the claims of cause and NCM really are.

This presentation will discuss the [conceptual](#) and logical reasoning flaws used to support the Negative Corpus Methodology.

## INTRODUCTION

### *Job Description*

#### *Abilities:*

*This position requires the ability to determine the origin and cause of fires.*

#### *Objective:*

*Must be able to determine the origin using accepted methodologies and procedures.*

*Must be able to determine the cause of a fire by identifying: the heat source, first fuel and ignition sequence.\**

*Must be able to classify the fire cause according to accepted practices and procedures.*

\* *Exception:*

*If the heat source cannot be identified by finding physical evidence at the fire scene, you will be permitted to eliminate everything else based upon your knowledge, training and experience and determine the fire to be whatever you believe the heat source to be.*

*Skills Required:*

*None. Will Train.*

Is there anyone in the world who cannot do this job? The concept of determining the ignition source, or as some would characterize as the “fire cause”, in the absence of proof has long standing in the fire investigation community. This concept has been referred to as “*Negative Corpus*.” Negative Corpus is not a legal term, but a “term of art” used within the fire investigation community. Generally, Negative Corpus refers to a methodology in which an ignition source can be determined without physical evidence of it.

### **WHAT IS NEGATIVE CORPUS?**

The term *negative corpus* is derived from the Latin term *corpus delicti*, which means “*body of the crime*.” *Negative corpus* is generally recognized as the opposite of *corpus delicti*, or “without the body of the crime.” The NCM is a method that allows for the determination of the ignition source, or as some say “the fire cause,” without physical evidence or proof.

There are investigators who do not recognize the term “negative corpus,” but employ the “process of elimination.” methodology. Whether the term “negative corpus” is used or not is irrelevant. It is the methodology, the process by which opinions regarding the ignition source are made in the absence of physical evidence, which is important. It is a methodology in which a determination is made by inference.

Kirks’ Fire Investigation is one of the few sources to reference the Negative Corpus methodology, where it states:<sup>3</sup>

*“Even in the absence of an incendiary device, the crime of arson can be proven in the absence of all logically possible accidental and natural causes at the point of origin.”  
(emphasis original)*

One of the key problems with addressing the NCM is that there is no formal definition. As a result, investigators apply the NCM differently. For example, terminology often becomes an issue. Unfortunately, the terms “fire cause” and “ignition source” are often used interchangeably. Some investigators define the word “cause” as an ignition source. Other investigators define the cause as the ignition source and the first fuel. According to NFPA 921, the fire cause as three primary elements generally involving the ignition source, the first fuel and the ignition sequence.<sup>4</sup> Problems arise when the investigator using the NCM “determines the cause of a fire as incendiary and identifies neither the ignition source nor the first fuel.

More serious problems arise when the investigator, using the NCM, fails to identify an origin. Kirk’s brief discussion of the NCM understates the single most important, and often most disregarded issue, on the effective and appropriate use of the NCM. That issue involves the point origin, stating that the NCM is only appropriate when the point of origin is known. Frequently, investigators do not follow this advice. Then again, identifying the point of origin is itself, is often controversial.

In another section entitled “Elimination of Other Ignition Sources”, Kirk’s states:<sup>5</sup>

*“Remember that all logically possible sources of ignition from natural and accidental causes must be eliminated if there is to be proof of the crime of arson.”*

Unfortunately, this passage can be misleading as to what can be “logically supported” by eliminating all accidental and natural ignition sources.

Kirk’s, however, offers another warning to investigators in the application of the NCM, stating:<sup>6</sup>

*“While some investigators treat negative corpus as a “catch all”, it is a very difficult case to prove and should be relied upon only in the most special circumstances.”*

Another reference, this time directly to Negative Corpus appears in *Forensic Fire Scene Reconstruction*.<sup>7</sup> In this text, the authors again describe the NCM.

*“The use of “negative corpus” or “arson by default” approach (the process of ruling out all accidental causes for a fire without sufficient scientific and factual basis to determine what did cause the fire) is rarely an acceptable methodology for determining that a fire was intentionally set.”*

Missing from this discussion is any reference to limiting the use of the NCM to the point of origin. While stating that the scientific method can be used to support findings using the NCM, the text doesn’t explain how this can be done.

