

Declaration of Justin J. McShane, JD, F-AIC

Qualifications

1. I am a practicing trial attorney who specializes in using forensic science for the citizens among us who have been accused of a crime. I am board certified as a criminal law specialist by the National Board of Trial Advocacy.
2. I am admitted to practice before the United States Supreme Court, the United States Court of Appeals for the Third Circuit, The Pennsylvania Middle District Federal Court, and the various Pennsylvania State courts.
3. Currently, I stand admitted *pro hac vice* to handle certain specific cases in Georgia and Florida. I was admitted *pro hac vice* in California to handle a case that has concluded.
4. To date, I have been invited to be a featured guest speaker to several academic institutions, scientific organizations, as well as state and local organizations (36 of them). I have lectured hundreds of times in forensic science in 22 different states and the District of Columbia. The topics I lecture on include method validity and fire investigation. The audience for these events includes scientists, policy-makers, lawyers and judges.
5. In November 2010, I attended and successfully completed the 3-day intensive certificate course offered by the National Fire Protection Agency (NFPA) in NFPA 921 and basic fire investigation in Chicago, IL. This course is offered for intermediate fire investigators. I have been a member of NFPA since 2010.
6. For the past 4 years, I have attended various lectures in fire investigation and fire debris investigation with the American Academy of Forensic Science annual meeting including round table discussions.
7. I have lectured before the American Chemical Society at their national meeting in the area of fire investigation. The audience was exclusively scientists. The lecture involved substantive matters concerning fire investigation.

8. I have been an invited guest speaker for the Bureau of Alcohol, Tobacco, and Firearms' (ATF) national seminar series entitled "Arson Investigation for Prosecutors." At this seminar, I lectured on proper techniques and methods in fire investigation to prosecutors and examiners.

9. I am a voting member of the American Society for Testing and Materials (ASTM) International E30 Committee, which is an international standards organization that produces standards both in analytical chemistry as well as fire investigation.

10. I am a Fellow with the American Institute of Chemists.

11. I am a Senior Assistant Chromatography Instructor with the American Chemical Society. I routinely teach scientists and lawyers on analytical chemistry and in chromatography.

12. I have litigated arson cases since 2002.

13. I have consulted on arson cases with various legal defense colleagues all across the United States.

A summary of relevant facts¹

14. On September 8, 1976, a fire occurred at 1625 Bamberger Road in Harrisburg, PA.

15. Mr. James Hugney, Sr. was the owner/occupant at this address together with his family.

16. When the police and the Fire Marshall arrived at that address, it was described as "a working structure fire" that was "fully engulfed in flames."

¹ Many of the original records and even copies of documents involved in this case have been destroyed or are untraceable due to retention policies of the various agencies and of the court.

17. When the police arrived at the scene, the then 16-year-old son of James Hugney Sr. was on the ground with over 98% of his body featuring third degree burns.

18. Eventually, Hugney's then 16-year-old son, named James Hugney Jr., succumbed to his condition.

19. James Hugney Sr. was charged with arson and murder.

20. After a trial, a Jury of Dauphin County convicted James.

21. James was sentenced to life in prison without the possibility for parole.

22. James is currently incarcerated at the State Correctional Institute in Rockview, PA serving this sentence.

23. According to the various reports made in this case, the following is known about the scientific and para-scientific evidence that was presented at trial:

23.1. According to the "Supplement Report" created by William H. Sweet of the Susquehanna Township Police on August 28, 1976,² the following was noted:

23.1.1. "John C. Brindle, Sr., Fire Marshall of Susquehanna Twp., was interviewed at the scene on 28 August 1978, and related the results of his investigation, in regard to ruling out the accidental causes of the fire in the case. **He further was of the opinion that the fire was entirely too rapid and intense to have been of accidental origin.**" (emphasis added)

23.1.2. "Examination revealed a large 'flammable liquid flow' pattern, on the masonite flooring of the bedroom, located in the northwest corner of the building. The flow pattern existed just inside the bedroom door and ran from the

² The entirety of the Supplemental Report is attached to this declaration as an appendix and labeled as "Appendix 1"

west wall to the center of the room up to the base of the dresser along the north wall . . . Additional flow patterns were found in the living room, near the doorway into the dining room.”

