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Modeling Fire Patterns on Burned Human Bodies

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were stored frozen (~36°F/2°C) until thawed to room temperature for use. Skin integrity on living bodies differs slightly from frozen and thawed cadaver skin with cellular damage [6,10], however similar heat-related changes developed for scorched hair and skin, skin discoloration, blisters, charred skin, skin splits, fat liquification, muscle contractions, and burned bones that were reliable models for replicating fire patterns on human bodies [1-12].

The bodies and arms were burned within mock scenarios to replicate fire scenes involving enclosures, radiant heat exposure, and incendiary fires with ignitable liquids burned outdoors. Six tests with gasoline and charcoal lighter fluid were conducted to examine thermal damage on exposed and clothed (cotton and polyester) skin lying on absorbent and non-absorbent substrates to demonstrate unique heat-related changes from each variable and their resulting fire patterns.

Two bodies were placed inside fully furnished bedroom enclosures to examine burned tissue damage from direct flame impingement. The GFIA burn cell enclosure was a wooden framework lined with gypsum board, 10x16-foot (4x4.8-meters) with four windows.

Pugilistic Posture

Flexion of the Joints

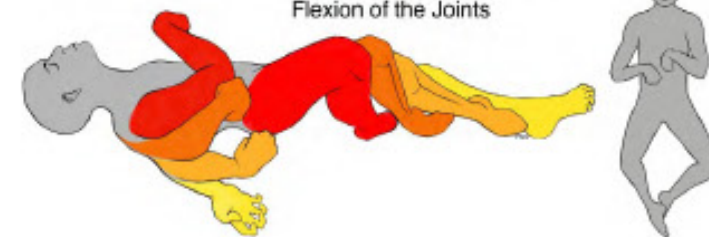


Figure 1. Progression of the pugilistic posture of a burned body with flexion of the joints involving movements of the fingers, hand, wrist, elbow, shoulder, toes, foot, ankles, knees, and hips caused by contractions of muscles from heat exposure.

Nine tests were conducted including six small-scale tests burned outdoors with ignitable liquids poured on body parts, and three full-scale tests with whole bodies. Since these tests were conducted as training demonstrations, ignitable liquids of gasoline and charcoal lighter fluid were applied to each body.

INTRODUCTION

Fatal fire scenes can pose several challenges to those who are tasked with recovering the remains of a burned body [1-6,8-12]. At the scene, investigators must identify and document the location of the body [1-6,8-12].

During their 2025 spring training conferences, the Georgia Fire Investigators Association (GFIA) in Marietta, Georgia, and the Missouri Fire Investigators Association (MFIA) in St. Louis, Missouri, were joined by the International Association of Fire Investigators (IAFI) in St. Louis, Missouri.

Health & Safety Committee

Providing the latest in fire investigator health and safety information.



Sean Bilovecky
Product Developer
Fire-Dex



Fire Investigation Had a PPE Problem Now there's purpose-built protection for the post-fire work



based on what you are doing and what and sweating at the same time. You can't have the fire is long gone. So, the answer is that matches how investigators act they need breathability and where the



Awards Committee

The awards committee has been working on restructuring some of the award categories. Here are some of the updates that have been instituted for this current nomination period.

A couple of years ago 'a group or unit of investigators' were included in the Investigator of the Year category. After processing the nominations the committee decided to separate the group or unit out as a separate award. The investigator of the year award will go back to an individual. Below is the information on the new unit award.

FIRE INVESTIGATION UNIT RECOGNITION:

This award is given to the fire investigation team or unit that is defined as a group or office of a public or private sector agency or entity that consists of two or more investigators with the responsibility for fire or explosion investigation, who has shown outstanding achievement, through the use of professional expertise, in both the criminal and civil fields of arson control. The recipient shall not be a current Officer or member of the Board of Directors, or a member of the Awards Committee. There shall be no more than one annual Investigation Unit Recognition awarded per year. This award shall be presented at the AGM.

(This is not limited to only formal teams/units but different agencies working together in the field of fire investigation)

The committee has added a third photograph category, identified as "Fire Effects". Below are the photograph guidelines. There is a separate Jotform on the website for photography submissions. The easiest way to locate it is to do a search for photograph awards.

PHOTOGRAPHY AWARDS:

Awards will be given in the categories of Arson Fire, Accidental Fire, and Fire Effects Photography. Participants can only win in one category; therefore, if a participant enters multiple categories, the photo receiving the highest ranking will be awarded to that participant, and the second entry will be dismissed. First Place, Second Place, and Honorable Mention awards are given in each category. Photos will be judged on the basis of the quality of the image represented, the clarity of the image, and the interest of the subject.



Rose Rozmiarek
MCJ, MIAAI, IAAI-CFI(V), IAAI-ECT



Jim Gault, IAAI-CFI

Hello Everyone,

We are approaching one of the most exciting times of the year as we prepare to elect our officers and gather at our Annual International Training Conference in St. Louis, Missouri. The ITC provides Chapter Officers and members a valuable platform to connect with each other and to engage with top professionals in the fire investigation industry. I encourage all members of other chapters, make new friendships and build professional relationships at the conference.

While at the conference I invite you to attend the in-person Chapters Committee Meeting on Thursday, April 30, 2026, starting at 3:30 PM in Grand Ballroom A, B, C. This meeting is open to all Chapter Officers and members. At 8:00 AM in Midway 9, there will be an in-person meeting for those members involved in Chapter governance and leadership. IAAI Executive Leadership will host "IAAI Ignite: Leadership in Action," a two-hour program that provides a leadership perspective within IAAI Chapters and the broader IAAI organization.

The election of Officers and Directors opened at noon on March 2, 2026. Voting is your voice and your responsibility and in alignment with our mission and the interest of the fire investigation industry. Please vote and encourage your Chapter members to vote.

Chapters are encouraged to partner with other nearby chapters to organize regional training events. Our Director of International Training, is available to help facilitate these cooperative efforts. Please contact Kate at (iaaitraining@firearson.com).

It appears that everyone is becoming familiar with using the new JOT forms for submitting chapter operations. These Liaisons have a strong understanding of the process and can be reached to event submissions and testing requests. Please keep in mind that our Liaison serves as the primary point of contact for chapter operations. For additional support, Vice Presidents can reach out to the Liaison. Please keep in mind that our Liaison serves as the primary point of contact for chapter operations.

Chapters Corner

By Jim Gault