

**IN THE
INDIANA COURT OF APPEALS**

Cause No. 16-C01-0612-PC-225

KRISTINE BUNCH)	Appeal from the Decatur County
Appellant (Petitioner Below),)	Circuit Court
)	
v.)	Cause No. 16-C01-0612-PC-225
)	
THE STATE OF INDIANA)	Hon. John A. Westhafer, Judge.
Appellee (Respondent Below).)	

BRIEF OF THE *AMICUS CURIAE*

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TABLE OF CONTENTS

	Page
TABLE OF CONTENTS.....	i
TABLE OF AUTHORITIES	ii
INTEREST OF THE AMICUS CURIAE	1
SUMMARY OF ARGUMENT	3
ARGUMENT.....	4
A. The Science of Fire Investigation Has Undergone a Transformative Change Since Kristine Bunch’s Trial	4
1. The Evolution of Fire Investigation Science	4
2. Old Myths and Misconceptions	7
3. The New Science	8
B. As a Result of the Transformative Change in Fire Science, New Exculpatory Scientific Evidence Can be Offered in Defense of Kristine Bunch	9
C. Three States Have Acted on These Transformative Advancements in Fire Science and Passed Resolutions Urging Judicial Review of Convictions.....	12
D. Nationwide, Convictions Based on Outdated “Expert” Testimony Are Being Reversed and Prosecutions Dropped Based on the New Emphasis on Science in Fire Investigations	14
CONCLUSION.....	15
WORD COUNT CERTIFICATION	16
CERTIFICATE OF SERVICE	16

TABLE OF AUTHORITIES

	Page(s)
CASES	
<i>Abon, Ltd. v. Transcontinental Ins.</i> , No. 2004-CA-0029, 2005 WL 1414486 (Ohio App. June 16, 2005)	7
<i>Am. Family Ins. Grp. v. JVC Am. Corp.</i> , No. 00-27 DSD/JMM, 2001 WL 1618454 (D. Minn. Apr. 30, 2001).....	15
<i>Babick v. Berghuis</i> , No. 1:03-cv-20, 2008 WL 282166 (W.D. Mich. Jan. 29, 2008).....	12
<i>Bryte ex rel. Bryte v. Am. Household, Inc.</i> , 429 F.3d 469 (4th Cir. 2005)	15
<i>Chester Valley Coach Works v. Fisher-Price, Inc.</i> , No. 99 CV 4197, 2001 WL 1160012 (E.D. Pa. Aug. 29, 2001).....	7, 15
<i>Daubert v. Merrel Dow Pharmaceuticals, Inc.</i> , 509 U.S. 579 (1993).....	passim
<i>Fireman's Fund Ins. Co. v. Canon U.S.A., Inc.</i> , 394 F.3d 1054 (8th Cir. 2005)	14
<i>Ind. Ins. Co. v. Gen. Elec. Co.</i> , 326 F. Supp. 2d 844 (D. Ohio 2004).....	7, 14
<i>Jefferson County Com. Attorney's Office v. Kaplan</i> , 65 S.W.3d 916 (Ky. 2001)	12
<i>Kumho Tire v. Carmichael</i> , 526 U.S. 137 (1999).....	6
<i>Malek v. Federal Ins. Co.</i> , 994 F.2d 49 (2d Cir. 1993).....	12
<i>McCoy v. Whirlpool Corp.</i> , 214 F.R.D. 646 (D. Kan. 2003).....	7
<i>Michigan Millers Mut. Ins. Corp. v. Benfield</i> , 140 F.3d 915 (11th Cir. 1998)	6, 14
<i>Pekark v. Sunbeam Prods. Inc.</i> , 672 F. Supp. 2d 1161 (D. Kan. 2008) (excluding opinion that cause of fire was electrical blanket where expert failed to follow reliable methodology)	15

<i>People v. Chase</i> , No. I-040-95, 2005 N.Y. slip op. 51125(U) (N.Y. Co. Ct. May 19, 2005)	10, 11
<i>People v. Rossbach</i> , No. 245262, 2004 WL 1178424 (Mich. Ct. App. May 27, 2004)	12
<i>Royal Ins. Co. of Am. v. Joseph Daniel Const., Inc.</i> , 208 F. Supp. 2d 423 (S.D.N.Y. 2002).....	7
<i>Sears Roebuck and Co. v. Manuilov</i> , 715 N.E.2d 968 (Ind. Ct. App. 1999).....	10
<i>Sewell v. State</i> , 592 N.E.2d 705 (Ind. Ct. App. 1992).....	4
<i>State v. Johnson</i> , 667 A.2d 523 (R.I. 1995).....	12
<i>Travelers Prop. & Cas. Corp. v. Gen. Elec. Co.</i> , 150 F. Supp. 2d 360 (D. Conn. 2001).....	7
<i>Tunnell v. Ford Motor Co.</i> , 330 F. Supp. 2d 707 (W.D. Va. 2004)	7
<i>United States v. Hebshie</i> , No. 02-cr-10185 (NG), Slip Op. (Nov. 15, 2010).....	13, 15
<i>United States v. Hebshie</i> , No. 02-cr-10185, Slip Op. (D. Mass. Nov. 15, 2010).....	10, 12, 14
<i>Workman v. AB Electrolux Corp.</i> , No. 03-4195-JAR, 2005 WL 1896246 (D. Kan. Aug. 8, 2005).....	7

