

SCOPE AND PURPOSE

The purpose of this report is to disclose the opinions formed in this matter and the basis and reasons therefore, the data and other information which was considered in the formation of the opinions, any exhibits that may be used as a summary of or in support of the opinions, qualifications of the witness, listing of all publications authored by the witness, compensation rate, and listing of other cases in which expert testimony has been rendered at trial or by deposition.

The opinions detailed in this report are based upon the data and other information, which is available at this time.

QUALIFICATIONS

My name is James G. Munger and I am over the age of twenty-one (21) years and a resident of the city and county of Cullman, state of Alabama. I have received an Associates Degree in Fire Science, a Bachelors Degree in Fire Science, a Masters Degree in Fire Science and a Doctorate in Occupational Safety and Health Engineering. The Alabama Fire College and Personnel Standards Commission has certified me as a Fire Prevention/Investigation Officer I, Fire Investigation Officer II, Fire Investigation Officer III, Fire Prevention Officer II, and Fire Prevention Officer III in accordance with the criteria set forth by the National Fire Protection Association (NFPA). I am also certified as a Fire Protection Specialist (CFPS) by the Fire Protection Specialist Certification

Board and as a Fire and Explosion Investigator (CFEI) by the National Association of Fire Investigators.

I hold memberships in both the Society of Fire Protection Engineers (SFPE) and the Institution of Fire Engineers (IFE). These memberships are granted upon peer review. I also hold membership in various other professional organizations such as the National Fire Protection Association, American Fire Sprinkler Association, International Fire Marshals Association, International Association of Electrical Inspectors, Southern Building Code Congress International, International Congress of Building Officials, International Association of Arson Investigators, and the National Association of Fire Investigators.

I am a member of the Adjunct Faculty of the National Fire Academy in Emmitsburg, Maryland and have also provided instructional services for other institutions such as the Alabama Fire College, Texas A & M, New Zealand Fire Service, South Carolina Fire Academy, North Carolina State University, Washington State Fire and Life Safety Council and Southern Building Code Congress International.

I am a former Deputy State Fire Marshal for the state of Alabama and am currently the President of James G. Munger and Associates, Inc., a fire protection, code consulting and fire loss analysis firm.

I have authored several articles for publications in the fire protection/investigation field and several texts for the National Fire Academy. I have been qualified in both state and federal courts as an expert witness in the area of fire protection that includes, but not has not been limited to, the determination of origin and cause and fire related human. A complete copy of my professional qualifications is attached at TAB 2.

COMPENSATION RATE

My services were retained in this matter on or about July 2001. The review and analysis of materials and the preparation of this report are being conducted on a pro-bono basis.

PRIOR TESTIMONY

A listing of the cases in which expert testimony has been rendered at trial or by deposition within the preceding four years is attached at TAB 4.

MATERIALS REVIEWED

- 1) Anecdotal drug list based on Sandy Maloney's medical records dated between October 6, 1991 and May 28, 1997
- 2) Green Bay Fire Department Report dated February 11, 1998
- 3) Brown County Arson Task Force Report dated February 11, 1998
- 4) Autopsy report of Dr. John Teggatz, MD, Deputy Medical Examiner, dated February 12, 1998
- 5) Wisconsin Department of Justice - Division of Criminal Investigation Fire Scene Examination Report, dated February 13 and 15, 1998
- 6) Green Bay Police Department report of verbal confirmation of Brown County Medical Examiner Gregory Schmunk that Sandra Maloney's death was "definitely a homicide" dated July 29, 1998
- 7) Brown County Medical Examiner Gregory Schmunk cause of death report to prosecutor Joseph Paulus dated January 19, 1999
- 8) Medical Examiner Investigator Al Klimek's report dated January 19, 1999
- 9) Trial testimony of Dr. John Teggatz, MD

