OSAC RESEARCH NEEDS ASSESSMENT FORM

Title of research need: Assessment of the value of activity level factors during investigative processes and interpretation of glass evidence (e.g., mechanisms of transfer and persistence of glass, random occurrence of glass in a random population)

Keyword(s): Glass, random occurrence, reconstruction, activity factors, transfer and persistence

Submitting subcommittee(s): Materials/Trace Date Approved: 9/24/18

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

Background Information:

1. Description of research need:

   The use of broken glass as physical evidence is well established in the criminal justice system, as is commonly left behind in the form of trace material in kidnappings, robberies, assaults and hit and run cases. Consensus-based standards, research studies, and peer-reviewed literature have laid the foundations of the discipline, particularly for the analysis and conclusions regarding source/class attribution.

   Nonetheless, current challenges remain on its use during investigative stages and on the overall assessment of the value of the evidence beyond the source level to the activity framework.

   The application of more comprehensive interpretation models is currently limited due to: a) the need to increase and maintain databases, b) gaps of information regarding the mechanisms of transfer and persistence of glass, and c) lack of studies on the random occurrence of glass in U.S. populations. Although some efforts have been conducted with regards to databases and persistence of glass, there are no studies that report baseline data of traces of glass in the United States. In the absence of local data regarding the prevalence of glass fragments on the general public—relative to those involved in an alleged event—the use of glass in our courts would not be used to its full potential.

2. Key bibliographic references relating to this research need:

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

Glass background surveys have been conducted only outside the U.S., and the existing literature suggests several geographical and socioeconomic factors influence the conclusions that can be inferred from the studies.

At the moment, most U.S. crime laboratories limit the use of glass evidence to the comparison of known and questioned glass fragments to make inferences at the source level. Research studies that generate data on background occurrence of glass on U.S. populations and that evaluate factors that could influence the transfer and persistence of glass will offer the criminal justice a valuable body of knowledge and provide a broader contribution to investigative efforts and a more comprehensive assessment of the evidential value of glass in court.

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

At the subcommittee level, these type of research would provide additional support to the interpretation and report writing guidelines that are being developed for glass evidence and trace materials in general.

3c. In what ways would the research results improve services to the criminal justice system?

Having new foundations of activity factors and baseline occurrence of glass would provide investigators, forensic examiners, defense and prosecutors, judges and jury with tools for a more overarching use of glass to assist in the judicial process.

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

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<thead>
<tr>
<th>Major gap in current knowledge</th>
<th>Minor gap in current knowledge</th>
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<tbody>
<tr>
<td>No or limited current research is being conducted</td>
<td>I</td>
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<tr>
<td>Existing current research is being conducted</td>
<td>II</td>
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</tbody>
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*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:

<table>
<thead>
<tr>
<th>Subcommittee Approval date:</th>
<th>9/24/18</th>
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*(Approval is by majority vote of subcommittee. Once approved, forward to SAC.)*

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<thead>
<tr>
<th>SAC Approval date:</th>
<th>12/19/18</th>
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1. Does the SAC agree with the research need? **Yes** × **No**

2. Does the SAC agree with the status assessment? **Yes** × **No**

   If no, what is the status assessment of the SAC:  

*(Approval is by majority vote of SAC. Once approved, forward to NIST for posting.)*