STATUTES

Ind. Code § 34-24.5-1-1	13
Ind. Code § 35-38-7-1, <i>et seq.</i>	13

OTHER AUTHORITIES

101st Legislature (Neb. 2010).....	13
49th Legislature (Ariz. 2010).....	13

Angelo L Pisani, Jr., <i>Historical Perspective on Arson Evidence</i>	7
Brandon L. Garrett & Peter J. Neufeld, <i>Invalid Forensic Science Testimony and Wrongful Convictions</i> , 95 VA. L. REV. 1, 14 (2009).....	2
BRANDON L. GARRETT, <i>JUDGING INNOCENCE</i> , 108 COLUM. L. REV. 55, 106 (2008).....	2
fire. John J. Lentini et al., <i>Indicators of Trouble</i>	7
http://www.innocenceproject.org (last visited Nov. 30, 2010).....	2
Indiana Rules of Evidence 702, 703	14
John F. Boudreau et al., ARSON AND ARSON INVESTIGATION: SURVEY AND ASSESSMENT 87 (1977).....	5
Justice, <i>Fire and Arson Scene Evidence: A Guide for Public Safety Personnel</i> (2000).....	6
Marc Price Wolf, <i>Habeas Relief from Bad Science: Does Federal Habeas Corpus Provide Relief for Prisoners Possibly Convicted on Misunderstood Fire Science?</i> 10 MINN. J. L. SCI. & TECH. 213, 213-17 (2009).....	4
<i>N.Y. CRIM. PRO. § 440.10(1)(g)</i> (2006)	11
NFPA 921, <i>Guide for Fire and Explosion Investigations</i> (“NFPA 921”)	passim
No. 99, 52nd Leg. (2010).....	13
<i>Rule 1</i>	9, 11

INTEREST OF THE *AMICUS CURIAE*

The Innocence Network has a substantial interest in this case. The Innocence Network is a world-wide association of organizations¹ dedicated to providing *pro bono* legal and investigative services to individuals whose actual innocence of the crimes of which they have been convicted may be established in post-conviction proceedings. The Innocence Network also works to redress the causes of wrongful convictions. The network of organizations consists of tax-exempt nonprofit organizations, projects based at educational institutions, units of attorneys or investigators within a governmental agency devoted to the representation of indigent persons,

¹ The Member Organizations include the Alaska Innocence Project, Arizona Justice Project, Association in the Defense of the Wrongly Convicted (Canada), California & Hawai'i Innocence Project, Center on Wrongful Convictions, Connecticut Innocence Project, Cooley Innocence Project (Michigan), Delaware Office of the Public Defender, Downstate Illinois Innocence Project, Georgia Innocence Project, Idaho Innocence Project (Idaho, Montana, Eastern Washington), The Griffith University Innocence Project (Australia), Indiana University School of Law Wrongful Convictions Component, Innocence Institute of Point Park University, Innocence Network UK, The Innocence Project, Innocence Project Arkansas, Innocence Project New Orleans (Louisiana and Mississippi), Innocence Project New Zealand, Innocence Project Northwest Clinic (Washington), Innocence Project of Florida, Innocence Project of Iowa, Innocence Project of Minnesota, Innocence Project of South Dakota, Innocence Project of Texas, Innocence Project at UVA School of Law, Kentucky Innocence Project, Maryland Office of the Public Defender, Medill Innocence Project (all states), Michigan Innocence Clinic, Mid-Atlantic Innocence Project (Washington, D.C., Maryland, Virginia), Midwestern Innocence Project (Missouri, Kansas, Iowa), Mississippi Innocence Project, Montana Innocence Project, Nebraska Innocence Project, New England Innocence Project (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont), North Carolina Center on Actual Innocence, Northern Arizona Justice Project, Northern California Innocence Project, Ohio Innocence Project, Osgoode Hall Innocence Project (Canada), Pace Post Conviction Project (New York), Palmetto Innocence Project, Pennsylvania Innocence Project, The Reinvestigation Project of the NY Office of the Appellate Defender, Rocky Mountain Innocence Project, Schuster Institute for Investigative Journalism at Brandeis University - Justice Brandeis Innocence Project (Massachusetts), The Sellenger Centre (Australia), Texas Center for Actual Innocence, Texas Innocence Network, University of British Columbia Law Innocence Project (Canada), University of Leeds Innocence Project (Great Britain), Wesleyan Innocence Project, and the Wisconsin Innocence Project. The Center on Wrongful Convictions at Northwestern University School of Law is a member of the Innocence Network, but took no part in the decision to file this brief.

and law firms that commit substantial *pro bono* resources to individuals seeking to prove their innocence.

