

ARSON-FOR-PROFIT: ITS IMPACT ON  
STATES AND LOCALITIES

HEARINGS  
BEFORE THE  
SUBCOMMITTEE ON  
INTERGOVERNMENTAL RELATIONS  
OF THE  
COMMITTEE ON GOVERNMENTAL AFFAIRS  
UNITED STATES SENATE  
NINETY-FIFTH CONGRESS  
FIRST SESSION

DECEMBER 14 AND 15, 1977

Printed for the use of the Committee on Governmental Affairs



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## A SUGGESTED APPROACH TO THE ARSON INFORMATION PROBLEM

Developed by Phillip E. Fisher, Dr. Louis J. Hillenbrand, and John T. Suchy, Battelle's Columbus Laboratories, Columbus, Ohio, as a written supplement to Mr. Fisher's testimony before the Senate Intergovernmental Relations Subcommittee of the Government Affairs (Oversight) Committee, December 14, 1977

In its Resource Assessment for Arson Education and Public Awareness, conducted for the Ohio FAIR Plan Underwriting Association in 1975, Battelle's Columbus Laboratories identified twelve "needs areas" of arson-related training and information program content. These areas reflect the character of information which is available and also represent subject areas where additional information is necessary. More than 30 leaders in the arson detection field reviewed these categories and were in general agreement with the Battelle listing. This provided a starting place for the identification of materials which are potentially useful. Following is a listing of the needs-area categories:

1. Orientation, general job descriptions of those concerned with arson
2. Size of the problem, how it affects the public
3. Fire sources and methods of arson
4. Classification of (incendiary) fires by reason or motive
5. Inspection of the fire scene
6. Interviewing and interrogation
7. Collection and preservation of evidence
8. Professional laboratory assistance
9. Legal aspects, corpus delicti
10. Case preparation and courtroom matters
11. Roles and responsibilities, including those of insurance industry
12. Workshops, case histories, set fires for training purposes.

Noting that available resources to address the arson problem are scattered widely and applied only in a limited way, we proposed an activity to provide a better understanding of these resources and how to acquire and utilize them. This activity, carried out in 1976 and 1977, was supported by the National Fire Prevention and Control Administration and the American Insurance Association.

Through its previous project experience the research team had developed an understanding of the scope and the extent of the arson

problem in the United States. We were able to capitalize on this understanding in selecting a group of cities which are broadly representative of the nation as a whole for our collection activity. In addition, we were assisted by officers of the International Association of Arson Investigators in selecting both cities and individuals to be contacted. Eight cities were chosen for the initial sampling: Atlanta, Chicago, Cleveland, Denver, Houston, Los Angeles, New York City, and Seattle. Because of the importance of arson in other areas, particularly non-metropolitan areas, and because of the availability of specific materials which were identified in other visits, we also were directed to several other stops: Austin, Texas; Boardman and Shaker Heights, Ohio; Bloomington, Illinois; Coronado and San Bernardino, California; Prince George's County, Maryland; and Miami and Ocala, Florida. In addition, materials were added from Battelle's files.

Discussions in the major cities were concentrated in those agencies which have direct responsibilities for arson investigation, most frequently in fire departments but also in fire-police task forces, sheriffs' offices, and offices of state fire marshals. In order to complete a representative collection, we also contacted others who have been involved in developing arson training and public understanding materials, primarily for insurance companies.

A major adjunct to the collection process was the opportunity provided us to establish the identity of many of the expert contributors available on a national basis, and to establish links for further communication and development of arson-related information. There was complete cooperation (often with the investment of considerable time spent by overworked individuals) by every fire service organization and by most other organizations we visited. The contacts established within these organizations, we believe, should form the bases for achieving a collection with the detail and authority required for professional information and training needed for an effective attack on the arson problem.

Any exchange of information to be worthwhile must be cost effective. The cost effectiveness problem is obvious in available documents on arson because there are so many wastes. Why are the same basic materials presented over and over again by different authors? What

safeguards are there against perpetuating information that is incorrect or based on hearsay rather than expert analysis? What evidence can be presented to city management that proves an arson squad itself is cost effective? What evidence can be presented to insurance company management of the cost effectiveness of denying insurance claims by arsonists? What can be learned from the experiences of others who have tried to interpret the costs of arson to the general public?

