



Introduction to Forensic Science – (Criminalistics)

Basic



Crime Scene Investigation Techniques

ITT Technical Institute  School of Criminal Justice 

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Crime Scene Investigation Techniques

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This week the student will learn:


- Methods of processing a crime scene
- Overview of controlling a crime scene from pre-arrival to conclusion of investigation
- To collect, preserve, package, identify, transport and submit evidence
- Crime scene reconstruction techniques
- HOMEWORK
 - Read chapters 17 & 18

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Review – Crime Scene Invest.

- It is the job of the CSI to recognize physical evidence at the scene
- Collection is governed with concern for:
 - Lab's techniques
 - Lab's capabilities
 - Lab's limitations
- Crime Labs DO NOT SOLVE CRIMES
- Crime solving is a team effort that begins at the crime scene with the CSI
- Forensic science is no more or less than an important element of the total investigation process.

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Review – Crime Scene Invest.

- Every effort must be employed to exclude unauthorized personnel from the crime scene.
- Crimes of violence are especially susceptible to violation by officials and the media.
- The lead investigator:
 - 1st, the crime scene boundaries must be determined.
 - 2nd, establish the path(s) of entry/exit
 - 3rd, perform walk-thru to gain an overview
 - 4th, brief the team

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Review – Crime Scene Invest.

- Record the scene:
- Photography (still & video), sketches, and notes are the three accepted methods of crime-scene recording.
- Additional classes on photography are offered other places.
- For photographing, the scene **MUST** be in an unaltered state.
- If objects are:
 - Removed,
 - Positions changed
 - Items added
 - They will probably not be admissible as evidence

Review – Crime Scene Invest.

- To deal with the situation:
 - Record scene as it now exists (photo, sketch, notes)
 - Make special note in your report describing how and why scene was altered, and by whom
 - Do NOT reintroduce the moved object
- Photographs must include the area the crime actually occurred and all adjacent areas
- Start with overview photographs of the entire scene and surrounding areas
- Photos of entry/exit

Review – Crime Scene Invest.

- For example, in a building, the actual room of the incident and all adjacent rooms would be documented
- Also concentrate on the main point of interest, like a body
 - These show position and location
- Intermediate distance photos of the exact same things are next
- Close-up photos follow that.
- As additional items of evidence are discovered, they need to be photographed to show their position and location relative to the entire scene.

Review – Crime Scene Invest.

- Close-up photos are intended to record details of the item
- A ruler or scale can be placed near the item, after initial photo
- Take notes relative to each photo.
- If digital, record in RAW format
- Notes of photos:
 - Photo number
 - Item of interest
 - Viewpoint of photo
 - Camera settings
 - Photographer/crew
 - Conditions
 - Lighting utilized
 - Camera utilized
 - Format utilized



Review – Crime Scene Invest.

- Same general principles apply to videotaping as to still photography
- Both long-distance and close-ups need to be taken in slow and systematic manner.
- Don't zoom or be creative.
- AFTER photographs are completed, the entire scene is sketched.
 - (first sketch is called a "rough sketch")
- No estimates
- No guesses
- ALL measurements are exact.



Review – Crime Scene Invest.

- Note taking is a constant activity from the assignment of the call to the completion of litigation.
- They include:
 - Detailed description of scene
 - Locations of items of physical evidence
 - Record times
 - Of discovery
 - Of dispatch
 - Of arrival
 - Of departure
 - Record whom
 - Record how
 - Record whom recovered and packaged
 - Record how marked
 - Record disposition
 - Record marking ID

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Review – Crime Scene Invest.

- Searches must be thorough and systematic
 - Method depends on size of area and location
 - Depends upon actions of suspect and victim
 - Have one supervisor to coordinate and oversee all facets of search

Spiral Search

Grid Search

Strip or line Search

Quadrant Search

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Review – Crime Scene Invest.

- In hit-and-run cases, the outside and undercarriage must be examined with care.
- Look for cross-transfer
 - Blood
 - Tissue
 - Hair
 - fabric
- Fibers
- Fabric impressions
- On the victim
 - Glass
 - Paint
 - Plastic
 - Impressions
- During any search, it is important to collect carriers of trace evidence.



Review – Crime Scene Invest.

- Critical areas should be vacuumed with a forensic vacuum.
 - Sweepings are submitted to the lab for analysis.
- Fingernail scrapings are taken whenever it is suspected that two individuals had contact of any kind.
- Scrapings are taken from the undersurface of each nail using a dull object so as not to cut skin.
- The search for and collection of physical evidence continues with the autopsy
 - The coroner usually completes this portion of the collection.

Review – Crime Scene Invest.

- Besides the bodily items taken for exam, the following are ordinarily collected and submitted:
 - Clothing
 - Fingernail scrapings
 - Head & pubic hairs
 - Blood
 - Swabs (oral, anal, vaginal)
 - bullets
- If case involves shooting, a GSR test is also conducted and submitted.
- If additional tests are desired, the coroner must be requested to conduct them and be informed as to the need.
- Once a body is pronounced dead, the coroner owns it.

Review – Crime Scene Invest.