- 10) Wisconsin Department of Justice – Division of Criminal Justice interview with Randy Winkler dated June 16, 1998
- 11) Trial testimony of Gregory Eggum
- 12) Trial testimony of Dan Hughes
- 13) Trial testimony of Randy Winkler
- 14) Closing arguments from trial
- 15) Report of Larry Ytaurte, Ph.D., dated March 21, 2000
- 16) Report of Gerald Hurst, Ph.D., dated April 7, 2000
- 17) Threshold Assessment by Brent Turvey, M.S, dated August 22, 2000
- 18) Summary of post-review interview with Dr. John Adams, M.D., dated August 5, 2000
- 19) Transcript of tape recorded interview with Werner Spitz, dated June 29, 2000
- 20) Partial transcript of interview with Brown County Medical Examiner Gregory Schumnk by Fred Krasco, dated May 31, 2000
- 21) Photographs of fire scene and body of Sandy Maloney
- 22) NFPA 921 *Fire and Explosion Investigation*

METHOD OF ANALYSIS

NFPA 921 *Fire and Explosion Investigation* is a publication of the National Fire Protection Association (NFPA). This document is developed through an open consensus process and represents the standard of care to be followed for the analysis of a fire incident and the subsequent formulation of hypotheses regarding a fire's origin and

cause. NFPA 921 provides that the “basic methodology of the fire investigation should rely on the use of a systematic approach and attention to all relevant details”. Further, the document sets forth that “the systematic approach recommended is that of the scientific method, which is used in the physical sciences. This method provides for the organizational and analytical process so desirable and necessary in a successful fire investigation”.

The scientific method is a principal of inquiry that forms a basis for legitimate scientific and engineering processes, including fire investigation. The scientific method is applied using the following six steps:

- a) Recognize the Need. First, one must determine that a problem exists. In this case, a fire or explosion has occurred and the cause must be determined and listed so that future, similar incidents can be prevented.
- b) Define the Problem. Having determined that a problem exists, the investigator or analyst must define in what manner the problem can be solved. In this case, a proper origin and cause investigation must be conducted. This is done by an examination of the scene and by a combination of other data collection methods, such as the review of previously conducted investigations of the incident, the interviewing of witnesses or other knowledgeable persons, and the results of scientific testing.
- c) Collect Data. Facts about the fire incident are now collected. This is done by observation, experiment or other direct data gathering means. This is called empirical data because it is based on observation or experience and is capable of being verified.

- d) Analyze the Data (Inductive Reasoning). All of the collected and observed information is analyzed by inductive reasoning. This is process in which the total body of empirical data collected is carefully examined in the light of the investigator's knowledge, training and experience. Subjective or speculative information cannot be included in the analysis, only facts that can be clearly proven by observation or experiment.
- e) Develop a Hypothesis. Based upon that data analysis, the investigator must now produce a hypothesis or group of hypothesis to explain the origin and cause of the fire or explosion incident. This hypothesis must be based solely on the empirical data that the investigator has collected.
- f) Test the Hypothesis (Deductive Reasoning). All other reasonable origins and causes must be eliminated. The investigator does not have a truly provable hypothesis unless it can stand the test of careful and serious challenge. This is done by the principle of deductive reasoning, in which the investigator compares his or her hypothesis to all known facts. If the hypothesis cannot withstand an examination by deductive reasoning, either it must be discarded as not provable and a new more adequate hypothesis tested or the fire cause must be listed as "unknown".

The 1995 edition of NFPA 921 set forth four levels of confidence that can be regularly applied to opinions. The Academy of Forensic Sciences has also established similar guidelines.

- a) Conclusive. At this level of confidence, the hypotheses has been tested and withstood all appropriate challenges while all reasonable alternatives to the

hypotheses have been considered and eliminated due to their failure to withstand a valid challenge, leaving only that hypothesis under consideration as true.

- b) Probable. This level of confidence corresponds to being more likely true than not. At this level of confidence, the chance of the hypothesis being true is more than 50 percent.
- c) Possible. At this level of confidence, the hypothesis can be demonstrated to be feasible but cannot be declared probable.
- d) Suspected. This level of confidence corresponds to a perception that the hypothesis may be true, but there are insufficient data to draw a conclusion to the exclusion of any other reasonable conclusion.

