

OSAC RESEARCH NEEDS ASSESSMENT FORM



Title of research need: Assessment of Examiners' Toolmark Categorization Accuracy

Keyword(s): Toolmarks, firearms, class characteristics, subclass,

Submitting subcommittee(s): Firearms & Toolmarks **Date Approved:** March 5, 2021

(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)

We are unaware of any study that assess the overall firearm and toolmark discipline's ability to correctly/consistently categorize evidence by class characteristics, identify subclass marks.

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)?

Unknown

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)

N/A

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, "Determination of accuracy and reliability of forensic analyses and conclusions, including potential sources of error"; "Evaluation of qualified language of association along the continuum from investigative leads to definitive conclusions".

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

Past validation studies have focused on the firearm and toolmark discipline's overall ability to correctly identify items using individual characteristics. We are unaware of any studies that focused on the discipline to correctly characterize class characteristics and eliminate samples. Additionally, we are unaware of any studies that assess examiner accuracy in recognizing subclass characteristics.

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

Understanding the overall accuracy of class and subclass characteristic categorization will guide the subcommittee with writing our testing and examination standards.

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

Further studies assessing and documenting the accuracy of examiners will help the justice system assess the overall error rates of the toolmark examinations.

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

III

	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.