23.1.3. “Most of the aluminum frame of the patio door had melted from the heat and only a small portion of the base remained partially melted. This being an indication of abnormally high temperature.”

23.1.4. In the report, there are remarks about holes in the carpet or in the floor. Although not directly stated, at the time of these events, it was common for fire scene investigators to opine that because heat rises, fire burns up and out and will not burn downward unless it has “help” (referring to an accelerant).

23.1.5. Absent in this report or any report is an identification of ignition source, first fuel or origin.

23.1.6. Analytical chemistry was involved in this case in the precise areas where the Fire Marshall believed that there was accelerant. The laboratory's conclusion was that there was no petroleum distillate present on any of the first batch of samples. The collected burned underpants also had no Volatile Organic Compounds (VOC's). The sample of the flooring at the burn patterns also had no VOC's. The laboratory only did a boiling point analysis for possible hydrocarbons for item 2 of the second batch, which was the flooring near the dresser of the victim's room. The report opines that the boiling point analysis of item 2 revealed “an unidentified series of hydrocarbons . . . The boiling point range of these hydrocarbons was similar to that of gasoline and lighter fluid.”

23.1.7. Photographs of the scene and the surrounding area were taken. They still exist.

The scientific analysis

24. It is the professional opinion of the undersigned that, in essence, there is no verifiable and valid proof that this was a fire of an incendiary nature, but simply a naked assertion based upon totally invalid (proven not to be true) evidence that is not in keeping with science or NFPA 921 or ASTM standards. This is so for the following reasons:

24.1. In section 23.1.1 *supra*, the opinion that “the fire was entirely too rapid and intense to have been of accidental origin” has been scientifically falsified and proven not to be true. It was made clear by the National Institute for Standards and Technology (NIST) controlled burn experiments that all the presence of accelerant does to impact a fire scene is hasten the time to flashover and/or full involvement of the compartment. Scientifically, accelerants absolutely do not increase temperature (or what is referred to by those in the 1970’s as “intensity”).

Sources: *Controlled Non Accelerant Fire to Flashover*, <http://www.youtube.com/watch?v=WOFa6BMmWXc> (last visited February 19, 2013); *Controlled Accelerant Fire Flashover*, <http://www.youtube.com/watch?v=NAfOKjnmEck> (last visited February 19, 2013) (These two are video recordings from the controlled burns conducted by ATF/PSP at the Pennsylvania State Fire Academy in Lewistown, PA as part of the “Arson Investigation for Prosecutors” lecture series that I lectured at.); *see also*, Technical Committee on Fire Investigation, National Fire Protection Association, NFPA 921 Guide for Fire and Explosions Investigations Sec. 6.8.2.2 (2008 ed. 2008) (“Wood and gasoline burn at essentially the same flame temperature. The turbulent diffusion flame temperatures of all hydrocarbon fuels (plastics and ignitable liquids) and cellulosic fuels are approximately the same, although the fuels release heat at different rates”); and John Lentini, *The Mythology of Arson Investigation* <http://www.firescientist.com/Documents/The%20Mythology%20of%20Arson%20Investigation.pdf> (last visited February 19, 2013).

24.2. In Section 23.1.2. *supra*, there is reference to “Flammable liquid flow patterns.” This opinion in conjunction with the photographs of the scene is a very classic case of misinterpretation of what, in reality, are simply ventilation patterns. **They are not accelerant pour patterns.** In a flashover situation or a fully involved fire this type of pattern is to be expected. In a flashover fire, deep charring to baseboards throughout the room is a common occurrence. The irregular shapes found in floor burn patterns are caused by the irregular and dynamic nature of ventilation through the burn room, not by poured liquids.

Sources: During the live burn research conducted by The Arson Research Project, irregularly shaped fire patterns on the floor and deep burn damage to baseboards and furniture at floor level were observed in every burn cell, regardless of the presence of a flammable liquid. Paul Bieber, *The Arson Research Project Fire Pattern Analysis And Case Study Review In Post-Flashover Fires* <http://www.the arsonproject.org/Docs/FlashoverAnalysis.pdf> (last visited February 19, 2013); *see also* Anthony Putorti, *Full Scale Room Burn Pattern Study*, National Institute of Justice Report 601-97, December 1997; Ronald Hopkins et al., *Fire Pattern Persistence And Predictability On Interior Finish And Construction Materials During Pre And Post Flashover Compartment Fires*, <http://www.kennedy-fire.com/PDFs/FirePatternsPersistence.pdf> (last visited February 19, 2013).

