

Evidence Collection and Preservation

Section A: True/False

Directions: Write True or False on the blanks provided; if False, write the correct statement on the lines provided.

1. _____ Evidence collected by fire investigators becomes the data used to develop and test opinions or hypotheses regarding the cause of a fire or explosion. (257)

2. _____ Empty containers in the area of the scene are a type of evidence. (257)

3. _____ Physical evidence includes witness observations and statements, and records and documents obtained after the fire. (258)

4. _____ The chain of custody tracks an item of evidence from the time it is identified as such, until released to the custody of someone else. (260)

5. _____ All items that support the findings of the investigation should be addressed by the chain of custody. (261)

6. _____ During the evidence collection process, investigators should touch items with their bare hands. (261)

7. _____ The methods used for collecting evidence and samples depend on material characteristics including location within the scene. (261)

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8. _____ An evidence log sheet lists the most significant items collected during the investigation. (263)
- _____
- _____
9. _____ To prevent the cleaning process from contaminating evidence, investigators should clean tools away from the collection site. (266)
- _____
- _____
10. _____ Fire investigators should use fire fighting gloves while collecting samples. (266)
- _____
- _____
11. _____ Common plastic bags are suitable for fire debris analysis. (268)
- _____
- _____
12. _____ Fire investigators need to collect large volumes of ignitable liquids for laboratory analysis. (269)
- _____
- _____
13. _____ Fire investigators should operate controls, circuit breakers, or other components of an electrical system during the scene examination. (271)
- _____
- _____
14. _____ When marking electrical evidence, fire investigators should tag just one end of any wire collected, indicating the end connected to the device. (273)
- _____
- _____
15. _____ When appliances or equipment are suspected ignition sources, they should be preserved as evidence. (274)
- _____
- _____
16. _____ Devices, controls, or other equipment may be X-rayed after completing a destructive type of examination. (274)
- _____
- _____

17. _____ The use of plastic bags is highly recommended to package dry cigarettes and butts as evidence. (278)
- _____
- _____

Section B: Fill in the Blank

Directions: Write the correct answer on the blanks provided.

1. The scientific method used by fire investigators demands that investigators remain _____ and maintain an open mind while collecting and analyzing data. (258)
2. Investigators may also collect _____ to show that a particular device or scenario can be disregarded from the ignition or fire-spread scenario. (258)
3. Tire or shoe impressions are considered a type of _____ found at a scene. (259)
4. Each person who has possession of an item of evidence must be able to attest to the fact that the item was not subject to _____ or _____ while it was in their custody. (260)
5. The final disposition of evidence may include legal requirements including _____. (261)
6. During evidence collection, a _____ sample may be selected to show a difference between the ambient conditions at a scene and the selected evidence sample. (263)
7. The _____ from where the evidence and the comparison samples were removed should be documented. (263)
8. Once evidence is collected, it must be protected from _____ or _____ before it is analyzed or presented in court. (264)
9. The most common container used for ignitable liquid samples is a clean, unused _____ with an airtight friction lid. (268)
10. Electrical wiring should be _____ from the suspected area of failure, preferably to where the insulation is still intact, if possible. (272)

Section C: Multiple Choice

Directions: Write the correct answers on the blanks provided.

- _____ 1. What is an action fire investigators perform during the scene examination? (257)
- A. Document the location of items
 - B. Transport collected items to their homes to keep them secure
 - C. Collect items to analyze in bags, boxes or any other available container
 - D. Take a picture of everything while walking around the fire scene
- _____ 2. What must the investigator be able to do to maintain the security of all items collected as evidence? (260)
- A. Prove that all the evidence comes from the same fire scene
 - B. Prove that she/he is a reliable and respectable person capable of taking care of the evidence
 - C. Document that all materials collected remain secure and in their custody until securely stored or released to the custody of someone else
 - D. Document that the most important piece of evidence collected remains secure and in their custody until securely stored or released to the custody of someone else
- _____ 3. What information should be obtained anytime the custody of evidence changes? (260)
- A. Date and time of item transfer and its new location
 - B. Detailed physical description of the evidence including characteristic marks of the item
 - C. Results of any testing that occurred while the item was in custody of the current custodian
 - D. All professional information and certifications as a fire investigator of the current custodian
- _____ 4. What guidelines should a fire investigator follow when materials will be sent to a forensic laboratory for analysis? (261)
- A. The sampling protocols of that laboratory
 - B. Procedures learned during their professional life
 - C. Procedures found in fire investigation research articles
 - D. Steps from a chart in physical evidence collection and preservation procedures from an online tutorial
- _____ 5. When transporting evidence from the fire scene to the lab for examination, the investigator should: (263)
- A. give it to the U.S. postal service.
 - B. hand it off to a volunteer to deliver.
 - C. perform a preliminary examination en route.
 - D. either directly deliver the evidence, or give it to a secure courier service.