The first edition (1992) of NFPA 921 provided an exception to allow for the determination of a fire cause in the absence of an ignition source, but did so cautiously and with little guidance. Section 12.2.4 provides:

§12.2.4 (1992) Undetermined Fire Cause.

*In the instance which the investigator fails to identify all the components of the cause of the fire, it need not always be classified as undetermined. If the physical evidence establishes one factor, such as the presence of an accelerant, that may be sufficient to establish the cause even where other factors such as (sic) ignition source cannot be determined. Those situations are also encountered to a lesser degree in accidentally caused fires. Determinations under such circumstances are more subjective.*

The guidance in this section provides that there should be some significant factor that provides clear and convincing, or conclusive evidence of the cause. This text has remained unchanged as found in §19.2.14. (B) of the 2004 Edition.

NFPA 921 provided procedural guidance regarding the NCM in its 1998 edition (§16.2.5). The discussion, entitled the “Process of Elimination” was done in an apparent attempt to separate it from the NCM and at the same time provide guidelines, limiting circumstances and conditions in which a determination of an ignition source can be made in the absence of physical evidence.

However, even NFPA 921 may provide misleading information, while stating that conclusions may be properly reached by following the scientific method, it also advises that results “can rarely be justified scientifically.”<sup>8</sup> The reference to scientific here is to the scientific method and its logic-based testing.

## **WHY NEGATIVE CORPUS?**

Generally, there appear to be two arguments as to why the NCM is necessary. First, ostensibly it's a procedure born out of the need to determine the cause (ignition source) in a fire where the ignition source has been removed from the scene at the time of ignition. Such circumstances might be a fire ignited with an open flame, such as a lighter, that was then removed from the scene by the fire setter

The second argument often made supporting NCM is that fire destroys the evidence of the crime. Without the NCM investigators could never determine incendiary fires. Interestingly, this reason explaining the need for making a determination in the absence of evidence is itself a reasoning fallacy called a "special pleading."<sup>9</sup> This occurs when the proponent attempts to rationalize the process because of dire consequences if you don't use it.

However, the NCM is not only used as the basis of determining incendiary fires. While Kirk's refers to the NCM as "arson by default,"<sup>10</sup> the NCM is also used to support determinations involving appliances or equipment.<sup>11</sup> In such cases, this process has been described in other arenas as "The Malfunction Theory."<sup>12</sup>

## **PERILS & PITFALLS**

Taken at face value, the purpose for the NCM might sound reasonable. However, upon further examination problems become apparent with the application of the method, and determining precisely under what circumstances the use of negative corpus might be appropriate, and when it is not, as well as the reasoning behind it. The determination of a fire cause in the absence of physical evidence is defended by a number, sometime a series, of fallacious arguments and pseudoscientific principles.

*"Pseudoscience is easier to contrive than science, because distracting confrontations with reality – where we cannot control the outcome of the comparison – are more readily avoided. The standards of argument, what passes for evidence is much more relaxed. In part, because for the same reasons, it is much easier to present pseudoscience to the general public than science."<sup>13</sup>*

*"At the heart of some pseudoscience is that idea that wishing makes it so."<sup>14</sup>*

## **Scientific Method v. NCM: The Methodology For Determining the Origin**

One of the key problems with the NCM is the inherent conflict with the Scientific Method and the process of hypothesis development. Nowhere is that more apparent than in the discussion regarding the determination of the origin.

For the investigator not relying on the NCM, the hypothesis regarding the origin is tested by finding the origin and the elements of the cause at that point. If his search does not result in finding the elements of the cause, he would re-evaluate the data and revise or develop a new hypothesis for a different origin. If he cannot determine the origin, then "generally, if the fire origin cannot be determined, the cause cannot be determined."<sup>15</sup> However, this is not true of the investigator relying on the NCM. The investigator relying on the NCM is not compelled to test any hypothesis. Once the Investigator identifies the origin and finds nothing of the cause, he is done. He can then infer the ignition source and determine it to be whatever he wants.