The Network and its members are dedicated to improving the accuracy and reliability of the criminal justice system in future cases. Drawing on the lessons from cases in which innocent persons were convicted, the Network advocates study and reform designed to enhance the truth-seeking functions of the criminal justice system to ensure that future wrongful convictions are prevented. The Innocence Network has represented dozens of individuals wrongfully convicted and imprisoned for crimes that they did not commit.² Experience in these cases demonstrates that proof of innocence is often untidy, untimely, and defies bright-line procedural strictures. *See* Brandon L. Garrett, *Judging Innocence*, 108 COLUM. L. REV. 55, 106 (2008) (noting that 86% of the individuals exonerated by DNA evidence had previously had their claims denied by appellate courts).

In half of the DNA exonerations by the Innocence Network, the misapplication of forensic disciplines—such as blood type testing, hair analysis, fingerprint analysis, bite mark analysis, and more—has played a role in convicting the innocent. *See, e.g.*, Innocence Project, Facts on Post-Conviction DNA Exonerations, at <http://www.innocenceproject.org> (last visited November 30, 2010); Brandon L. Garrett & Peter J. Neufeld, *Invalid Forensic Science Testimony and Wrongful Convictions*, 95 VA. L. REV. 1, 14 (2009). The Network, therefore, has a particularly strong interest in ensuring that criminal convictions are premised upon accurate forensic work. In this case, the Innocence Network seeks to present a broad perspective on the

² To date, 261 individuals have been exonerated based on DNA evidence through the efforts of the Innocence Network and other organizations. *See* The Innocence Project Home Page, at <http://www.innocenceproject.org> (last visited Nov. 30, 2010) (providing count of U.S. postconviction DNA exonerations). This figure does not include additional exonerations in cases without DNA evidence.

issues in the hope that the risk of future wrongful convictions will be minimized.

SUMMARY OF ARGUMENT

Appellant, Kristine Bunch, was convicted in 1996 of intentionally setting a fire in which her young son perished. She was convicted based, in no small part, on expert testimony from fire investigators appearing for the State. At the time of trial, this expert testimony, and the assumptions supporting it, may have conformed to what was then considered to be accepted practice. However, since Ms. Bunch was convicted, advances in fire science and, more importantly, acceptance and adoption of these scientific methods by the fire investigation community and courts around the country clearly demonstrate that the practices and standards employed by the State's witnesses are no longer professionally or legally acceptable. Indeed, much like advances in criminal science have fundamentally changed the analysis of fingerprints, blood, hair, body fluids, and other physical evidence, recent advances in fire science and the acceptance and reliance on the scientific method by fire investigators have completely dispelled the myths and misconceptions previously relied upon by fire investigators, including the investigators who testified in Ms. Bunch's trial.

Since Ms. Bunch was convicted, the new science and the body of evidence and test results this science has produced have been extensively peer-reviewed and accepted by the fire investigation community, the United States Department of Justice, and numerous courts as the *de facto* standard to be applied to fire investigations. If Ms. Bunch were tried today, the testimony by the State's experts would easily be shown to be unreliable, unsupportable and, therefore, inadmissible. Given that, the State would have no scientific or other evidence of arson and thus no evidentiary support for a conviction.

The courts and legislature of Indiana have recognized in DNA cases that advances in science and technology may yield potential for exculpation where none previously existed. *See,*

e.g., Sewell v. State, 592 N.E.2d 705, 708 (Ind. Ct. App. 1992). As with DNA evidence, the field of forensic fire investigation has evolved to the point that prior investigative methods, often based on observations alone, are no longer valid or acceptable in our system of justice. Under *Daubert* and its progeny, the testimony offered by the State’s experts at trial would be inadmissible today, resulting in an acquittal for Ms. Bunch, if not a dismissal of the charges brought against her.

