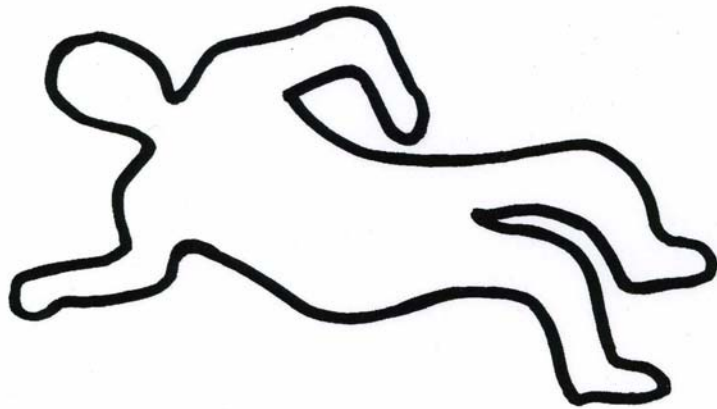


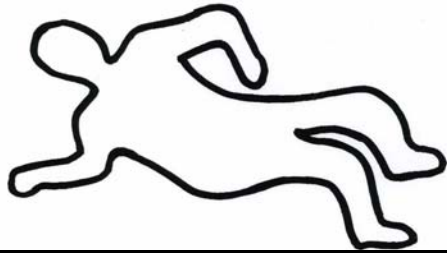
Chapter 3: THE CRIME SCENE

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS



“Oh, how simple it would all have been had I been here before they came like a herd of buffalo and wallowed all over it.”

—A. Conan Doyle, in *The Boscombe Valley Mystery*, 1892



CRIME SCENE

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

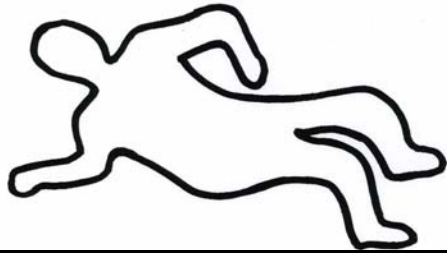


Students will learn:

- The steps to take when processing a crime scene.
- The type of evidence that determines what packaging should be used.
- Why the chain of custody must be preserved.

Students will be able to:

- Isolate, record, and search for evidence at a mock crime scene.
- Collect and package evidence at a mock crime scene using to proper forensic procedures.

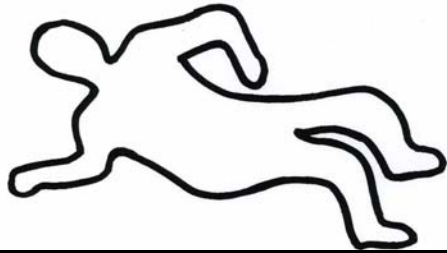


Crime Scene

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

Crime Scene: any place where evidence may be located to help explain events.





CORPUS DELICTI

“Body of the Crime”

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

You must prove

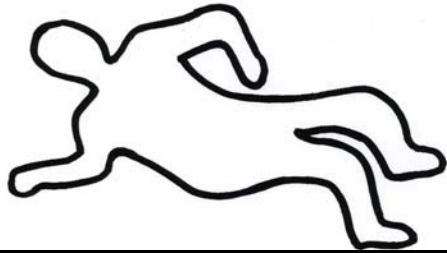
- that a crime occurred
- that the person charged with the crime was responsible for the crime

Top Reasons for Committing a Crime

- Money
- Revenge
- Emotion—love, hate, anger

Source of Evidence

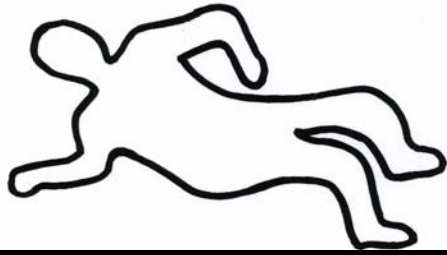
- Body
- Primary and/or Secondary Crime Scene
- Suspect(s)



CRIME SCENE TEAM

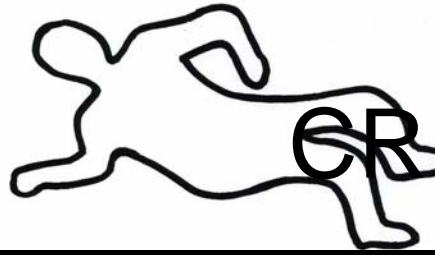
CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

- A group of professional investigators, each trained in a variety of special disciplines.
- Team Members
 - First Police Officer on the scene
 - Medics (if necessary)
 - Investigator(s)
 - Medical Examiner (if necessary)
 - Photographer and/or Field Evidence Technician
 - Lab Experts



CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

<http://www.youtube.com/watch?v=Wo-VO4sAJI4>



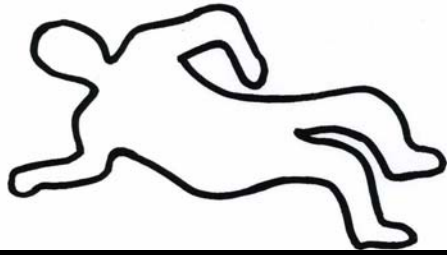
CRIME SCENE INVESTIGATION

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

Based on the scientific method and the Locard Exchange Principle, logic and forensic techniques