## **Importance of the Known Origin**

The origin itself is a hypothesis, arguably the most important hypothesis an investigator makes in any investigation. It is at the origin the investigator hopes to find the evidence of the

fire cause: the ignition source, the first material ignited and the ignition sequence. When relying on the NCM, the determination of the origin becomes even more important.

It's not unusual for the most controversial part of any investigation to be the determination of the origin. The single most important factor in whether the NCM can be used at all, according to Kirk's, and similarly with the POE in NFPA 921, is when the origin is known. Kirk's requires that elimination of other sources occurs at the "point of origin", which is a very high standard.<sup>16</sup> The point of origin is defined as "exact physical location where a heat source came and a fuel come in contact with each other and a fire begins."<sup>17</sup> NFPA 921 states that the origin must be "clearly defined for the POE to be appropriate, where §18.2.1 states:

*"when the origin of a fire is clearly defined, it is occasionally possible to make a credible determination regarding the cause of a fire even when there is no physical evidence of the ignition source available"*

If the investigator incorrectly identifies the origin, the entire investigation is subject to irreversible error. Because the ignition source is implied only after the origin is determined. This type of reasoning is referred to as a *chain argument*, which will be discussed later in this article.

The extent or degree of damage also can play a role in whether the NCM or the POE is appropriate or can even be considered. Kirk's specifically cites a prohibition against using "too much damage" as an excuse to use the NCM. Kirk's states:<sup>18</sup>

*"This is not to say it is permissible to conclude a fire is arson simply because "too much damage was done" or because "no accidental source could be identified."*

NFPA 921 states that the extent of damage may prevent the use of the POE (§18.2.3) at all, in that:

*"Elimination... becomes more difficult as the degree of destruction in the compartment of origin increases, and is not possible in many cases"*

The implication is that if the origin is not "clearly defined" the use of the POE is inappropriate. Detriments to a clearly defined origin can be the extent of damage from fire, the effects of flashover, consumption, destruction, alteration of the structure or contents, the effects of suppression activities, (such as the length of time to extinguish the fire, the location and application of fire hose streams, overhaul, salvage, movement or removal of items including the ignition source), and the effects of collapse.<sup>19</sup>

The effective and appropriate use of the NCM, according to Kirk's, is when the point of origin is known. The origin itself is a hypothesis, arguably the most important hypothesis in the investigation. No where is this more evident than when an investigator is proposing the NCM to imply or infer the ignition source and classify the fire cause. In all cases, but especially with the NCM, the investigator must be able to prove by deductive analysis and testing that his origin is the true origin.

While Kirk's applies the very high standard of knowing the point of origin, NFPA 921 advises that the origin must be "clearly defined." Unfortunately, "clearly defined" itself is not defined in NFPA 921, an omission that has allowed some to take liberties with the language. Lentini noted this ambiguity and has provided his personal assessment of what qualifies as "clearly defined."<sup>20</sup> The ordinary dictionary definition for "clear" and "define" should suffice. Essentially, the origin

should be: easily perceptible, distinctive, free from doubt or confusion, certain, sure, distinguishable.

Lentini provides the following definition of “clearly defined”, with which the author concurs:<sup>21</sup>

*“Clearly defined, in this investigators view, means that anyone, even someone completely untrained in the investigation of fires, could look at the damage and unhesitatingly, without fear of contradiction, point to the location and state, “that’s were the fire started.””*

*“... if the information is not obvious or clear to the untrained eye, then it is neither obvious nor clear.” (emphasis original)*

In accepting the guidance from NFPA 921, the investigator is advised that even after finding the origin “clearly defined” the investigator would still have to identify the significant factor which proves conclusively, or exclusively, that the fire resulted from the act or ignition source being proffered, and only from that act.<sup>22</sup>

### **Eliminating Fire Causes as Proof**

Elimination is a process involving the development, testing and refuting of hypotheses. The elimination, or refutation, of any hypothesis means that the hypothesis has been considered (examined and tested deductively) and that has been eliminated (refuted or discarded) as being proven wrong or unsupportable. The outcome of one hypothesis does not serve as proof of the alternate hypothesis.