ARGUMENT

A. The Science of Fire Investigation Has Undergone a Transformative Change Since Kristine Bunch’s Trial

1. The Evolution of Fire Investigation Science

Although fire investigation today is generally accepted as a scientific pursuit, this was not always the case. *See* Affidavit of John J. Lentini at ¶ 6 (“Lentini Aff.”), a copy of which is attached as an exhibit to Appellant’s Amended Post-Conviction Petition, filed June 10, 2009, and contained in Appellant’s App. pp. 474-536. This was certainly not the case in 1996 when Ms. Bunch was tried. *Id.* The industry handbook that is today the “gold standard” in fire investigation methodology and interpretation, NFPA 921, *Guide for Fire and Explosion Investigations* (“NFPA 921”), was largely ignored by the vast majority of fire investigators in 1996. *Id.* at ¶ 7.³

Before and even during the time of Ms. Bunch’s trial in 1996, fire investigation was much more art than science, with techniques and beliefs passed down and honed through apprenticeship rather than through scientific or even academic study. *See* Marc Price Wolf, *Habeas Relief from Bad Science: Does Federal Habeas Corpus Provide Relief for Prisoners Possibly Convicted on Misunderstood Fire Science?* 10 MINN. J. L. SCI. & TECH. 213, 213-17

³ NFPA 921 has been revised since it was first introduced. Unless otherwise noted, all cites herein to NFPA 921 are to the current 2008 edition.

(2009); Lentini Aff. Ex. 2 (*The Mythology of Arson Investigation*) at 1-3. Conclusions were based solely on observation and comparison, rather than in accordance with scientific method. *Id.* For example, a 1977 Department of Justice publication extolled the utility of “burn indicators” in fire investigations, referring to these often difficult-to-interpret visual clues as “the most common method of establishing arson.” John F. Boudreau et al., ARSON AND ARSON INVESTIGATION: SURVEY AND ASSESSMENT 87 (1977). The publication ominously noted, however, that burn indicators had “received little or no scientific testing” and there was “no published material in the scientific literature to substantiate their validity.” *Id.* at 88.

In 1992, the National Fire Protection Association (NFPA) published the first edition of NFPA 921 after incorporating over 280 comments from the fire protection and fire investigation communities. Wolf, *supra*, at 218; Lentini Aff. at ¶ 3. This seminal handbook was developed by the NFPA’s Technical Committee on Fire Investigations “to assist in improving the fire investigation process and the quality of information on fires resulting from the investigative process.” NFPA 921 at 921-1. More specifically, NFPA 921 provided to the fire investigation community – which still relied on unscientific methods and untested conclusions – some of the earliest and most authoritative guidance regarding accepted scientific principles and scientific research. Lentini Aff. at ¶ 3.

Initially, NFPA 921 was largely ignored by the fire investigation community. *Id.* at ¶ 7. At the time of Ms. Bunch’s trial in 1996, and even much later, many fire investigators still employed “traditional” methods of investigation and conclusions that were inconsistent with NFPA 921. *Id.* at ¶ 6; Wolf, *supra*, at 218-19. In a testament to the adherence to the traditional, non-scientific methods, the largest organization of professional fire investigators in the world, the International Association of Arson Investigators (“IAAI”), filed amicus briefs in pending

arson cases⁴ arguing that fire investigation should not be held to a scientific standard. Lentini Aff. at ¶¶ 12, 13, Ex. 3.

In 1999, the Supreme Court firmly rejected the position of the IAI, holding in *Kumho Tire v. Carmichael*, that all expert testimony (including fire investigators’) is subject to a reliability challenge under *Daubert*. 526 U.S. 137, 147 (1999). Then in 2000, NFPA 921 received a watershed endorsement: that of the U.S. government. The U.S. Department of Justice issued a report noting that NFPA 921 “has become a benchmark for the training and expertise of everyone who purports to be an expert in the origin and cause determination of fires.” National Institute of Justice, U.S. Dept. of Justice, *Fire and Arson Scene Evidence: A Guide for Public Safety Personnel*, 6 (2000). In November 2000, the IAAI followed the DOJ’s lead and finally endorsed NFPA 921. Lentini Aff. at ¶ 15.

The gradual adoption of NFPA 921 as the standard for fire investigation represented a sea change in fire investigations for two reasons: (1) it espoused the scientific method; and (2) it provided new guidance on the interpretation of post-fire artifacts based on empirical testing, which disproved many traditional interpretations of these artifacts. Lentini Aff. at ¶ 8. As a result, many of the traditional methods employed by fire investigators during the time of Ms. Bunch’s trial – and indeed, by the fire investigators who testified at her trial – have been entirely discredited or seriously questioned. *See generally id.*; NFPA 921 §§ 6.2.4.3, 6.13.1.4.