To answer questions like these, an Arson Information Center should be developed and conducted as a continuing *information analysis* activity. Such a catalytic activity is needed particularly for arson because the crime of arson has no built-in awareness mechanism. Murder, rape, burglary . . . any of the so-called "Part I" crimes are capable of arousing immediate community interest and concern. Arson is not, except in the rare cases where an effective local arson task force is organized. An information analysis center can address this need by *pulling* data and information which can be of value in meeting identified needs and by *pushing* continued local involvement and awareness, supporting the task-force concept.

Such a center can be large or small, depending on available support. It can address the entire arson problem, or segments of the problem which are identified by those it must serve. It should have three characteristics: (1) continuity of operation, (2) expert input, and (3) dissemination of specialized products. In a classic article on the subject\*, G. S. Simpson, Jr., of Battelle defines the activities of an information analysis center:

One or more scientists, engineers, and information specialists, committed, at least part time, to providing a specialized audience the technically intellectual service of evaluating, integrating, condensing, and analyzing available information or data in a specific . . . area or pertaining to a specified mission. The center provides answers to technical questions and provides to its specialized audience *authoritative* and *timely* data arrays, analyses, monographs, or state of the art reports.

\* "Administration of Information Analysis Centers" in Toward a National Information System; Second Annual National Colloquium on Information Retrieval, April 23-24, 1965, Philadelphia, Pennsylvania.

This center should address the arson problem in three particular ways:

- o As a mechanism for developing cost effectiveness of a national program which presently is marked by diffusion, inconsistencies, and the lack of clear objectives, as well as poor information exchange,
- o As a spearhead for a meaningful attack on arson through the marshalling and development of information resources,
- o As a continuing activity which operates throughout the entire problem-solving process -- recognition and definition as well as solution.

Based on our own analysis of the arson problem and on the concerns which have been expressed to us by individuals within a wide professional spectrum we recommend nine priority activities for special groups which should be developed as soon as possible within an information analysis center format:

1. For city and county management, there is badly needed an authoritative characterization and compilation of the needs, functions, and duties of an arson investigation unit. This compilation must contain specific recommended levels and dollar costs of equipment and staffing. (Recommended standards of arson squad staffing are not available on a national basis. There are no mechanisms for relating the costs of arson investigators to their value to a community, nor for specifying local needs in terms of manpower, skill, or equipment. City and county managers need *credible* information.)
2. For state government, both legislators and administrators, there is badly needed an authoritative characterization and compilation of the needs, functions, and duties of arson investigators within the state fire marshal's office. (What can and should be done at the state level has never been thoroughly researched and documented. As a result, state government organizations seem to be developed along the lines of political expediency rather than identified needs. What can and should be encouraged within state government structures? An analytical activity should be supported to answer this question.)



3. For insurance companies and insurance company officers, there is badly needed an authoritative characterization of insurance company needs and responsibilities in combatting arson. (The process of developing this has been initiated within a number of insurance organizations and individual companies. Here the need is for the continuing development of mutual understanding, facilitated by the free exchange of information on a regular basis.)
4. For continuing professional education of arson investigators and fire investigators there is a need for the development of high-quality audio/visual materials.
5. For arson investigators and fire investigators, there should be a field guide to the use of laboratory techniques for fire cause identification, including how to obtain and handle evidence which will be submitted for analysis.
6. For crime and arson laboratory scientists, technicians, and administrators, there should be standard reference guides to fire cause identification which eliminate the ambiguity and sensitivity problems created by the uses of nonspecific techniques.
7. For arson investigators and members of the legal profession, there should be the utilization and development of a large amount of case-related information obtained from actual case files, for training and professional awareness. (Existing case files constitute a significant, though unexploited, resource. Mechanisms should be set up for routine analysis of large volumes of case files to show arson trends; trends in the uses of accelerants, etc.; trends in court settlements; trends in investigative techniques; and strengths and weaknesses in case preparation.)
8. For arson investigators, members of the legal profession, and insurance companies, standardized criteria for case reporting should be developed. (To permit case by case comparison, it would be useful to have uniform reporting formats and criteria. This would facilitate case comparisons and could be used as the basis for developing a standardized arson case information system which could be sanitized to permit information exchange without violating privacy laws.)

9. For prosecuting attorneys, specialized arson reference materials should be developed. (The prosecutor is the key to criminal arson conviction. Yet, particularly in nonmetropolitan areas, he often lacks the time and experience to become familiar with the unique requirements of an arson case. Special professional materials for prosecutors should be prepared, based on case analyses by prosecutors and fire marshals who have well-developed professional expertise in the arson area.)