- Packaging and handling of physical evidence must insure that no change occurs to that evidence.
- Evidence should always be submitted intact, when possible
- Trace should NOT be harvested unless it must be.
- Every piece of evidence must be packaged separately, and as harvested.
- “Unbreakable”?
Plastic pill bottles with pressure lids are good for trace
- Manila envelopes and screw top glass jars are also very good.

Review – Crime Scene Invest.

- Cardboard pill boxes and “druggist fold” pouches also good.
- Types of trace:
 - Hairs
 - Glass
 - Fibers
 - Etc.
- Ordinary mail envelopes are NOT good.
- Normally, all items of clothing are air-dried, then placed into paper bags.
- Charred debris must be placed into an airtight container, like a paint can or sealed jar.
 - This prevents the loss of evaporating petroleum residue.

Review – Crime Scene Invest.

- A guide to "normal" evidence packaging is located in appendix #1 on Page #543
- The Chain Of Custody is vital to presentation of evidence.
- It must be established any time an item is presented in court.
- Every person that has touched or handled the item, since the crime, must be accounted for.
- Exchanges must be recorded in notes and on forms.
- Therefore, keep the chain as short as possible.

Review – Crime Scene Invest.

- Most evidence should be marked as harvested.
- If unsure how to mark, or how to do so without damaging the evidentiary value, omit this step.
- Few are aware of the importance of submitting standards
- The thorough collection and proper packaging of reference/standard samples and substrate controls are the mark of a skilled investigator.
- Quality and quantity of standards determine evidential value of collected items.

Review – Crime Scene Invest.

- Substrate control is:
- If an investigator suspects an accelerant has been used in a fire, he collects a piece of the same surface material he believes has NOT been exposed to the accelerant.
- CSI's have a very slim chance of contracting AIDS or Hepatitis at the crime scene.
- However, it is not impossible.
- Blood and semen at the scene present biological specimens of unknown origin.

Review – Crime Scene Invest.

- Because of this, the investigator has no way of gauging what health hazards may exist.
- Therefore, utilize caution at all times.
- OSHA proposed a guideline of eight increasing safety levels
 - 1) latex gloves and Tyvek shoe covers
 - 2) respirator goggles and face shield
 - 3) awareness of knives, needles, etc.
 - Special disposal, packaging
 - Special dusting brush
 - 4) a red biohazard bag at the loc.
 - 5) note taking in uncontaminated gloves

Review – Crime Scene Invest.

- 6) If clothing damaged, the investigator must decontaminate
- 7) eating, drinking, smoking, and application of make-up are verboten.
- 8) all non-disposable items should be placed in a bag and marked as "infectious linen" and laundered appropriately at employer's cost.
- Since you are responsible for retrieving the evidence and insuring its use in court, insure you have a warrant.
- 4) revisited, the biohazard bag receives all disposable items that are exposed and it removed by the CSI team upon their leaving.



Review – Crime Scene Invest.

- The removal of any evidence from a person or crime scene must be done in conformity with the Fourth Amendment
- That means you need a warrant.
- That means you have to provide good need to a judge.
- 4 conditions permit you to violate this:
 - Emergent circumstances
 - Prevent the immediate loss or destruction
 - Incident to a lawful arrest
 - By consent of the owner.
- Otherwise, get a warrant

Review – Crime Scene Invest.

- Mincey v. Arizona
 - Drug dealer
 - Undercover officer forced entry into home and was killed
 - Police searched apartment for 4 days without warrant
 - Bullets, drugs and paraphernalia were thrown out at trial.
- Michigan v. Tyler
 - Business burned
 - Fire suspected arson
 - Everybody left after extinguished
 - Investigators returned next day, and on 4 more days over the next month, without a warrant
 - All evidence was thrown out at trial

Review – Terminology

- Identification – the determination of the physical or chemical identity of a substance with as near as absolute certainty as existing analytical techniques will permit.
- Comparison – subjecting a suspect specimen and a standard to the same tests for the ultimate purpose of determining whether or not they have common origins.

Review – Terminology

- Individual Characteristics – Properties of evidence that can be attributed to a common source with an extremely high degree of certainty.
- Class Characteristics – Properties of evidence that can only be associated with a group and never with a single source.

Review – Physical Properties

- The forensic scientist MUST constantly strive to determine those properties that impart distinguishing characteristics to matter, giving it a unique identity. (Individual characteristics)
- Individual Characteristics – Properties of evidence that can be attributed to a common source with an extremely high degree of certainty.

Review – Physical Properties

- Physical Properties – Describe a substance without reference to any other substance. (weight, volume, color, boiling point, melting point...)
- Chemical Property – Describes the behavior of a substance when it reacts or combines with another substance. (When wood burns it chemically combines with oxygen to form a new substance.)

Review – Physical Properties

- Standards
 - If the property can be assigned a numerical value, it must be one that relates to a standard system of measurement accepted throughout the scientific community.
- Examples:
 - 6.6770 slugs
 - window glass, 5.5 (Moh's scale)
 - Jupiter mean distance to the Sun is 5.2 AU
 - Paper burns @ 457
 - Gravity = 32.2



Review – Physical Properties

- Homework –
- Review all notes
- Next week is final test
- It involves a written test
- It involves a hands on portion
- You will work for your grade