Today, NFPA 921 is the standard of care in fire investigation. Lentini Aff. at ¶ 4. It is published by the National Fire Protection Association, the largest professional fire protection organization in the world and has been formally adopted by the National Association of Fire Investigators and the International Association of Arson Investigators. *Id.* NFPA 921 is now

⁴ *Michigan Millers Mut. Ins. Corp. v. Benfield*, 140 F.3d 915 (11th Cir. 1998); *Kumho Tire v. Carmichael*, 526 U.S. 137 (1999).

recognized in courts around the country as the national standard of care for fire investigations.⁵

2. *Old Myths and Misconceptions*

In 1996, fire investigators still relied heavily on burn patterns to determine whether a fire was arson, *see generally* Lentini Aff., and this was certainly true of the investigators who testified in Ms. Bunch’s trial. Common misconceptions or “myths” within the fire investigation community in 1996 included the following:

- a. The misconception that pool-shaped or irregular burn patterns on floors were the result of the presence of a flammable liquid. Wolf, *supra*, at 224; Angelo L Pisani, Jr., *Historical Perspective on Arson Evidence*, PROCEEDINGS OF THE INTERNATIONAL SYMPOSIUM ON THE FORENSIC ASPECTS OF ARSON INVESTIGATION, 8-9 (1995); NFPA 921 § 6.3.7.8.
- b. The misconception that rapidly developing fire is indicative of arson and, specifically, the use of an accelerant. Wolf, *supra*, at 221.
- c. The misconception that accelerants burn at higher temperatures than ordinary combustibles and, consequently, melted metals are a sign of an incendiary fire. John J. Lentini et al., *Indicators of Trouble*, <http://www.firescientist.com/Documents/IndicatorsOfTrouble.pdf>. (last visited Nov. 30, 2010).

⁵ See e.g., *Workman v. AB Electrolux Corp.*, No. 03-4195-JAR, 2005 WL 1896246, at *10 (D. Kan. Aug. 8, 2005) (referring to NFPA 921 as the “national standard with regard to appropriate methodology for investigation by fire science experts”); *Ind. Ins. Co. v. Gen. Elec. Co.*, 326 F. Supp. 2d 844, 849-50 (D. Ohio 2004) (“NFPA-921 is a recognized guide for assessing the reliability of expert testimony in fire investigations.”); *Tunnell v. Ford Motor Co.*, 330 F. Supp. 2d 707, 725 (W.D. Va. 2004) (“Many courts have recognized NFPA 921 as a peer reviewed and generally accepted standard in the fire investigation community.”); *McCoy v. Whirlpool Corp.*, 214 F.R.D. 646, 653 (D. Kan. 2003) (“The ‘gold standard’ for fire investigations is codified in NFPA 921, and its testing methodologies are well known in the fire investigation community and familiar to the courts.”); *Royal Ins. Co. of Am. v. Joseph Daniel Const., Inc.*, 208 F. Supp. 2d 423, 426 (S.D.N.Y. 2002) (“The NFPA 921 sets forth professional standards for fire and explosion investigations.”); *Chester Valley Coach Works v. Fisher-Price, Inc.*, No. 99 CV 4197, 2001 WL 1160012, at *3 (E.D. Pa. Aug. 29, 2001) (“[The expert] acknowledges that NFPA 921 is the authoritative comprehensive guide to accepted procedures and techniques for fire investigations.”); *Travelers Prop. & Cas. Corp. v. Gen. Elec. Co.*, 150 F. Supp. 2d 360, 366 (D. Conn. 2001) (describing NFPA 921 as “a peer reviewed and generally accepted standard in the fire investigation community”); *Abon, Ltd. v. Transcontinental Ins.*, No. 2004-CA-0029, 2005 WL 1414486, at *10 (Ohio App. June 16, 2005) (“[NFPA 921] is a peer reviewed and generally accepted standard in the fire investigation community.”).

- d. The misconception that “multiple origins” or two separate burn areas without a connecting burn line between them is a reliable indicator of arson. Wolf, *supra*, at 225-26.

As the record in this case demonstrates, these myths and misconceptions formed a central part of the testimony of the State’s expert witnesses who testified at trial. For example, Bryan Frank referred repeatedly to “burn patterns” in his testimony for the prosecution, simply assuming the patterns resulted from a liquid accelerant. R. 822-825. Paul Hildebrand similarly concluded that the burn patterns on the floor “were characteristic of some type of flammable liquid being poured on the floor” R. 1331. Mr. Frank testified that a melted aluminum carpet strip found near the entryway of Ms. Bunch’s trailer could have only resulted from the presence of high heat caused by an accelerant. R. 1348-51.

The testimony of Frank and Hildebrand reveal how unfamiliar they were with the new developments in fire science, relying instead on the highly unscientific traditional methods of investigation and analysis. Indeed, Frank testified that he was aware of NFPA 921, but had never read it. R. 841. He also testified that the State of Indiana did not require him to follow any particular protocol or procedure in conducting fire investigations, including the practices and procedures required by NFPA 921. R. 866-67, 885.