If the level of confidence is only “possible” or “suspected” then the cause should be listed as unknown, undetermined or under investigation.

In the 1998 edition of NFPA 921, a reference to *Daubert v. Merrel Dow Pharmaceuticals, Inc.* 509 U.S. 579, 113 S. Ct. 2786 (1993) was added. Recently the application of this case law to fire investigation was broadened by *Kumho Tire Company, Ltd v. Patrick Carmichael* 119 S.Ct. 1167 in which the court decided that the gate keeping function of the courts under Daubert applies to all types of evidence, not merely traditional science.

The analysis of a fire or explosion event involves skill, technology, knowledge, and science. It is critical that all factual data be compiled and subsequently be analyzed objectively and truthfully. A proper analysis includes first determining and establishing the origin and then analyzing the cause. The cause analysis includes the circumstances,

conditions, or agencies that brought together the ignition source, fuel and oxidant together.

NFPA 921 clearly sets forth that until all data have been collected, no specific hypothesis can be reasonably formed or treated. All fires should be approached by the investigator without presumption. Information regarding motive and/or opportunity has no bearing on the proper determination of a fire's origin and/or cause.

OPINIONS

Based upon my training, education and experience and my review of the materials previously listed in this report utilizing the systematic approach of the scientific method, I have formulated the following hypothesizes (opinions). These opinions are all expressed to a reasonable degree of scientific certainty. Additionally, each opinion carries a level of confidence of "conclusive" in accordance with NFPA 921.

Opinion 1

It is clear that the analysis conducted by the "fire experts" on behalf of the state was not conducted utilizing the systematic approach of the scientific method. The hypotheses put forth by the state and it's "expert witnesses" that the fire was incendiary and the death of Sandra Maloney was homicide fail when held up to the bright light and challenge of reasonable examination. Stated another way, these hypotheses are "junk science".

Opinion 2

Applying the systematic approach of the scientific method to the determination of the origin in this instant matter, results in the formulation of the hypothesis that the fire originated in the sofa in the living room.

Opinion 3

The foam padding of such furnishings has a fuel loading (latent heat of combustion) value of approximately 12,000 to 16,000 Btus per pound. In comparison, wood or other similar ordinary combustible materials have a have value of approximately 8,000 Btu's per pound. The latent heat of combustion of the foam padding is comparable to that of gasoline. Once ignited, the foam material will produce high levels of heat and substantial quantities of heavy soot and smoke. Additionally, when heated the foam material melts and drips downward onto the floor surface below. This melted foam can also run like a spilled liquid across the flooring surface. The melted and burning of foam padding materials will produce heavy floor level charring under and adjacent to an item of furniture. The burn patterns present under and adjacent to the sofa in which the fire originated are fully consistent with the melting and burning of foam padding materials. This behavior of foam padding and resultant burn patterns has been well documented by fire testing conducted by various agencies such as the United States Fire Administration and is reflected in recognized publications in the fire protection/investigation field such as NFPA 921.

Opinion 4

In the initial stages of a fire, the growth of the fire is “fuel controlled or regulated”. A fuel regulated fire is one in which the heat release rate and growth rate are controlled by the characteristics of the fuel(s) such as quantity and geometry. When a fire is fuel regulated, adequate air is available for combustion. When the ignition first occurred in this fire, the fire was fuel regulated. As the fire progressed the available oxygen level within the structure declined resulting in the fire becoming oxygen/ventilation controlled or regulated. This occurs when the heat release rate or fire growth is controlled by the amount of air available to the fire. If insufficient oxygen is available, the fire will self-extinguish. In this instant matter the fire, become oxygen/ventilation controlled prior to flashover taking place and self-extinguished.

Opinion 5

Flashover is defined as a transition phase in the development of a contained fire in which the surfaces exposed to thermal radiation reach ignition temperature more or less simultaneously and fire spreads rapidly throughout the space. In this instant matter flashover did not occur.