24.3. In Section 23.1.3. *supra*, there is reference to the metal melting versus other portions of the area with an opinion that this is “an indication of abnormally high temperature.” This too is totally false. In a flashover fire or a fully involved fire this is to be expected. This notion of melted metal being traceable to accelerant use was known to be false as early as 1969.

Sources: Paul L. Kirk, *Fire Investigation* 145 (1969); John J. Lentini, *The Mythology of Arson Investigation*, <http://www.firescientist.com/Documents/The%20Mythology%20of%20Arson%20Investigation.pdf> (last visited February 19,

2013).

24.4. In Section 23.1.3. *supra*, there is reference to holes being in the carpet or in the floor and the likely testimony that resulted that can be summarized as “because heat rises, fire burns up and out and will not burn downward unless it has 'help'” referring to accelerant. This simplistic explanation of fire behavior has formed the basis of many an arson investigator’s determination of incendiary cause and plays very well with a jury that has no knowledge of flashover. It too has been falsified.

Sources: NFPA 921 Section 6.17.2.2. reads “Like other areas of low burning, holes in the floor can be produced by the presence of ignitable liquids, glowing embers, or the effects of flashover or full room involvement.”

24.5. There is no identification of ignition source, first fuel or origin. These are essential per NFPA 921.

Sources: NFPA 921 Section 12.3, 12.4, 12.5 and 12.6.

24.6. The analytical chemistry disproves the use of accelerant at all in this case. It is very likely that one result was mischaracterized to the jury. In the precise areas where the fire marshal believed that there was accelerant, the laboratory's conclusion was that there was no petroleum distillate. The burned underpants also had no VOCs. The flooring of the burn patterns also had no VOC's. The laboratory only did a boiling point analysis for possible hydrocarbons for item 2, which was the flooring near the dresser of the victim's room. Boiling point analysis was never a confirmatory test, even in 1976. It could never stand alone as a method of identification. It is a forensically unacceptable analytical technique to definitively determine VOC's as it is a wholly non-specific method of analysis. Melting point (Mp) analysis, as it

is technically called, is a simple analysis. It is a potential screening method back in the 1970's, but is not favored even back then as there are much better and more specific methods to identify accelerant. The core of the issue with Mp analysis is that many substances have similar melting points. The thermometers used in the 1970's were not NIST traceable as they should be today. Mp is dependent on pressure as well. The biggest source of error stems from the visual detection of melting by the experimenter. Further, it is well known that false positives from this crude method of analysis occur. The source of these false positives generally fall into "two basic categories: (1) actual liquid petroleum products that are present in the substrate material; and (2) substrate materials that pyrolyze to form interfering volatile compounds in the range of common ignitable liquids. Previous work has revealed that many items used in homes and buildings are made of synthetic materials that, when exposed to fire conditions, will produce volatile pyrolyzates in the boiling point of range of commonly encountered ignitable liquids. Early research focused primarily on the latter category, and studied the pyrolyzates of common building materials such as wood, carpet, and floor tile."

Sources: John J. Lentini et. al., *The petroleum-laced background*, 45(5) J. Forensic Sci. 968 (2000); I.C. Stone & J.N. Lamonte, *False positives in the analysis of fire debris*, 34(3) Fire & Arson Investigator 36 (1984); John Howard & Bruce McKague, *A fire investigation involving combustion of carpet material*, 29(3) J. Forensic Sci. 919 (1984); R.W. Clodfelter & E.E. Hueske, *A comparison of decomposition products from selected burned materials with common arson accelerants*, 22(1) J. Forensic Sci. 116 (1977); and J.D. DeHaan & K. Bonarius, *Pyrolysis products of structure fires*, 28 J. Forensic Sci. 299 (1988).

Respectfully submitted,
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