3. *The New Science*

Despite widespread reliance among traditional fire investigators on irregular burn patterns as indicators of the use of an accelerant (and typically, of arson), advanced fire testing has proven that these patterns are not reliable indicators of either. NFPA 921 states: “Irregular, curved, or pool-shaped” patterns on floors and floor coverings should not be identified as resulting from ignitable liquids on the basis of observation of the shape alone.” NFPA 921 § 6.3.7.8. When full room involvement occurs, “patterns similar in appearance to ignitable liquid burn patterns can be produced when no ignitable liquid is present.” *Id.*

When a fire starts in a “compartment,” such as a mobile home, smoke and gases emitted by the fire and burning fuel rise to the ceiling above the fire and spread outward, forming a layer. NFPA 921 § 5.10.2.1. As the fire continues to burn, the layer of smoke and gas grows thicker and the temperature in the compartment skyrockets. *Id.* at §§ 5.10.2.4, 5.10.2.6. If the layer reaches a temperature of roughly 1100° F, the fire reaches a “flashover” point, where any item near the layer of smoke could combust. *Id.* at § 5.10.2.6. In a compartment fire, an open flame can progress to flashover in as little as 3 to 5 minutes. *Id.* at § 5.10.4.6. In flashover fires, burning floors, irregular floor-burn patterns and low-wall burning are all common. *Id.* at §§ 5.10.2.8, 6.3.7.8. Yet, each of these characteristics has been used by fire investigators in the past to conclude that a fire was incendiary in origin. Wolf, *supra*, at 221. “Given the facts of the flashover phenomenon, fire investigators should no longer use these burn patterns alone to conclude that an accelerant was used in setting a fire.” *Id.*

With respect to evidence of burned or melted metal objects found at a fire scene, such as the aluminum carpet strip found in Ms. Bunch’s trailer, “[a] specific melting temperature or range is characteristic for each material,” and, “when metals or their residues are found in fire debris, some inferences concerning temperatures in the fire can be drawn.” NFPA 921 § 6.2.8.3. Because wood and gasoline burn at essentially the same flame temperature, however, flame temperature and burned metals are not an indication of arson. *See id.*; NFPA 921 § 6.8.2.2.

B. As a Result of the Transformative Change in Fire Science, New Exculpatory Scientific Evidence Can be Offered in Defense of Kristine Bunch

Indiana PCR Rule 1 sets out the framework for post-conviction relief and the requirement that post-conviction relief be based on “evidence of material facts, not previously presented and heard.” The transformative change in fire science and the concomitant shift in mainstream expert opinion regarding fire science since the trial constitutes a “material fact” not previously

presented or heard in this case. As understood today, the State's expert testimony was utterly unreliable and unsupportable. It was based on unscientific observations and misguided assumptions. Under current standards, that testimony would, at a minimum, be subject to a serious *Daubert* challenge and, if admitted, to a rigorous cross-examination on currently accepted scientific principles. See *Sears Roebuck and Co. v. Manuilov*, 715 N.E.2d 968, 986 (Ind. Ct. App. 1999); *United States v. Hebshie*, No. 02-cr-10185, Slip Op. at 61, (D. Mass. Nov. 15, 2010); *Daubert v. Merrel Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 590 (1993).⁶

Under NFPA 921's scientific standards for conducting a reliable fire scene investigation, much of the State's expert witness testimony would likely have been excluded or severely limited at trial, thereby undermining the verdict. See, e.g., *Hebshie* at 56-59 (finding that government expert testimony that failed to meet the standards of NFPA 921 should have been excluded or limited, undermining confidence in the verdict). Absent clear standards in the fire investigation community in 1996, however, Ms. Bunch was limited in her defense and left with scientifically inadequate cross-examination as her only option to discredit the State's experts. "Cross-examination suffices only when experts have reached different conclusions, but the underlying approach is sound." *Hebshie* at 40. "Where it is not, exclusion, or in some situations, limitation, is the only option." *Id.*

Other courts have recognized that the advances in fire science severely undermine prior convictions, and that the new scientific evidence should be heard by a jury in a new trial. For example, in *People v. Chase*, No. I-040-95, 2005 N.Y. slip op. 51125(U) (N.Y. Co. Ct. May 19, 2005), the defendant was accused of removing a gas hose from a propane tank and intentionally setting fire to the gas. Under New York's post-conviction statute, the defendant was required to

⁶ See generally, cases cited in note 4, *supra*.

show that “[n]ew evidence had been discovered since the entry of a judgment based upon a verdict of guilty after trial, which could not have been produced by the defendant at the trial even with due diligence on his part.” N.Y. CRIM. PRO. § 440.10(1)(g)(2006). The defendant introduced expert testimony that the propane hose could not have caused the fire based on new scientific understandings of the chemical properties of propane. The State argued that “the properties of propane have not changed since [the] discovery” of the gas. *Chase* at 6. The court rejected that argument, however, stating that “it is clear that scientists now have a better understanding of those properties and how they work. The new knowledge better explains the cause of the fire.” *Id.*