Stating something has been eliminated, and thus something else is has been proven responsible is incorrect. The only fact such a statement provides is not what the cause is, but what the cause is not. Specifically, the statement provides that those items examined have been eliminated, and they are not elements of the cause. Making any determination beyond stating what has been considered, examined and eliminated is speculation. If the material elements of “the cause” are unknown, cannot be proven to a “probability” (or what is often referred to as an “acceptable level of certainty”) then the cause classification must, and can only be, undetermined. If the best statement that can be made is only that the known heat sources have been examined and “eliminated,” then the heat source for the fire is “unknown.”

It is not uncommon to find, investigators who make NCM determinations in severely damaged fire areas, including post-flashover compartments where the contents and structure are largely consumed, wiring systems are broken, severed, melted, and missing. Elimination of appliances, equipment and wiring systems in such circumstances is occasionally not possible. Whenever the system, appliance or equipment is incomplete, and cannot be found, documented or examined, its relationship as a potential ignition source or fuel cannot be determined. Simply, what cannot be examined cannot be eliminated.

### **Results Depend on the Education, Training and Experience of the Investigator**

The appropriate methodology for developing hypotheses involving the investigation of fires is where the investigator relies on their education, training and experience. This methodology is called inductive reasoning. Once hypotheses are developed, the hypotheses are testing by the process of deductive reasoning, which is what can be proven by experimentation or research of similar circumstances.

Typically, the investigator examines the site, determines the origin and then identifies ignition sources at the origin. However, in the case of the NCM, the consideration of potential ignition

sources must go beyond what is merely identified at the origin and must include what ignition sources and ignition sequences within the investigators experience are possible, even remotely so. This consideration must include every and any ignition source/sequence that could ever occur. Clearly, the inductive reasoning process of identifying and considering all potential unknown ignition sources depends implicitly on the education, training and experience of the investigator like no other process. For example, an investigator must be able to determine whether a heat source is a competent ignition source for the first fuel. Determining the competency of an implied, yet unknown ignition source, is not considered or analyzed because it is already assumed that it is competent. The reasoning is that it must be competent because it started the fire. This is an example of both *arguing in a circle* and *begging the question* fallacies. Both will be discussed later.

If the investigator who does not rely on the NCM were to encounter something that was beyond his experience or capabilities, that investigator would be obligated to say that he didn't know, or declare the ignition source unknown. However, with the NCM there is no need to declare anything undetermined, ever. There is nothing beyond the capabilities of the investigator. The investigator simply determines whatever cause he chooses on the basis of the eliminating everything else.

In reality, using the NCM the investigator with less education, training and experience is more likely to eliminate all ignition sources he can identify or imagine and declare the fire incendiary. The NCM also rewards the investigator who does nothing whatsoever in the search for the ignition source. The fact is the investigator who does nothing or fails to remove or examine any debris can determine the cause using the NCM, the same as the investigator who works diligently.

There are occasions where the ignition source simply cannot be found or is not recognized. The ignition source can be destroyed, consumed, deformed, moved, removed, or discarded at the fire scene. Consequently, it may be impossible to identify or recognize the physical remains of the ignition source. However, relying on the NCM, those occasions never occur. Why? Because in every fire the ignition source can be determined, even if it is by inference.

### **No Need for Undetermined Fires**

Another problem with the NCM is the absence of any level of certainty in an opinion. For example, in circumstances other than NCM, the investigator must quantify the certainty in the opinion as being "probable", or more likely than not, before any conclusion is of value. Conclusions that are deemed "possible" are considered to have an insufficient level of proof. For classifying fire causes, if the level of certainty is only "possible," the ignition source must be declared undetermined.