Involves:

- **Recognition**—scene survey, documentation, collection
- **Identification**—comparison testing
- **Individualization**—evaluation and interpretation
- **Reconstruction**—reporting and presenting

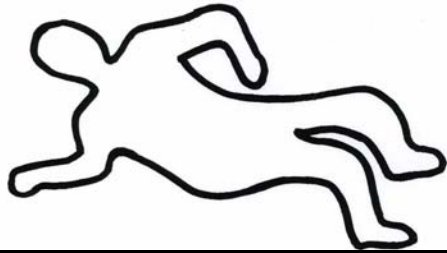


PROCESSING A CRIME SCENE

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

- Isolate and secure the scene
- Document the scene
- Search for evidence
- Collect and package evidence, maintaining the chain of custody
- Submit evidence to the crime lab



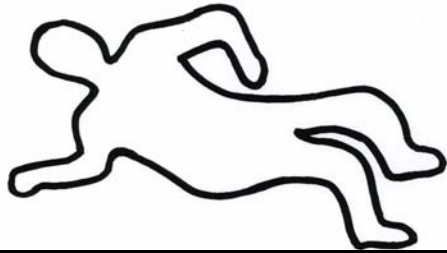


FIRST OFFICER ON THE SCENE

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS



- A Assess the crime scene and assist those hurt
- D Detain the witness
- A Arrest the perpetrator
- P Protect the crime scene
- T Take notes



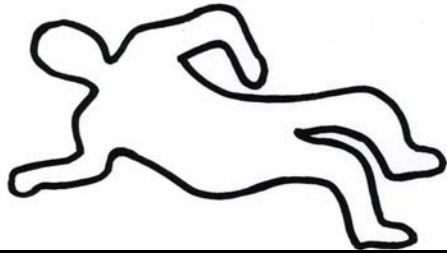
CRIME SCENE SURVEY

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

Walk-through—performed by the crime scene investigator, the first officer and sometimes the lead detective

Purpose:

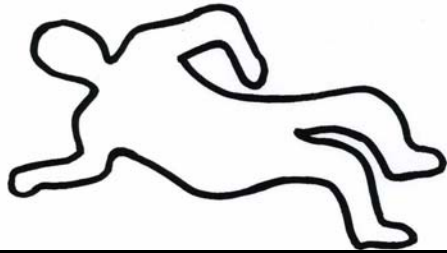
- Mentally prepare a reconstruction theory
- Note any transient or conditional evidence that could change over time.
- Note weather conditions
- Note points of entry or exit, as well as paths of travel within the crime scene
- Record initial observations of who, what, where, when, and how
- Identify special needs within the crime scene for personnel, precautions or equipment and notify superior officers or other agencies



DOCUMENTATION

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

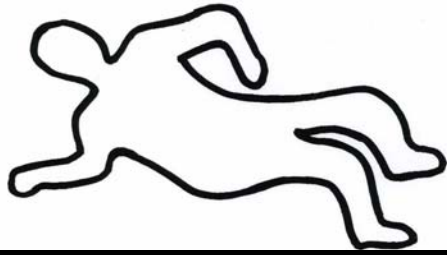
- **Notes**—date and time, description of the location, weather and environmental conditions, description of the crime, location of the evidence relative to other key points, the names of all people involved, modifications that have occurred and other relevant information
- **Photography**—photos of scene and surroundings, mid-range to close-up photos with various angles of each piece of evidence, photos as viewed by any witnesses.
- **Sketches**—inclusion of date, time, scale, reference points, distance measurements, names of investigators, victims, suspects, and a legend (key)
- **Videography**—allows narration (non-subjective) to be included



SEARCH METHODS

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

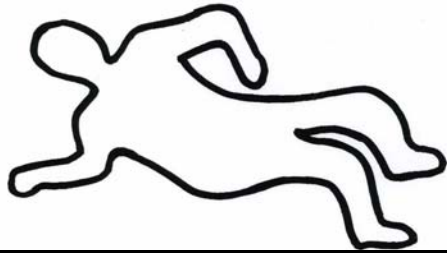
- **Line or strip method**—best in large, outdoor scenes
- **Grid method**—basically a double-line search; effective, but time-consuming
- **Zone method**—most effective in houses or buildings; teams are assigned small zones for searching
- **Wheel or ray method**—best on small, circular crime scenes
- **Spiral method**—may move inward or outward; best used where there are no physical barriers