#### Scientific Problems of Fire Cause Detection

The problems encountered in fire cause detection closely resemble the problems encountered in any detection process where the presence of small amounts of physical materials can provide valuable clues. For example, if the exact nature of a chemical fire accelerant such as gasoline can be determined, it is often possible to trace the accelerant to its individual source and to the person who purchased it. Similarly, the presence of minute quantities of materials in combustion products can provide valuable clues as to how a fire was started. A particular problem which needs to be addressed specifically is that modern fire cause detection techniques are insufficiently applied, particularly as they relate to arson.

A number of public and private forensic laboratories are developing sophisticated techniques and instrumentation for determining fire causes. Some of the techniques they employ include infrared and ultraviolet spectroscopy, mass spectrometry, neutron activation analysis, and gas chromatography. Already these laboratories are providing impressive evidences of success. A number of commercially made detection instruments are becoming available, both for use in the field and in the laboratory. None, or at most a few, of these instruments is being developed specifically for fire cause determination. Yet, the instruments are potentially capable of providing great assistance both to the forensic scientist and to the arson investigator. Some of the instruments also should be useful to fire service personnel for routine on-the-scene investigations. In addition, whether for his own investigation or for

later laboratory analysis, the investigator must be able to obtain and preserve evidence in such a manner as to make laboratory identification techniques most useful.

In spite of these opportunities, the actual fire identification picture remains bleak. There is a lack of understanding in the field of what modern laboratory instruments can do. From fire investigators we hear complaints, often founded on hearsay rather than actual experience, that detection apparatus is too bulky, too difficult to use, too fragile, or too expensive. From forensic scientists we learn that there is a lack of developed identification procedures, that further research is required to adapt laboratory apparatus to fire situations, and that samples they receive are too often contaminated by improper handling.

We have witnessed fire investigation seminars in which there have been attempts to explain laboratory procedures to field investigators and to both paid and volunteer firefighters. These explanations have proved unsuccessful because scientific terminology is not part of the normal language of the firefighter. Yet it is clear that an intimate understanding of scientific theory is no more necessary to one who operates a piece of field apparatus than is an understanding of the internal combustion engine essential to one who drives an automobile!

The problem, thus, can be delineated as follows:

There is a need for:

1. The development and documentation of methodologies for processing laboratory evidence of fire causes for use both in fire research (such as that of The National Bureau of Standards) and in training programs (such as those of the National Fire Academy of the National Fire Prevention and Control Administration),
2. A compilation of available scientific techniques for fire cause determination, together with a listing of the sensitivities of these techniques,
3. A collection of information on types of scientific apparatus available for or/and which can be adapted to fire cause determination both in the laboratory and in the field,

4. An understanding of the capabilities of both field and laboratory apparatus for fire cause determination so that the investigator or firefighter can determine when to call in the laboratory or use the apparatus,
5. An understanding of how to obtain, preserve, and transmit useful specimens for laboratory fire cause determination.

A program should be implemented to make available for use by state and local government better procedures for fire cause determination using modern scientific instrumentation. This should be done through a series of activities which encompass laboratory research, field investigation and analysis, field and laboratory equipment definition and evaluation, and the development of needs-oriented training and communication mechanisms. Both field and laboratory applications of several techniques such as gas chromatography and vacuum distillation should be investigated. Typical laboratory and field apparatus selections should be identified. A matrix matching techniques and apparatus with materials to be identified in fire cause detection should be developed.

Laboratory research should be conducted to determine reasonable and applicable methods of analysis of materials in fire ignition. Each method should be keyed to a field exercise involving a number of fire sets under realistic conditions. The exercises should include ignition under both accidental and incendiary conditions. A technical treatment should be prepared of the results of these studies, and information gained in the research should be prepared for dissemination through a field guide and instructional materials.

As results of this research, procedures for utilizing scientific apparatus for fire cause determination could be introduced through Federal, state, and local agencies. Roles of both field and laboratory instrumentation in fire cause analysis could be identified, and both the potentialities and inadequacies of current techniques could be clarified. Results of this work would be useful to fire protection departments and both public and private investigation agencies in determining their equipment requirements. The training materials could

be incorporated into professional certification programs for fire investigators.

Better utilization of scientific equipment for pinpointing fire causes--better understanding of how laboratory and field equipment can be used--training materials which facilitate understanding of laboratory equipment by firefighters and contribute toward the professional certification of investigators are widely recognized as needs for managing an effective campaign against incendiary fires. The results of such a program should help supply them all.

**END**