

# Training Guidelines for the Fire Debris Analyst

## Lesson Plan (Module) 8

**Date:** November 2006

**Instructor:** Qualified Instructor

**Subject:** Evidence Collection, Documentation and Packaging, Preservation and Chain of Custody

**Total Time:** 8 hours

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### Learning Objectives

- Demonstrate an understanding of evidence collection.
  - Demonstrate knowledge of correct documentation and packaging of evidence.
  - Demonstrate correct evidence preservation techniques.
  - Demonstrate correct procedures to establish valid chain of custody.
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### Suggested Reading

1. *Criminalistics: An Introduction to Forensic Science*, Saferstein, Richard, Ed.; Chapters 2, 3 and 11. Pearson Prentice Hall; 8th ed., 2004.
2. *NFPA 921, Guide for Fire and Explosion Investigation*. Quincy, MA. 2004, chapter 9.
3. *Forensic Science Handbook Volume I*, 2<sup>nd</sup> edition, Editor R. Saferstein, Prentice-Hall, Inc., 2002, chapter 9.
4. *Kirk's Fire Investigation*, 5<sup>th</sup> Edition, J. D. DeHaan, Brady/Prentice Hall, Upper Saddle River, NJ, 2002.
5. Handbook of Forensic Services Revised 2003 at [www.fbi.gov](http://www.fbi.gov):  
<http://www.fbi.gov/hq/lab/handbook/intro2.htm>
6. Evidence Contaminated by Polyester Bags, Dietz, W.R., Mann, D., *Scientific Sleuthing Newsletter*, Vol. 12 (3), summer 1988, pages 5-6.
7. Arson Evidence Container Evaluation: II. "New Generation" Kapak Bags, Kinard, W.D. and Midkiff, C.R., Jr., *Journal of Forensic Sciences*, Vol. 36 (6), Nov. 1991, pages 1714-1721.
8. Evaluation of Polyethylene Containers Used to Collect Evidence for Accelerant Detection, Tontarski, R.E., Jr., *Journal of Forensic Sciences*, Vol. 28 (2), April 1983, pages 440-445.
9. ASTM E 1492-92 (1999), Standard Practice for Receiving, Documenting, Storing, and Retrieving Evidence in a Forensic Science Laboratory.
10. In Search of the Perfect Container for Fire Debris Evidence, Mann, D.C., *Fire and Arson Investigator*, April 2000, pp. 21-25.

11. Alternative Sampling Methods To Collect Ignitable Liquid Residues From Non-porous Areas Such As Concrete, Mann, D.C. and Putaansuu, N.D., Fire and Arson Investigator, July 2006, pp. 43-46.
  12. Physical Evidence of Arson: Its Recognition, Collection, and Packaging, Dietz, W.R., Fire and Arson Investigator, 41(4), 1991, pp. 33-39.
  13. Evidence Collection, Preservation & Disposal, Herrera, F., Fire and Arson Investigator, 49(4), 1999, pp.31-32.
  14. A Study of Contamination in Fire Debris Containers, Lang, T., Canadian Society of Forensic Science Journal, 32(2&3), 1999, pp. 75-84.
  15. Individual laboratory protocol manuals.
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## **Introduction**

The student will learn the importance of proper evidence collection. Correct procedures will be taught concerning how to seal physical evidence as well as how to properly document and preserve any recovered evidence. Additionally, the student will learn the importance of a proper chain of custody.

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## **Outline**

1. Documentation of Evidence
  - a. Scene
    - i. Date/time of evidence collection
    - ii. Scene conditions
    - iii. Photography
    - iv. Sketches
    - v. Notes
  - b. Laboratory
    - i. Date/time of examination
    - ii. Description of Evidence Packaging
    - iii. Preliminary Description of Evidence
      1. odor
      2. general evaluation of contents
    - iv. Post-Analysis Description of Evidence
2. Collection of Evidence
  - a. Tools
  - b. Gloves
  - c. Cross sections
  - d. Absorbents
  - e. Adsorbents
  - f. Quantities
3. Packaging of Evidence

- a. Containers
    - i. Metal cans (unlined and lined)
    - ii. Vapor-tight bags (nylon, Fire DebrisPAK, others)
    - iii. Glass jars
    - iv. Vials
    - v. Unacceptable containers
  - b. Labeling Information
    - i. Description of material
    - ii. Location information
    - iii. Agency information
    - iv. Date and time
  - c. Sealing
    - i. ASCLD/LAB requirements for a seal
    - ii. Tape, heat sealers
    - iii. Unacceptable seals
4. Preservation of Evidence
- a. Refrigeration
  - b. Freezing
    - i. Microbial degradation
  - c. Protection
    - i. Sunlight
    - ii. Heat
    - iii. Breakage (glass containers)
  - d. Time
    - i. Shelf life
    - ii. Visual inspection
5. Chain of Custody
- a. Intact
  - b. Legible
  - c. Complete
  - d. Documented transfers

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## Teaching Aids

Visual aids  
Sample containers  
Chain of Custody forms  
Handouts  
PowerPoint presentation

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## Summary

Upon completion of this training, the student will have learned the basics of proper evidence documentation, collection and preservation of fire debris evidence. The student will be able to correctly select the appropriate materials and containers used to gather this type of evidence. Additionally, the student will be able to properly label and seal recovered fire debris evidence and complete accurate chain of custody forms.

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### Test Questions

1. Microbial degradation is reduced by:
  - a. Room temperature storage
  - b. Heating
  - c. Freezing**
  - d. Anti-bacterial reagents
  
2. Which of the following is not an appropriate container for storage of fire debris suspected of containing an ignitable liquid?
  - a. Polyethylene bags**
  - b. Nylon bags
  - c. Fire DebrisPAK bags
  - d. Glass jars
  
3. A complete chain of custody should include documentation of:
  - a. name of individuals transferring the evidence
  - b. date of transfer
  - c. location
  - d. all of the above**
  
4. How full should jars or cans be filled for laboratory analysis?
  - a. 90-100%
  - b. 40-70%**
  - c. 1-10%
  - d. Any of the above
  
5. Which of the following should not be used as an absorbent for suspected ignitable liquids?
  - a. self-rising flour**
  - b. unscented cat litter
  - c. tampons
  - d. first aid gauze
  - e. diatomaceous earth