

Training Guidelines for the Fire Debris Analyst

Lesson Plan (Module) 9

Date: November 2006

Instructor: Qualified Instructor

Subject: Other Evidence

Total Time: 12 hours

Learning Objectives

- To create an awareness of the forensic significance of non-fire debris types of physical evidence from fire scenes.
 - To create an awareness of the potential destruction of other types of evidence during fire debris examination.
-

Suggested Reading

1. Criminalistics: An Introduction to Forensic Science, Editor R. Saferstein, Prentice-Hall, Inc., 9th ed., 2006.
 2. *NFPA 921, Guide for Fire and Explosion Investigation*. Quincy, MA. 2004. Chapter 9
 3. Kirk's Fire Investigation, 5th Edition, J. D. DeHaan, Brady/Prentice Hall, Upper Saddle River, NJ, 2002, chapter 14.
 4. Handbook of Forensic Services Revised 2003 at www.fbi.gov:
<http://www.fbi.gov/hq/lab/handbook/intro2.htm>
 5. Forensic Science Handbook, 2nd edition, Editor R. Saferstein, Prentice-Hall, Inc., 2002.
 6. Forensic Science Handbook Volume II, Editor R. Saferstein, Prentice-Hall, Inc., 1988.
 7. Forensic Science Handbook Volume III, Editor R. Saferstein, Regents/Prentice-Hall, 1993.
 8. Forensic Science Handbook Volume I, 2nd edition, Editor R. Saferstein, Prentice-Hall, Inc., 2002.
 9. Techniques of Crime Scene Investigation, 7th edition, Barry A.J. Fisher, CRC Press, 2004.
 10. Forensic Science - An Introduction to Criminalistics, Peter R. DeForest, R.E. Gaensslen, and H. Lee, McGraw-Hill, 1983. ISBN: 0070162670
-

Introduction

The student will be introduced to the many diverse types of physical evidence that might be present at the fire scene or in the submitted evidentiary materials recovered from a fire scene.

Outline

1. Seek appropriate consultation
 - a. Scene
 - i. Determine what possible types of examinations are required on a particular piece of evidence.
 - ii. Prioritizing and preserving potential evidence.
 - iii. Package evidence appropriately based on the above determination.
 - b. Laboratory
 - i. Determine whether other analyses can/should be performed on evidence in a fire debris container prior to an ignitable liquid examination.
 - ii. Package evidence appropriately based on results of consultation.
2. Friction ridge patterns/impressions
 - a. Latent
 - b. Patent
 - c. Plastic
3. Impression evidence
 - a. Shoe impressions
 - b. Tire impressions
 - c. Tool marks
4. Biological evidence
 - a. Detection
 - b. Identification
 - c. Individualization (DNA)
 - i. Types of evidence to consider
 - d. Types
 - i. Fluids
 1. Stains
 2. Liquids
 - ii. Anatomical parts
5. Physical matches
6. Trace evidence
 - a. Fibers
 - i. At the scene
 - ii. In the fire debris
 - iii. Singed fibers on the suspect
 - iv. Comparing textile wick (Molotov cocktail) to textile in possession of suspect
 - b. Glass
 - i. Molotov cocktails
 - ii. Glass from scene on suspect
 - c. Hairs
 - i. At the scene

- ii. In the fire debris
 - iii. Singed hairs on the perpetrator
 - d. Soil
 - e. Paint
 - f. Gunshot residues
 - i. Primer residues
 - ii. Gunpowder
 - g. Building materials
 - i. Brick
 - ii. Concrete
 - iii. Plaster board
 - iv. Wood (processed/natural)
 - v. Insulation
 - 7. Firearms
 - 8. Questioned Documents (including charred papers)
 - 9. Digital evidence
 - a. Hard drives
 - b. Digital/analog media
 - 10. Controlled substances
 - a. Paraphernalia
 - b. Clandestine laboratories
 - i. Safety issues
 - ii. Awareness of possible secondary incendiary devices
 - iii. Evidence of controlled substance manufacturing
 - 11. Role of the medical examiner
 - a. Medical examiner reports
 - b. Toxicology
 - c. Pathology
-

Teaching Aids

Visitation of respective forensic disciplines
Visual aids
Handout
PowerPoint presentation

Summary

Having completed this training, the student will be aware of the many types of potential evidence that could be present at a fire scene. The student will be able to execute the correct evidence handling procedures to ensure that all forensically significant evidence will be preserved.

Test Questions

1. Blood stains cannot be individualized after any exposure to fire or heat. True or **False**
2. Fingerprints are rendered useless by exposure to fire conditions. True or **False**
3. A torn match can sometimes be identified back to its matchbook by a physical (jigsaw fit) comparison. **True** or False
4. At a fire scene, a shoe print is located in soil below a broken ordinary clear glass window; the authorities have a suspect in custody. Which of the following is more likely to provide a positive link between the suspect and the scene?
 - a. soil comparisons with soil on the suspect's shoe
 - b. identification of an ignitable liquid on the suspect's shoe
 - c. recovery of glass fragments embedded in the suspect's shoe
 - d. shoe impression examination**
5. A charred document has been submitted to the laboratory for authentication and ignitable liquid analysis. Which one of the following steps is recommended?
 - a. consult a questioned documents examiner**
 - b. process the charred document for ignitable liquids by usual methods
 - c. repackage the charred document in plastic
 - d. examine the document using a forensic light source
6. A cigarette butt is found at the fire scene. What types of examinations could the cigarette butt be subjected to?
 - a. DNA analysis
 - b. latent print examination
 - c. cigarette brand identification
 - d. all of the above**