However, the NCM utilizes no levels of certainty. Conclusions are supported only by the elimination of everything else. If it's not one thing, it's something else, even though something else is everything else. Also using the NCM, there is never an "undetermined" classification of fire cause, and never a need for one as all fires are either "incendiary" or "accidental". "

### **A Negative Corpus Hypothesis Is Incapable of Being Tested, Falsified or Disproven**

*"Claims that cannot be tested, assertions immune to disproof are veridically worthless."*<sup>23</sup>

*"Propositions that are untestable, unfalsifiable are not worth much."*<sup>24</sup>

A valid hypothesis must be capable of being falsified or disproven. The only way to disprove the hypothesis is to find, precisely, the item that cannot be found. Theoretically, then negative

hypotheses cannot be falsified and cannot be disproven. The problem with the negative hypothesis is that the investigator proposing the hypothesis cannot state that the ignition source didn't exist or still doesn't exist and that it just hasn't been found.

Most investigators understand that a negative result for a test of samples for ignitable liquids is not evidence that there was no ignitable liquids were present. The result means, simply that there isn't any proof that there was some present. The same analogy can be made to the negative corpus argument. The absence of evidence of an ignition source isn't proof that there wasn't an ignition source present. It simply means there is no proof that there was. In a negative hypothesis, you can't prove what is not present; you can only prove what is.

Sagan relates the difference between pseudoscience and real, or as he refers to a, "erroneous" science and the inability to disprove hypotheses:

*"Pseudoscience differs from erroneous science. Science thrives on error, cutting them away one by one. False conclusions are drawn all the time, but they are drawn tentatively. Hypotheses are framed so they are capable of being disproved. A succession of alternative hypotheses is confronted by experiment and observation. Science gropes and staggers toward improved understanding. Proprietary feelings are of course offended when a scientific hypothesis is disproved, but such disproofs are recognized as central to the scientific enterprise.*

*Pseudoscience is just the opposite. Hypotheses are often framed precisely so they are invulnerable to any experiment that offers a prospect of disproof, so even in principle they cannot be invalidated."*<sup>25</sup>

It is important to note that the inability to disprove a hypothesis is not the same thing as supporting it or proving it true.<sup>26</sup> This is a usual position of those proposing the NCM. This position is referred to as *arguing from ignorance* and will be discussed later.

## **LOGICAL REASONING FALLACIES**

There is both good and bad reasoning. Good reasoning, referred to as *cogent resonating*. Is that which provides a sound basis for its conclusions. Bad reasoning is referred to as *fallacious reasoning* has flaws in its logical structure.

Proponents of the NCM knowingly or unknowingly use faulty reasoning to support their position. These are some of the more common errors.

### **Confusing Correlation with Causation.<sup>27</sup>**

*This fallacy occurs when there is an attempt to show the relationship at the beginning of an issue is the same (as the) relationship at the end.*

This is also referred to as the *Confusion of Cause and Effect*.<sup>28</sup> This is one of the most frequently encountered fallacious logical reasoning issues regarding the NCM.

This misconception usually begins with someone proposing that all fires are either intentional or unintentional. What they are referring to in this case is the ignition of a fire. While it's true, all fires begin as either an intentional or unintentional act attempting to frame the cause of a fire in these terms is fallacious. Generally, "unintentional" is interchanged for "accidental" and "intentional" for "incendiary." Any attempt toward drawing an unwarranted conclusion by



making a word or phrase used in two different senses appear to have the same meaning throughout is itself called the *fallacy of equivocation*.<sup>29</sup>

While some people might not realize the flawed logic, or are simply credulous, others will exploit the confusion and state they use “pseudo-logic” to support their position.

### **False Dilemma Fallacy**

*This fallacy consists in restricting too severely the number of proposed alternatives and in assuming that one of the suggested alternatives must be true.*<sup>30, 31, 32</sup>

There are a number of names for this fallacy including the *false dilemma*, the *either-or fallacy*, the *false alternatives fallacy*, or the *black & white fallacy*. This assumes that there are only two choices and only one can be true. Generally, on most issues, there are more than two choices. Frequently, the false dilemma is an attempt to oversimplify an issue.

Through either self-deception or intentional manipulation those using the NCM often defend their position by attempting to classify the fire cause as either accidental (unintentional) or incendiary (intentional) and disregarding the undetermined and natural classifications altogether.

