OSAC 2021-N-0018 Standard for On-Scene Collection and Preservation of Physical Evidence

Crime Scene Investigation & Reconstruction Subcommittee
Scene Examination Scientific Area Committee
Organization of Scientific Area Committees (OSAC) for Forensic Science

Draft OSAC Proposed Standard

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Standard for On-Scene Collection and Preservation of Physical Evidence

Prepared by
Crime Scene Investigation & Reconstruction Subcommittee
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Disclaimer:

This OSAC Proposed Standard was written by the Crime Scene Investigation & Reconstruction Subcommittee of the Organization of Scientific Area Committees (OSAC) for Forensic Science following a process that includes an open comment period. This Proposed Standard will be submitted to a standards developing organization and is subject to change.

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Foreword

This document provides standards for the on-scene collection and preservation of physical evidence. Proper collection and preservation of physical evidence ensures that the integrity of the evidence is maintained from the point of collection, through possible forensic examination, and to the presentation of the evidence in the courtroom.

This document should be utilized in conjunction with local regulations and any requirements set forth by entities examining collected evidence to inform or augment policies relating to the collection and preservation of physical evidence.

This document has been drafted by the Crime Scene Investigation & Reconstruction Subcommittee of the Organization of Scientific Area Committees (OSAC) for Forensic Science through a consensus process.

This standard provides guidance on some safety issues but is not exhaustive. It is the responsibility of the appropriate agency to develop a full health and safety plan.

Keywords: crime scene investigation, collection, preservation, physical evidence

Table of Contents

1 Scope 5
2 Normative References 5
3 Terms and Definitions 5
4 Collection and Preservation of Physical Evidence 6
4.1 Personal Protective Equipment 6
4.2 Chain of Custody 7
4.3 Evidence Packaging 7
5 Evidence Type Considerations 8
5.1 Biological evidence 8
5.2 Wet items 9
5.3 Greasy or oily items 9
5.4 Trace evidence 9
5.5 Fragile items 9
5.6 Friction ridge and other impressions 9
5.7 Gasses and liquids 10
5.8 Electronic Devices 10
6 Evidence Security 10
6.1 Sealing of evidence 10
6.2 Evidence Labelling 10
6.3 Evidence storage 10
Appendix A 12

Standard for On-Scene Collection and Preservation of Physical Evidence

1 Scope

This document provides standards and recommendations for the collection and preservation of physical evidence during scene investigations. This document covers evidence handling considerations intended to maintain the integrity of physical evidence so that reliable, accurate, and relevant conclusions can be obtained in the course of an investigation. This document does not pertain to the preservation methods needed during the initial survey and processing of the scene. This document does not go into specific considerations for individual classes of evidence.

2 Normative References

The following referenced document is indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Organization of Scientific Area Committees (OSAC) for Forensic Science, Scene Investigation Subcommittee. *Guiding Principles for Scene Investigation and Reconstruction* [OSAC Proposed Standard], March 2020.

ANSI-ASB Best Practice Recommendation 068: "Safe Handling of Firearms and Ammunition", 1st Edition, 2020.

3 Terms and Definitions

For purposes of this document, the following definitions apply.

3.1
chain of custody
Chronological record of the handling and storage of an item from its point of collection to its final return or disposal.

3.2
contamination
The undesirable introduction of a substance to an item at any point in the forensic process. (ISO/FDIS 21043-1:2018[E])

NOTE This includes undesirable transfer of a substance within an item or between items, also referred to as cross-contamination.

3.1
crime scene investigation
CSI
A scene investigation that involves an apparent criminal act.

3.2
crime scene investigator
CSI
An individual, however named, who is responsible for performing elements of a scene investigation that involves a potential criminal act.

3.5
law enforcement officer
LEO
Any public employee whose duties primarily involve enforcement or investigation of laws.

3.6
personal protection equipment
PPE
Equipment worn to minimize exposure to a variety of hazards such as body-fluids, irritants, or contaminants. Examples of PPE: gloves, foot and eye protection, respirators, and full body suits.

