

OSAC RESEARCH NEEDS ASSESSMENT FORM



Title of research need:

Describe the need:

Almost all of the guidance on wall and ceiling patterns in NFPA 921 is based on those surfaces being unpainted gypsum wallboard. It is important that fire investigators understand that their analysis and interpretation of patterns may change as the material on which those patterns manifest themselves change. The effects that are created on surfaces other than gypsum wallboard are largely unknown.

Keyword(s):

Material properties, burning properties, fire patterns, fire pattern creation, fire origin, fire spread

Submitting subcommittee(s): **Date Approved:**

(If SAC review identifies additional subcommittees, add them to the box above.)

Background Information:

1. Does this research need address a gap(s) in a current or planned standard? (ex.: Field identification system for on scene opioid detection and confirmation)

Yes. NFPA 921, Chapter 6, Fire Patterns is ever evolving to address enhanced understanding of the effects of fire and the patterns resulting from ventilation effects. It is currently under review for the next edition of the standard.

2. Are you aware of any ongoing research that may address this research need that has not yet been published (e.g., research presented in conference proceedings, studies that you or a colleague have participated in but have yet to be published)?

No.

3. Key bibliographic references relating to this research need: (ex.: Toll, L., Standifer, K. M., Massotte, D., eds. (2019). Current Topics in Opioid Research. Lausanne: Frontiers Media SA. doi: 10.3389/978-2-88963-180-3)

Kim, M.E., Dembsey, N. (2012). *Engineering Guide for Estimating Material Pyrolysis Properties for Fire Modeling*, WPI Final Report 28 September 2012.
Geiman, J, McCarthy, L (2015). *Assessment of Damage by Fire Investigators*, Fire and Materials Conference, San Francisco, CA.

4. Review the annual operational/research needs published by the National Institute of Justice (NIJ) at <https://nij.ojp.gov/topics/articles/forensic-science-research-and-development-technology-working-group-operational#latest>? Is your research need identified by NIJ?

Yes.

5. In what ways would the research results improve current laboratory capabilities?

This research need is targeted to improve current fire investigation field work rather than laboratory analyses. This research will serve to better inform fire investigators as to how to approach the interpretation of fire patterns as well as the training they receive in this area. In addition to a comprehensive report, a series of training materials would also be important to the understanding of how ventilation (or the lack thereof) affects fire patterns.

6. In what ways would the research results improve understanding of the scientific basis for the subcommittee(s)?

See Number 5.

7. In what ways would the research results improve services to the criminal justice system?

This research will help the fire investigation community to apply a more systematic approach to fire pattern analysis. This more systematic approach will improve expert opinions and testimony relating to fire pattern analysis.

8. Status assessment (I, II, III, or IV):

I

	Major gap in current knowledge	Minor gap in current knowledge
No or limited current research is being conducted	I	III
Existing current research is being conducted	II	IV

This research need has been identified by one or more subcommittees of OSAC and is being provided as an informational resource to the community.