

1 **OSAC 2021-N-0018**
2 **Standard for On-Scene**
3 **Collection and**
4 **Preservation of Physical**
5 **Evidence**

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





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Standard for On-Scene Collection and

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Preservation of Physical Evidence

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Prepared by

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Crime Scene Investigation & Reconstruction Subcommittee

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17 **Disclaimer:**

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

22 There may be references in an OSAC Proposed Standard to other publications under
23 development by OSAC. The information in the Proposed Standard, and underlying concepts and
24 methodologies, may be used by the forensic-science community before the completion of such
25 companion publications.

26 Any identification of commercial equipment, instruments, or materials in the Proposed Standard
27 is not a recommendation or endorsement by the U.S. Government and does not imply that the
28 equipment, instruments, or materials are necessarily the best available for the purpose.



29 **Foreword**

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

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

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

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

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

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65 **Standard for On-Scene Collection and Preservation of Physical Evidence**

66 **1 Scope**

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

73 **2 Normative References**

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

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

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

82 **3 Terms and Definitions**

83 For purposes of this document, the following definitions apply.

84 **3.1**

85 **chain of custody**

86 Chronological record of the handling and storage of an item from its point of collection to its final
87 return or disposal.

88 **3.2**

89 **contamination**

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

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

94 **3.1**

95 **crime scene investigation**

96 **CSI**

97 A scene investigation that involves an apparent criminal act.

98 **3.2**

99 **crime scene investigator**

100 **CSI**

101 An individual, however named, who is responsible for performing elements of a scene investigation
102 that involves a potential criminal act.

103 **3.5**

104 **law enforcement officer**

105 **LEO**

106 Any public employee whose duties primarily involve enforcement or investigation of laws.

107 **3.6**

108 **personal protection equipment**

109 **PPE**

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

112 **3.7**

113 **physical evidence**

114 Anything that can be physically collected, lifted, or imaged to inform the understanding of an
115 incident.

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

118 **3.7**

119 **scene**

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

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

123 **3.6**

124 **scene investigation**

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

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

129 **3.7**

130 **scene investigator**

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

133 **4 Collection and Preservation of Physical Evidence**

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

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

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

146 **4.1 Personal Protective Equipment**

147 4.1.1 Personal protective equipment (PPE) shall be utilized for both the safety of the wearer and
148 to protect the integrity of the evidence. PPE may consist of but is not limited to, gloves,
149 protective clothing, masks, eye protection, and respiratory equipment.

150 4.1.2 Scenes can be the source of various hazards including biological, chemical, physical, and
151 environmental hazards. Once the hazards present at the scene have been determined,
152 appropriate PPE shall be utilized by those processing the scene to protect from such
153 hazards. The scene should be continuously reevaluated to determine if alterations to the
154 level of PPE are needed for adequate personal protection.

155 4.1.3 PPE shall also be utilized as a means of contamination prevention. To prevent
156 contamination, PPE shall be single-use disposable or reusable and capable of being properly
157 sterilized from one scene to the next. Unused disposable gloves shall be worn when
158 handling items of physical evidence and shall be changed frequently. When handling
159 multiple items at a scene, PPE can be a source of cross contamination. PPE shall be changed
160 regularly to prevent cross contamination.

161 4.1.4 Care should be taken to avoid breathing, talking, or sweating directly over or otherwise
162 contaminating an item subject to DNA analysis. A mask and unused gloves should be worn
163 when working closely with evidence that may be subject to DNA analysis.

164 **4.2 Chain of Custody**

165 4.2.1 Chain of custody is the chronological and careful documentation to ensure traceability and
166 continuity of physical evidence in order to account for the integrity and possession of the
167 material. Chain of custody shall be established at the point of collection and maintained
168 through final disposition.

169 4.2.2 The chain of custody shall be documented for all items that are collected as evidence. This
170 documentation shall include the dates and times of any transfer to include the name of the
171 person or location to which the evidence is transferred. Each transfer shall be documented
172 by both parties.

173 **4.2.3** Transfer of evidence shall be purposeful and necessary. Evidence shall be transferred only to
174 persons that have a direct role in processing, storing, or investigating the items of evidence.
175 All evidence transfers shall be documented.