By creating only two possible choices, then employ a form of a deductive argument called the *disjunctive syllogism*.<sup>33</sup> The disjunctive syllogism is a deductive form that compels the user to make a choice between two things.

### **Disjunctive Syllogism: Inappropriate Deductive Form**

One of the ways in which proponents of the NCM support their position is how they frame their argument. One such trick is to use a deductive form referred to as the *disjunctive syllogism*. Instead of the typical *modus ponens*<sup>34</sup> form (“If A is true, then B is true; A is true; therefore, B is true) proponents of the NCM attempt to frame their arguments in the form of the *disjunctive syllogism* (either A or B; not A; therefore B). The disjunctive syllogism is used to oversimplify complex issues and attempts to imply there are only two choices. Frequently there are more.

“Accidental” and “incendiary” refer to the classifications of a “fire cause” and not the elements of a fire cause. Even if the investigator were to compare classifications of a fire cause there is not only two choices, as there are four classifications of fire. The problem with the *disjunctive syllogism* is the NCM assumes that a fire cause is either “accidental” or “incendiary.” The second issue is that the proponent attempts to compare two different values, the “classification” of a fire cause with the “elements” of a fire cause. There is no such thing as an “accidental fire cause” or an “incendiary fire cause.” This flawed logical form can be recognized in the frequently heard statement that “all accidental fire causes have been eliminated.” The statement is itself ambiguous yet sounds scientifically based. Statements such as these constitute an unacceptable criteria or methodology for determining or affirming any fire cause.

The frequent misapplication of the *disjunctive syllogism*, in the manner of this example, will undoubtedly befuddle the credulous or unknowing observer (e.g. investigator or juror) because of its reliance on pseudoscientific principals, because “it sounds logical.” All too frequently, the investigator or person asserting the use of the *disjunctive syllogism* in this manner is himself being deceived and does not realize the faulty reasoning that is employed.

### **Arguing in a Circle or Begging the Question**<sup>35, 36</sup>

*This fallacy consists in either explicitly or implicitly asserting that, in one of the premises of an argument, what is asserted is in the conclusion of that argument.*

It is common for an investigator to exclude as potential ignition sources everything outside the declared origin. Thus, those sources are all eliminated without ever being evaluated. This is problematic when the origin itself becomes central to the issue of cause. Lentini describes how investigators can fall into this “trap” when in fact the origin itself is often the subject of dispute.<sup>37</sup>

The author recalls one particular incident where another investigator determined the fire cause as incendiary using the NCM. The structure was a two-story commercial building in which the second floor had been largely consumed. Portions of the flooring remained, with much of the remaining structure falling into the first floor. The other investigator provided a sketch which identified his area of origin on the second floor, which was drawn in a kidney shape. In our examining the fire scene we found a furnace near the narrowest part of the kidney shape, but outside the other investigator’s “area of origin.” The furnace was not noted on the sketch. The furnace was severely damaged with most of the pertinent components were melted, consumed or missing. The furnace was too badly damaged to make any assessment regarding its potential as an ignition source. When questioned later, the initial investigator later stated that he did not even recall the furnace and did not examine it, why? Because, it was outside his area of origin.

In another case an investigator proposed his area of origin on the floor throughout a post-flashover room, but conspicuously located his origin away from the walls, including all electrical wiring, receptacles and switches. In this way he simply explained that there were no ignition sources, including any part of the household wiring system, on the floor in “his” area of origin.

