



## OSAC RESEARCH NEEDS ASSESSMENT FORM

**Title of research need:**

**Keyword(s):**

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

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

### Background Information:

1. Description of research need:

Doors, windows, and other openings in a compartment introduce air, allow the escape of heat and thus affect temperatures and flow patterns. Temperature and flow in turn create and destroy patterns on the compartment surfaces. Given the influence of these factors, a pattern that is observed post fire may or may not be related to the origin. Without a solid understanding of these effects, fire investigators may misinterpret these patterns, thus making erroneous conclusion about the origin of a fire. A coordinated research program is needed to analyze the effects that ventilation has on the creation and obscuration of fire patterns related to the origin of a fire.

2. Key bibliographic references relating to this research need:

Custer, R., Wright, C. (1984). *Open Windows and Thermal Inversions may Complicate a Fire Investigation*. Fire and Arson Investigator, **6**, p. 89-91.

Cox, A (2013). *Origin Matrix Analysis: A Systematic Methodology for the Assessment and Interpretation of Compartment Fire Damage*. Fire & Arson Investigator, 64(1).

Gorbett G, Meacham B, Wood C, Dembsey N (2017). *Structure and Evaluation of the Process for Origin Determination in Compartment Fires*. Fire Technology, doi 10.1007/s10694-015-0553-3

3a. In what ways would the research results improve current laboratory capabilities?

This research will help laboratories to better determine which instrumentation is appropriate for large scale fire testing as well as what data should be documented and published.

3b. In what ways would the research results improve understanding of the scientific basis for the subcommittee(s)?

3c. 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 the results of fire pattern analysis.

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

	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.*

**Approvals:**

Subcommittee	Approval date: <input type="text"/>
<i>(Approval is by majority vote of subcommittee. Once approved, forward to SAC.)</i>	

SAC	
1. Does the SAC agree with the research need?	Yes <input type="checkbox"/> No <input type="checkbox"/>
2. Does the SAC agree with the status assessment?	Yes <input type="checkbox"/> No <input type="checkbox"/>
If no, what is the status assessment of the SAC:	<input type="text"/>
Approval date:	<input type="text"/>
<i>(Approval is by majority vote of SAC. Once approved, forward to NIST for posting.)</i>	