3.7
physical evidence
Anything that can be physically collected, lifted, or imaged to inform the understanding of an incident.

NOTE physical evidence may include biological evidence swabbings, impression, and print evidence in the form of lifts, digital devices, and transitory evidence.

3.7
scene
A place or object that is subject to and/or requires forensic examination. (ISO/FDIS 21043-1:2018[E])

NOTE A crime scene is a common description of a scene where a presumed crime has been committed. The scene can be a person or an animal.

3.6
scene investigation
An examination of a scene to locate, document, collect, and preserve items of potential evidentiary value. (Guiding Principles)

NOTE Though commonly applied to criminal investigations, the same principles and methods can be more broadly applied to scene investigations that are not criminal in nature.

3.7
scene investigator
An individual, however named, who is responsible for performing elements of scene investigation. (Guiding Principles)

4 Collection and Preservation of Physical Evidence

Scene investigators shall communicate and cooperate with investigative personnel to ensure that the scene examination is thorough and all evidence discovered is properly collected and/or documented. The method employed for the collection and preservation of a particular item may vary based on scene context and future analysis.

Evidence shall be collected and preserved in a manner that maintains evidence integrity by preventing contamination, tampering, alteration, or loss of evidence. Evidence shall be retained in a manner that preserves the items' integrity for analysis and introduction into a legal proceeding. Throughout the process of collection, transportation and storage effort shall be taken to mitigate unnecessary handling of items.

If the collection or preservation of a particular item is beyond the technical skills, knowledge, or resources available to the crime scene investigator, specialized personnel within the department or from an outside entity shall be contacted for consultation or assistance.

4.1 Personal Protective Equipment

4.1.1 Personal protective equipment (PPE) shall be utilized for both the safety of the wearer and to protect the integrity of the evidence. PPE may consist of but is not limited to, gloves, protective clothing, masks, eye protection, and respiratory equipment.

4.1.2 Scenes can be the source of various hazards including biological, chemical, physical, and environmental hazards. Once the hazards present at the scene have been determined, appropriate PPE shall be utilized by those processing the scene to protect from such hazards. The scene should be continuously reevaluated to determine if alterations to the level of PPE are needed for adequate personal protection.

4.1.3 PPE shall also be utilized as a means of contamination prevention. To prevent contamination, PPE shall be single-use disposable or reusable and capable of being properly sterilized from one scene to the next. Unused disposable gloves shall be worn when handling items of physical evidence and shall be changed frequently. When handling multiple items at a scene, PPE can be a source of cross contamination. PPE shall be changed regularly to prevent cross contamination.

4.1.4 Care should be taken to avoid breathing, talking, or sweating directly over or otherwise contaminating an item subject to DNA analysis. A mask and unused gloves should be worn when working closely with evidence that may be subject to DNA analysis.

4.2 Chain of Custody

4.2.1 Chain of custody is the chronological and careful documentation to ensure traceability and continuity of physical evidence in order to account for the integrity and possession of the material. Chain of custody shall be established at the point of collection and maintained through final disposition.

4.2.2 The chain of custody shall be documented for all items that are collected as evidence. This documentation shall include the dates and times of any transfer to include the name of the person or location to which the evidence is transferred. Each transfer shall be documented by both parties.

4.2.3 Transfer of evidence shall be purposeful and necessary. Evidence shall be transferred only to persons that have a direct role in processing, storing, or investigating the items of evidence. All evidence transfers shall be documented.

4.3 Evidence Packaging

4.3.1 Proper packaging is critical to preserving material physically as well as to preserving its evidentiary value. Packaging protects against breakage, damage, contamination, prevents chemical changes and deterioration, helps maintain chain of custody and provides for safe handling, storage and shipment of hazardous material.

4.3.2 Each item of evidence shall be protected from loss, contamination, alteration, or tampering prior to removing the item from the scene. If an item is too large to be placed in available packaging, areas of evidentiary value shall be protected. There may be multiple acceptable packaging options for different evidence types.