#### **Appeal to Ignorance;<sup>38</sup> Arguing From Ignorance**

*This fallacy consists in arguing that a claim is true (or false) because there is evidence or proof to the contrary or because of the inability or refusal of an opponent to present convincing evidence to the contrary.*<sup>39</sup>

The appeal to ignorance is a claim that whatever has not been proved false must be true.<sup>40</sup> This is not true and constitutes faulty reasoning. Not finding evidence of the ignition source doesn’t mean that the ignition source didn’t exist. No one can state that the evidence didn’t exist or does not exist, and that the evidence cannot be found. In this regard Sagan states,

*“The absence of evidence is not evidence of absence.”<sup>41</sup>*

A determination in the absence of evidence not only relies on a multitude of reasoning fallacies, but it is also directly related to the skills, knowledge’s and abilities of the investigator and the amount of effort put forth to find the evidence. Many issues involve the thoroughness of the investigation, such as:

- Was there an effort to find evidence?
- How good was the effort?
- Would the investigators have recognized the evidence if they saw it?
- What evidence were the investigators looking for?
- Was it evidence of an ignition source within their experience?
- Was the evidence outside their experience, or something inconceivable?
- Were the investigators looking in the right place?”
- Could someone else have found it?

### **Shifting Burden of Proof**

*This fallacy occurs when someone attempts to shift the obligation of proof to another person, usually to someone unconvinced by or skeptical of the claim.*<sup>42</sup>

By declaring the ignition source undiscovered, or technically “unfound”, the proponent forces the opposing investigator to try to prove it isn’t. This is unfair because there are occasions where the ignition source cannot be found. However, using the NCM there are no such cases. Secondly, the negative hypothesis is a position that is theoretically incapable of being disproven. The only way to disprove such a hypothesis is by finding the ignition source.

### **Chain Arguments**

*If there’s a chain (of) argument, every link in the chain must work (including the premise) – not just most of them.*<sup>43</sup>

A chain argument is where all subsequent conclusions depend on the truth or correctness of the previous conclusion. Nowhere is this more important than the issue regarding the inference of the fire cause in the NCM. The effective and appropriate use of the NCM relies entirely on the positive and conclusive determination of the origin. If the origin is misidentified, all following premises and conclusions that rely on the origin being correct cannot be proven. Simply put, the misidentification of the origin is an irrevocable and irreversible error.

### **CONCLUSION**

*“One of saddest lessons in history is this: If we’ve been bamboozled long enough, we tend to reject any evidence of the bamboozle. We’re no longer interested in finding out the truth. The bamboozle has captured us. It’s simply too painful to acknowledge, even to ourselves, that we’ve been taken.”*<sup>44</sup>

The Negative Corpus Methodology is inherently fraught with logical reasoning and procedural failings. By its own guidelines, the use of the Negative Corpus Methodology critically relies on its application. That application depends on knowing the origin, to a certainty. Without a certain and known origin, the use of the negative Corpus Methodology is subject to irrevocable and irreversible error. Even then there is little logical support for its use.

Basically, the Negative Corpus Methodology exists only because the procedure is acceptable to the fire investigation and legal communities.

### **BIOGRAPHY**

Dennis W. Smith is a senior fire expert with Kodiak Enterprises, Inc. ([www.Kodiakconsulting.com](http://www.Kodiakconsulting.com)) of Ft. Wayne, Indiana where he is responsible for origin & cause investigation, large loss investigation and scene management, peer review of prior investigations, assessing investigative methodology, building and fire code analysis, and fire investigation training. He retired after 25 years from the Atlantic City (N.J.) Fire Department as a Fire Captain. He has Bachelor of Science and Bachelor of Arts degrees. He’s a member of the NFPA Technical Committee for Fire Investigations (NFPA 921) and the Technical Committee for Fire Investigator Professional Qualifications (NFPA 1033).

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- <sup>1</sup> NFPA 921, Guide for Fire and Explosion Investigation, 2004 ed., NFPA, Quincy, MA, §18.2
- <sup>2</sup> The views and opinions expressed in this article are solely the opinions of the author and are not intended to reflect the position of the National Fire Protection Association, any of its Technical Committees or any other entity. This article is copyrighted and may not be reproduced without permission of the author, NAFI or the ISFI.
- <sup>3</sup> DeHaan, John D., Kirks' Fire Investigation, 5<sup>th</sup> Ed., Brady/Prentice Hall, Saddle River, NJ, 2002, p.246
- <sup>4</sup> NFPA 921-2004, §18.1.2
- <sup>5</sup> DeHaan, p.230
- <sup>6</sup> DeHaan, p.246
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