In *Albrecht v. Horn*, the convicted defendant had previously been granted an evidentiary hearing to present new fire science evidence. 314 F. Supp. 2d 451, 464 (E.D. Pa. 2004). Rejecting the Commonwealth’s arguments to the contrary, the court held that expert testimony that discredited the old science upon which the conviction rested was “new evidence.” *Id.* at 465 n. 9.⁷

In *State v. Edmunds*, the court held a “shift in mainstream medical opinion” or “the emergence of a legitimate and significant dispute within the medical community as to the cause” of injuries to a baby in a shaken baby syndrome case constituted newly discovered evidence warranting a new trial. 746 N.W.2d 590, 599 (Wis. Ct. App. 2008). The court reasoned:

Now, a jury would be faced with competing credible medical opinions in determining whether there is a reasonable doubt as to Edmunds's guilt. Thus, we

⁷ In *Albrecht* case, the new evidence was not enough to earn the defendant his freedom. Unlike the case at bar, under the applicable standard for habeas relief, the defendant was required to actually prove that he “did not commit the crime.” *Id.* at 465. The court concluded that Albrecht’s new evidence proved only that the fire could have been accidental but did not conclusively prove his innocence. *Id.* The standard in the instant case is different. Kristine Bunch need not prove her innocence. Rather, under PCR Rule 1, Ms. Bunch must show only that retrial with the new evidence “will probably produce a different result.”

conclude that the record establishes that there is a reasonable probability that a jury, looking at both the new medical testimony and the old medical testimony, would have a reasonable doubt as to Edmunds's guilt. Accordingly, we reverse and remand for a new trial. *Id.*

Arson cases often feature a heavy reliance on fire science testimony. Indeed, the testimony of the fire science experts is often outcome determinative. *See Malek v. Federal Ins. Co.*, 994 F.2d 49, 54 (2d Cir. 1993) (noting importance of expert testimony in an arson case); *Babick v. Berghuis*, No. 1:03-cv-20, 2008 WL 282166, *60 (W.D. Mich. Jan. 29, 2008) (noting that the prosecutor's case rested heavily on the opinion testimony of his two arson experts); *People v. Rossbach*, No. 245262, 2004 WL 1178424, *6 (Mich. Ct. App. May 27, 2004) (noting expert testimony aided the jury by supplying information that was not within the knowledge of the layperson); *Jefferson County Com. Attorney's Office v. Kaplan*, 65 S.W.3d 916, 919 (Ky. 2001) (noting the prosecution relied heavily “on the fact that expert testimony revealed the presence of accelerants”); *State v. Johnson*, 667 A.2d 523, 528 (R.I. 1995) (noting the importance of arson expert testimony). “[A] certain patina attaches to an expert’s testimony unlike any other witness; this is ‘science,’ a professional’s judgment, the jury may think, and give more credence to the testimony than it may deserve.” *Hebshie*, No. 02-cr-10185, Slip Op. at 39 (finding that government expert testimony that failed to meet the standards of NFPA 921 should have been excluded or limited, undermining confidence in the verdict).

Given this reliance on experts, new evidence of a shift in accepted fire science methods and principles and a corresponding shift in mainstream fire expert opinion regarding these methods and principles is likely to have a significant impact in a new trial of Ms. Bunch, resulting in an entirely different verdict.

C. Three States Have Acted on These Transformative Advancements in Fire Science and Passed Resolutions Urging Judicial Review of Convictions

State legislatures in Oklahoma and Nebraska have recently passed resolutions supporting

“judicial review of any cases in which the attorneys submit that a conviction is questionable due to faulty science having been used,” and urging “the judicial branch, law enforcement agencies, and other relevant government entities . . . to employ NFPA 921 when conducting fire investigations.” Okla. Senate Res. No. 99, 52nd Leg. (2010); Legislative Res. 411, 101st Legislature (Neb. 2010). Arizona also recently passed a substantially similar resolution, noting that “it is possible that some of those persons convicted of arson in Arizona may have been convicted using antiquated and unreliable techniques in the past.” House Concurrent Res. 2066, 49th Legislature (Ariz. 2010).

In 2001, the Indiana legislature enacted comparable legislation in the context of DNA testing when it amended the Indiana Code to include a new section entitled “Postconviction DNA Testing and Analysis.” Ind. Code § 35-38-7-1, *et seq.* The statute provides courts with the option of ordering a new trial when DNA testing results would be favorable.⁸

The same principle of justice is manifest in this appeal. DNA cases involve a new analysis of old physical evidence, and courts routinely permit the introduction of new DNA evidence. New fire science evidence is no different – it also involves a new analysis of old physical evidence. Courts should treat this new evidence like new DNA evidence, with the operative question being whether the new science undermines the conviction. “By routinely allowing into evidence expert testimony that we know should have been excluded, and by closing courthouse doors to claims for redress after conviction, the courts have contributed to the problems we face today.” *United States v. Hebshie*, No. 02-cr-10185 (NG), Slip Op. at 66 (Nov. 15, 2010) (quoting Larry A. Hammond, *The Failure of Forensic Science Reform in Arizona*, 93

⁸ Indiana law has long provided for habeas remedies by constitutional provision (Article 1, section 27), and as early as 1881, the Indiana legislature codified the constitutional remedies under what is now Ind. Code § 34-24.5-1-1.