4.3.3 Attempts should be made to utilize final packaging in the field but conditions may exist where temporary packaging needs to be used for transport. In this case, items shall be repackaged to prevent degradation or tampering. For example, wet items may need to be transported in plastic and dried prior to final packaging for long-term storage. Final, long-term packaging shall minimize degradation to the item and preserve the evidentiary value of the item to the extent possible.

4.3.4 Packaging and containers used to preserve evidence should be reasonably sized in relation to the item. Excessively large or tight packaging should be avoided.

4.3.5 Packaging materials used for preservation of evidence shall be sturdy enough to avoid damage to the packaging, damage to items within, or endangering personnel. Fragile and sharp evidence may need additional clean protective padding.

4.3.6 Packaging shall be either single-use disposable or reusable and capable of being properly sterilized prior to use. Note: Some sample types and analytical methods require that only new, unused packaging be utilized.

4.3.7 Any tools utilized to place an item into its collection container shall be clean. Tools shall either be single-use or properly sterilized prior to use.

4.3.8 Individual items of evidence should be packaged and sealed separately to maintain their integrity and prevent cross-contamination. For items found commingled (such as cigarettes within an ashtray), items may be packaged together or separately depending on investigative needs.

4.3.9 Items and/or packages shall be marked in a manner that ensures that each item can be uniquely associated with its documentation. Packaging shall include warning labels of any hazards that the items may possess.

4.3.10 If an item with potential evidence is repackaged, original packaging shall be retained.

5 Evidence Type Considerations

This section provides general type-specific considerations for some common classes of evidence. This list does not cover all possible evidence types, nor does it address all possible considerations for each evidence.

5.1 Biological evidence

5.1.1 The collection and storage of biological evidence shall be packaged in a manner that limits the degradation or tampering of the biological material.

5.1.2 In general, biological stains that are able to be dried shall be dried and packaged in breathable packaging (e.g., paper bag) or in non-breathable packaging with a moisture control mechanism (e.g., plastic tube with desiccant pack).

5.1.3 Liquid biological samples shall be collected in a sterile leak-proof, hard-sided container and should be refrigerated or frozen for long-term storage depending on the type of sample.

5.1.4 NOTE *The Biological Evidence Handbook: Best Practices for Evidence Handlers* (NIST 2013) is available for further guidance on the collection and preservation of biological evidence.

5.2 Wet items

5.2.1 Any item which could be degraded by prolonged exposure to moisture such as whole or live plant evidence, clothes, or organic material shall be dried and packaged in breathable packaging or packaging with a moisture control mechanism to prevent the accumulation of moisture, mold, or mildew.

5.2.2 Wet items shall be packaged in a manner that prevents leakage from the point of collection to a controlled area where the item can be dried and repackaged for long-term storage.

5.3 Greasy or oily items

5.3.1 Greasy or oily items shall be packaged in a manner that prevents leakage such as plastic bags.

5.4 Trace evidence

5.4.1 Trace evidence shall be packaged in a manner that prevents loss of evidence or contamination. If paper packaging is used, a bindle-type fold (figure 1 contains one possible example) or double bagging procedure shall be used to prevent loss of small evidence through seams.