176 **4.3 Evidence Packaging**

177 4.3.1 Proper packaging is critical to preserving material physically as well as to preserving its
178 evidentiary value. Packaging protects against breakage, damage, contamination, prevents
179 chemical changes and deterioration, helps maintain chain of custody and provides for safe
180 handling, storage and shipment of hazardous material.

181 **4.3.2** Each item of evidence shall be protected from loss, contamination, alteration, or tampering
182 prior to removing the item from the scene. If an item is too large to be placed in available
183 packaging, areas of evidentiary value shall be protected. There may be multiple acceptable
184 packaging options for different evidence types.

185 **4.3.3** Attempts should be made to utilize final packaging in the field but conditions may exist
186 where temporary packaging needs to be used for transport. In this case, items shall be
187 repackaged to prevent degradation or tampering. For example, wet items may need to be
188 transported in plastic and dried prior to final packaging for long-term storage. Final,
189 long-term packaging shall minimize degradation to the item and preserve the evidentiary
190 value of the item to the extent possible.

191 **4.3.4** Packaging and containers used to preserve evidence should be reasonably sized in relation
192 to the item. Excessively large or tight packaging should be avoided.

193 **4.3.5** Packaging materials used for preservation of evidence shall be sturdy enough to avoid
194 damage to the packaging, damage to items within, or endangering personnel. Fragile and
195 sharp evidence may need additional clean protective padding.

196 **4.3.6** Packaging shall be either single-use disposable or reusable and capable of being properly
197 sterilized prior to use. Note: Some sample types and analytical methods require that only
198 new, unused packaging be utilized.

199 **4.3.7** Any tools utilized to place an item into its collection container shall be clean. Tools shall
200 either be single-use or properly sterilized prior to use.

201 **4.3.8** Individual items of evidence should be packaged and sealed separately to maintain their
202 integrity and prevent cross-contamination. For items found commingled (such as cigarettes
203 within an ashtray), items may be packaged together or separately depending on
204 investigative needs.

205 4.3.9 Items and/or packages shall be marked in a manner that ensures that each item can be
206 uniquely associated with its documentation. Packaging shall include warning labels of any
207 hazards that the items may possess.

208 4.3.10 If an item with potential evidence is repackaged, original packaging shall be retained.

209 **5 Evidence Type Considerations**

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

213 **5.1 Biological evidence**

214 **5.1.1** The collection and storage of biological evidence shall be packaged in a manner that limits
215 the degradation or tampering of the biological material.

216 **5.1.2** In general, biological stains that are able to be dried shall be dried and packaged in
217 breathable packaging (e.g., paper bag) or in non-breathable packaging with a moisture
218 control mechanism (e.g., plastic tube with desiccant pack).

219 **5.1.3** Liquid biological samples shall be collected in a sterile leak-proof, hard-sided container and
220 should be refrigerated or frozen for long-term storage depending on the type of sample.

221 **5.1.4** NOTE *The Biological Evidence Handbook: Best Practices for Evidence Handlers* (NIST 2013) is
222 available for further guidance on the collection and preservation of biological evidence.

223 **5.2 Wet items**

224 **5.2.1** Any item which could be degraded by prolonged exposure to moisture such as whole or live
225 plant evidence, clothes, or organic material shall be dried and packaged in breathable
226 packaging or packaging with a moisture control mechanism to prevent the accumulation of
227 moisture, mold, or mildew.