Judicature 227, 2 (2010)). *Amicus* urges this Court to grant Ms. Bunch nothing more than justice requires in this case: a retrial untainted by science that has been proven unreliable under Indiana Rules of Evidence 702, 703.

D. Nationwide, Convictions Based on Outdated “Expert” Testimony Are Being Reversed and Prosecutions Dropped Based on the New Emphasis on Science in Fire Investigations

The nationwide trend toward review, retrial, and outright rejection of junk fire science is unmistakable. For example, in *Carr v. State*, Weldon Wayne Carr was convicted in 1994 of arson and murder based in part on expert testimony regarding pour patterns and a dog allegedly detecting an accelerant at the scene. 482 S.E. 2d 314, 316 (Ga. 1997). The Georgia Supreme Court overturned the conviction, holding that the evidence of the dog’s alert was unreliable and should not have been admitted. *Id.* at 318.

In *United States v. Hebshie*, James Hebshie was convicted of arson in 2006 based, in part, on unreliable expert testimony regarding canine alerts and burn patterns. Slip Op. at 1-2. His conviction was reversed after the district court found that the government’s arson investigator failed to meet the standards of NFPA 921 and his testimony should have been excluded or limited pursuant to a reliability challenge under *Daubert*. *Id.* at 56-59, 64-66.

In addition to these cases, which involve courts reversing improper convictions based on bad fire science, court opinions excluding unreliable arson expert testimony are legion. *E.g.*, *Fireman's Fund Ins. Co. v. Canon U.S.A., Inc.*, 394 F.3d 1054, 1058 (8th Cir. 2005) (holding district court's exclusion of expert arson evidence proper where experts failed to compare hypothesis to evidence from scene in violation of NFPA 921); *Mich. Millers Mutual Ins. Corp. v. Benfield*, 140 F.3d 915, 920 (11th Cir. 1998) (finding no abuse of discretion where trial court excluded arson expert's testimony because his methodology did not support his conclusion); *Indiana Ins. Co. v. Gen. Elec. Co.*, 326 F. Supp. 2d 844, 850-51 (N.D. Ohio 2004) (holding that

cause-and-origin expert's failure to properly collect evidence, in violation of NFPA 921, made his investigation unreliable); *Am. Family Ins. Grp. v. JVC Am. Corp.*, No. 00-27 DSD/JMM, 2001 WL 1618454, at *3-4 (D. Minn. Apr. 30, 2001) (excluding expert testimony where expert did not apply the scientific methodology recommended by NFPA).⁹

CONCLUSION

“One would hope that with the announcement of every exoneration, the judges across whose desks these cases passed would pause to ask, ‘what can we do to make sure that this doesn’t happen again?’ . . . finality cannot trump fairness or justice.” *United States v. Hebshie*, No. 02-cr-10185 (NG), Slip Op. at 66 (Nov. 15, 2010). There has been a transformational shift in the science of fire investigation since Ms. Bunch was tried in 1996. That shift in science is a new, material fact compelling the relief sought by Ms. Bunch and *Amicus* – the outcome demanded by justice: a retrial untainted by bad scientific evidence. Based on the new scientific evidence discussed in this brief, it is evident that innocent people are currently incarcerated based on outmoded and discredited fire investigation evidence. *Amicus* urges the Court to ensure that Ms. Bunch is not among them.

⁹ See also *Pekark v. Sunbeam Prods. Inc.*, 672 F. Supp. 2d 1161, 1176-77 (D. Kan. 2008) (excluding opinion that cause of fire was electrical blanket where expert failed to follow reliable methodology); *Chester Valley Coach Works v. Fisher-Price, Inc.*, No. Civ. A. 99 cv 4197, 2001 WL 1160012 (E.D. Pa. Aug. 29, 2001) (excluding expert testimony under *Daubert* where the expert failed to follow the scientific method set out in NFPA 921); *Bryte ex rel. Bryte v. Am. Household, Inc.*, 429 F.3d 469 (4th Cir. 2005) (holding that where the fire expert failed to consider and rule out other possible causes, his inspection was properly excluded for being “inconsistent with the NFPA standards, which require investigators to exclude ‘all other reasonable origins and causes’”).

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WORD COUNT CERTIFICATION

I verify that this brief contains no more than 7,000 words.

Frances Lee Watson

CERTIFICATE OF SERVICE

I hereby certify that on December 1, 2010, I caused a copy of the foregoing document to be served by first class mail, postage prepaid, on the following counsel of record:

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