Opinion 6

The ignition source or cause of this fire was smoking materials. The careless smoking habits of Sandra Maloney are unquestionably documented by the photographic evidence. While the ignition source has been properly identified as “smoking materials”, it is not possible to determine the first material ignited given the extensive damage to the sofa and the victim’s clothing. Smoking materials which includes matches and cigarettes represent competent ignition sources for both clothing and upholstery materials. A competent ignition source is one which has sufficient temperature and energy and is in contact with the fuel long enough to raise the fuel to its ignition temperature.

Opinion 7

There is no scientifically valid evidence of the use or presence of any type of accelerant. An accelerant is an agent, often an ignitable liquid, used to initiate or speed the spread of fire. An ignitable liquid is any liquid or the liquid phase of any fuel that is capable of fueling a fire, including a flammable liquid, combustible liquid, or other material that can be liquefied and burned.

Opinion 8

In properly reconstructing and systematically analyzing the activities of Sandra Maloney from a fire related human behavior standpoint and as it related to the origin and causation of this fire, it is important to consider several factors. It is undisputed that Ms. Maloney had a history of alcohol abuse. The toxicological analysis revealed an ethyl alcohol level in the vitreous fluid of .40, a blood level of .25 and a urine level of .32. The vitreous fluid level of .40 indicates the actual level of the victim's intoxication. This level of intoxication is consistent with the victim becoming unconscious prior to the fire. The position of the body on the sofa is also consistent with the scenario.

Opinion 9

There is/was clear and convincing evidence present in the basement of the residence that Ms. Maloney attempted to take her own life prior to the fire. The presence of the electrical cord, coffee table and bloodstains are indisputable but were ignored by the witnesses for the state. It is also inexcusable that the state did not pursue the clearly identified bloody fingerprint found in the downstairs bathroom. The presence of this print indisputably places Jody Pawlak at the scene after Ms. Maloney received her head injury and prior to the fire. This is totally inconsistent with the state's position of how the injury and fire occurred.

Opinion 10

In trial, the state portrayed the fire as one set by an individual who possesses technical knowledge of fire behavior. This is completely contradicted by the actual physical evidence. A person knowledgeable about fire behavior would have taken steps to ensure that the fire had adequate ventilation for rapid growth and involvement of the structure and its contents. Such a person would also know that a fire could not totally conceal a death, which occurred prior to the fire.

Opinion 11

The physical evidence at the scene is also inconsistent with the state's position that the fire was set to cover up the physical attack. One example of this is the placement of the bloody shirt in the downstairs laundry hamper. A person knowledgeable about fire would have left this item of clothing on or with the victim and would have set an additional fire in the basement in order to destroy other blood and physical evidence.

Opinion 12

The extremely limited review of the case by Mr. Jon Marsh of EFI, as requested by Boyle prior to trial, fails to meet the standard of care for the formulation of scientifically valid hypotheses as set forth in systematic approach of the scientific method. Boyle provided Marsh with only the Wisconsin Department of Justice – Division of Criminal Investigation report and few photographs. A full review of all evidence is necessary for the proper analysis and formulation of scientifically valid hypotheses.

Without conducting a full review it is impossible to properly “test the hypothesis” as provided for in the systematic approach of the scientific method. In order to “test the hypothesis” all other reasonable origins and causes must be eliminated. As NFPA 921 states “the investigator does not have a truly provable hypothesis unless it can stand the test of careful and serious challenge.” An unbiased, thorough and systematic analysis of all evidence shows that any hypothesis that the fire was incendiary cannot stand the challenge of reasonable examination.

While Marsh requested additional information from Boyle prior to trial, Boyle failed to provide this critical information necessary for a scientifically valid analysis to be conducted. Had such information been provided to Marsh, it is reasonable to believe that Marsh would have concluded that the fire and death were accidental.

/s/

Dr. James G. Munger, Ph.D., MIFireE, CFPS

July 4, 2002