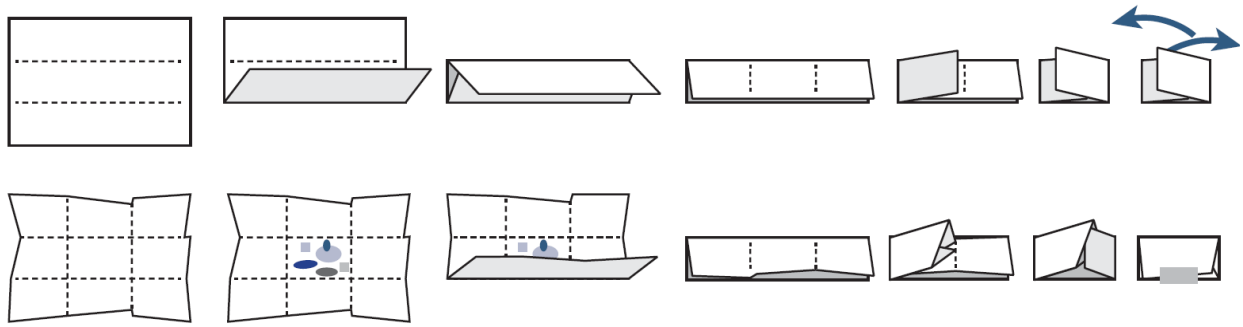
228 **5.2.2** Wet items shall be packaged in a manner that prevents leakage from the point of collection
229 to a controlled area where the item can be dried and repackaged for long-term storage.

230 **5.3 Greasy or oily items**

231 **5.3.1** Greasy or oily items shall be packaged in a manner that prevents leakage such as plastic
232 bags.

233 **5.4 Trace evidence**

234 **5.4.1** Trace evidence shall be packaged in a manner that prevents loss of evidence or
235 contamination. If paper packaging is used, a bindle-type fold (figure 1 contains one possible
236 example) or double bagging procedure shall be used to prevent loss of small evidence
237 through seams.



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

241 **5.4.2** Items suspected to be at risk of loss or damage during packaging should be collected
242 separately from substrates prior to transport..

243 **5.4.3** Powdery or crystalline material should be packaged in a manner that prevents small
244 particles from loss.

245 **5.5 Fragile items**

246 **5.5.1** Easily lost, broken, or destroyed evidence types shall be packaged and handled in a manner
247 that reduces surface contact, friction against the item, and possible damage from impacts to
248 the container.

249 **5.6 Friction ridge and other impressions**

250 **5.6.1** Friction ridge and other impressions on the surface of items may be displaced or destroyed
251 by rubbing against packaging. These item types should be collected separately from
252 substrates (if possible), or placed in packaging which protects against abrasive contact or
253 other possible damage prior to transport.

254 **5.7 Gasses and liquids**

255 **5.7.1** Gasses and some liquid chemicals can escape from common packaging like plastic bags and
256 paper bags. Further, plastic containers may break down and contaminate chemical evidence.
257 These types of evidence shall be packaged in non-porous containers such as glass jars or
258 lined paint cans to prevent evaporation or contamination

259 **5.8 Electronic Devices**

260 **5.8.1** Digital information contained in electronic evidence can be accidentally or purposely
261 destroyed if physical items are not properly handled, protected, and prepared for storage.
262 When collecting an electronic device for purposes of investigating its digital media, content
263 shall be protected from alterations resulting in loss or contamination to the extent possible.

264 **6 Evidence Security**

265 **6.1 Sealing of evidence**

266 **6.1.1** Upon collection, evidence shall be sealed in a manner that maintains evidence integrity by
267 preventing contamination, tampering, alteration, or loss of evidence.

268 **6.1.2** If an item is too large to be placed in available packaging, areas of evidentiary value shall be
269 protected from contamination, tampering, alteration, or loss of evidence.

270 **6.1.3** Long-term packaging shall include tamper detection ability, such as signed evidence tape.

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

274 **6.2 Evidence Labelling**

275 **6.2.1** Packaging shall be appropriately labeled to uniquely identify content, the circumstances of
276 collection, and to reflect any hazards.

277 **6.2.2** Packaging or associated documentation should include specialized storage considerations
278 (e.g., refrigerated or frozen storage requirements) specific to the contents and subsequent
279 laboratory testing.

280 **6.3 Evidence storage**

281 **6.3.1** From the time of collection until final disposition, all items shall be maintained and stored in
282 a secure manner which is able to prevent and detect tampering, alteration, loss or
283 contamination.

284 **6.3.2** Storage areas for both short and long-term storage of evidence shall be secured and have
285 restricted access, where all personnel with access to the area are trained in the proper
286 handling of evidence.

287 **6.3.3** Evidence shall be stored in a manner in which its integrity is preserved and it can be
288 uniquely associated with its documentation.

289

Appendix A

290

(informative)

291

Bibliography

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

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