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- _____ 6. What other party may require access to the evidence for examination and testing? (264)
- A. Firefighter
 - B. Property owner
 - C. Insurance adjusters
 - D. Private police investigators
- _____ 7. Why should investigative notes be kept with the case file? (264)
- A. The investigator may need it for other cases in the future.
 - B. It is mandatory to keep investigative notes by international judicial courts.
 - C. Investigative notes should never be destroyed according to National Association of Fire Investigators (NAFI).
 - D. Investigative notes may be subject to subpoena should criminal or civil litigations arise.
- _____ 8. Locard's Exchange Principle holds that: (267)
- A. you must know your own faults and limitations during investigation.
 - B. burdening your mind with small, unimportant matters is a mistake.
 - C. any contact with a scene leaves something behind, and takes something away.
 - D. wide ranging knowledge will give perspective and breadth of understanding while investigating.
- _____ 9. Regardless of the type of container used for ignitable liquids evidence, it should be approved by: (268)
- A. the local commerce board.
 - B. an investigative team.
 - C. the insurance company adjuster.
 - D. the forensic laboratory that will analyze the sample.
- _____ 10. Upon finding a container at an incident scene, why should investigators wear gloves and touch the container as little as possible? (269)
- A. To avoid transferring body heat to the sample
 - B. To avoid any injury or chemical exposure
 - C. To prevent container discoloration
 - D. To prevent the destruction of any fingerprint and DNA evidence on the surface
- _____ 11. Where should gloves be placed after collecting ignitable liquids evidence? (269)
- A. Investigator's pocket
 - B. Directly on a garbage can
 - C. Inside the evidence container
 - D. Beside the container after collection and photography

- _____ 12. What guidelines should a fire investigator use to collect suspect liquids? (269)
- A. Collect a small quantity of the suspect liquid
 - B. Collect a large quantity of the suspect liquid
 - C. Collect samples of any water using a glass straw
 - D. Collect samples of any water layer on the surface of the suspect liquid
- _____ 13. If fire debris material is suspected to contain an ignitable liquid, fill the container _____ full. (270)
- A. 1/8
 - B. 1/3
 - C. 2/3
 - D. 4/3
- _____ 14. What should the fire investigator do before attempting to analyze or collect portions of an electrical system? (271)
- A. Gather information about wiring quality and brand
 - B. Gather information about the wiring rating and the date when the system was installed
 - C. Make sure electrical bill was paid and the electrical system was in use by the time of the fire
 - D. Make certain that the system is deenergized and that all sources of power to the system are disconnected
- _____ 15. If soot is present on only one side of a broken glass from a fire scene, this indicates: (275)
- A. the glass was broken after the fire.
 - B. the glass was broken before the fire.
 - C. the glass was broken during the fire.
 - D. nothing for the fire investigation.

Section D: Short Answer

Directions: Write the correct answers on the lines provided.

1. Give three examples of types of evidence that usually require a technical expert for collection. (262)

2. List three ways that contamination of evidence can occur. (265)

3. What are three properties that affect the collection of ignitable liquids? (268)

4. Why should soil samples be placed in and stored in a freezer as soon as possible after collection? (270)

5. List two features that a photograph of electrical wiring suspected of a failure should show? (271)

6. Give three examples of precautions that the fire investigator should take when collecting and packaging electrical evidence? (272)

Section E: Matching

Directions: Write the correct answers on the blanks provided.

Part I: Evidence collection guidelines

Match the evidence type with the collection guideline.

Evidence types:

- A. Wood
- B. Branch circuit
- C. Paper
- D. Glass

Collection guidelines:

- _____ 1. Wrap large items in paper, plastic, or fabric, if possible, to prevent additional damage. (276)
- _____ 2. Document position/condition of the protective fuse. (272)
- _____ 3. Remove and individually wrap each of these pieces before carefully packaging them to prevent further breakage. (275)
- _____ 4. Take close-up photographs of documents or materials with writing or printing on them. (277)