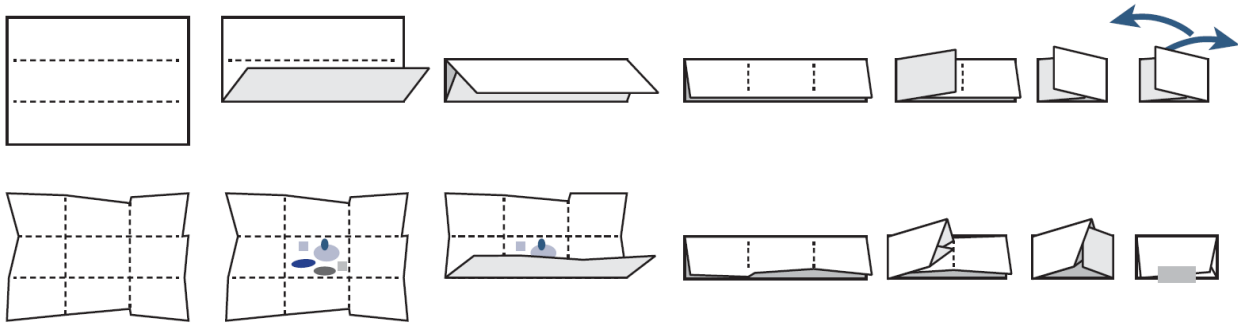

Figure 1 - Fold a clean sheet of paper into thirds, like a business letter; then fold into thirds from the ends, creating nine "squares"; unfold; lay trace material in center "square"; re-fold as before, facing one end of last fold into opposite end; seal with tape. (Figure courtesy of NFSTC@FIU).

5.4.2 Items suspected to be at risk of loss or damage during packaging should be collected separately from substrates prior to transport..

5.4.3 Powdery or crystalline material should be packaged in a manner that prevents small particles from loss.

5.5 Fragile items

5.5.1 Easily lost, broken, or destroyed evidence types shall be packaged and handled in a manner that reduces surface contact, friction against the item, and possible damage from impacts to the container.

5.6 Friction ridge and other impressions

5.6.1 Friction ridge and other impressions on the surface of items may be displaced or destroyed by rubbing against packaging. These item types should be collected separately from substrates (if possible), or placed in packaging which protects against abrasive contact or other possible damage prior to transport.

5.7 Gasses and liquids

5.7.1 Gasses and some liquid chemicals can escape from common packaging like plastic bags and paper bags. Further, plastic containers may break down and contaminate chemical evidence. These types of evidence shall be packaged in non-porous containers such as glass jars or lined paint cans to prevent evaporation or contamination

5.8 Electronic Devices

5.8.1 Digital information contained in electronic evidence can be accidentally or purposely destroyed if physical items are not properly handled, protected, and prepared for storage. When collecting an electronic device for purposes of investigating its digital media, content shall be protected from alterations resulting in loss or contamination to the extent possible.

6 Evidence Security

6.1 Sealing of evidence

6.1.1 Upon collection, evidence shall be sealed in a manner that maintains evidence integrity by preventing contamination, tampering, alteration, or loss of evidence.

6.1.2 If an item is too large to be placed in available packaging, areas of evidentiary value shall be protected from contamination, tampering, alteration, or loss of evidence.

6.1.3 Long-term packaging shall include tamper detection ability, such as signed evidence tape.

a) If the packaging does not yet include a tamper detection mechanism and items are not in the physical presence of the person currently in the custody of the items, items shall be placed in a secure, temporary storage location with restricted access.

6.2 Evidence Labelling

6.2.1 Packaging shall be appropriately labeled to uniquely identify content, the circumstances of collection, and to reflect any hazards.

6.2.2 Packaging or associated documentation should include specialized storage considerations (e.g., refrigerated or frozen storage requirements) specific to the contents and subsequent laboratory testing.

6.3 Evidence storage

6.3.1 From the time of collection until final disposition, all items shall be maintained and stored in a secure manner which is able to prevent and detect tampering, alteration, loss or contamination.

6.3.2 Storage areas for both short and long-term storage of evidence shall be secured and have restricted access, where all personnel with access to the area are trained in the proper handling of evidence.

6.3.3 Evidence shall be stored in a manner in which its integrity is preserved and it can be uniquely associated with its documentation.

Appendix A

(informative)

Bibliography

This is not meant to be an all-inclusive list as the group recognizes other publications on this subject may exist. At the time this document was drafted, these were some of the publications available for reference. Additionally, any mention of a particular software tool or vendor as part of this bibliography is purely incidental, and any inclusion does not imply endorsement by the authors of this document.

1] ASTM International, *E1732-18, Standard Terminology Relating to Forensic Science*, 2018

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3] National Forensic Science Technology Center, Crime Scene Investigation A Guide for Law Enforcement, September 2013.

4] National Institute of Standards and Technology, & National Institute of Justice. The Biological Evidence Handbook: Best Practices for Evidence Handlers, April 2013