Types of Searches

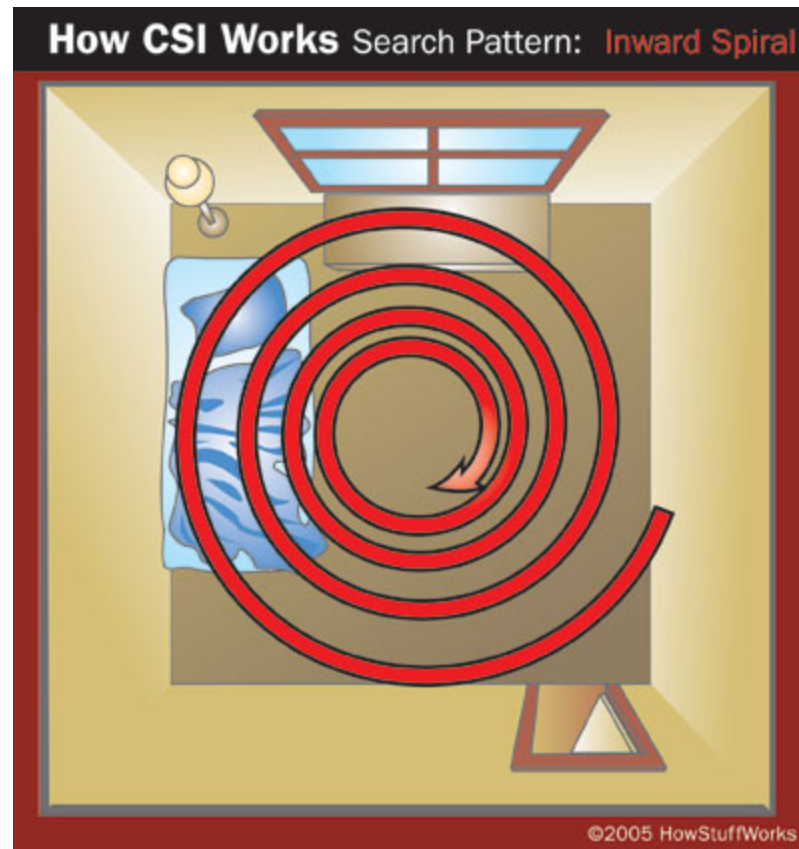
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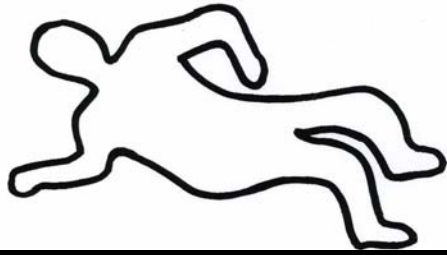
<http://science.howstuffworks.com/csi3.htm>



Search methods

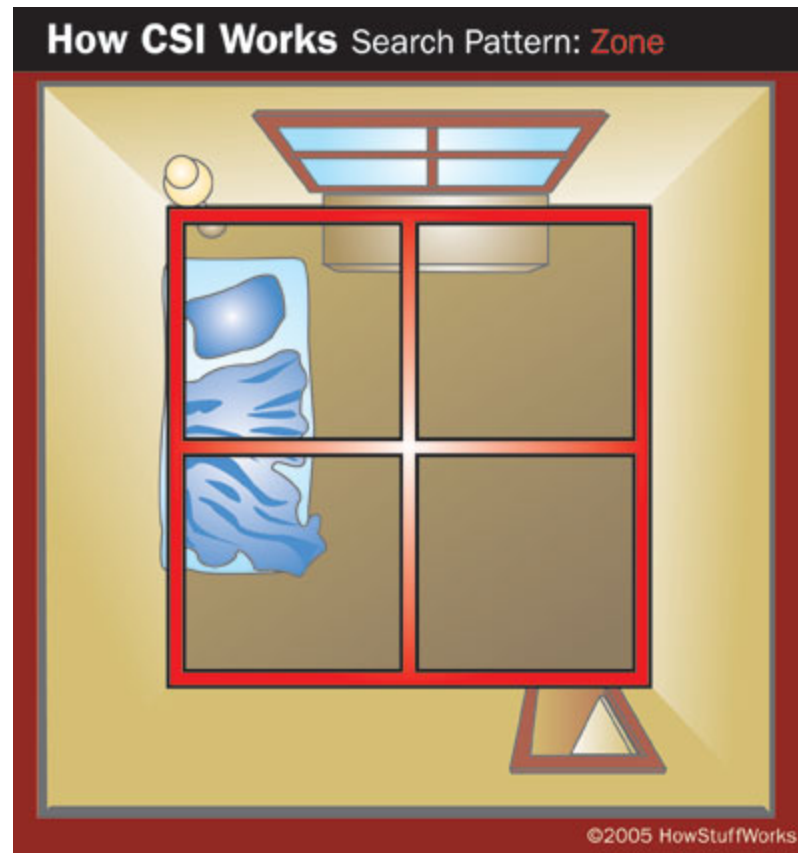
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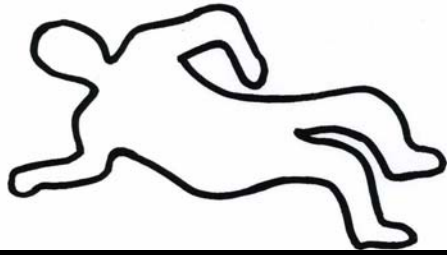




Search methods

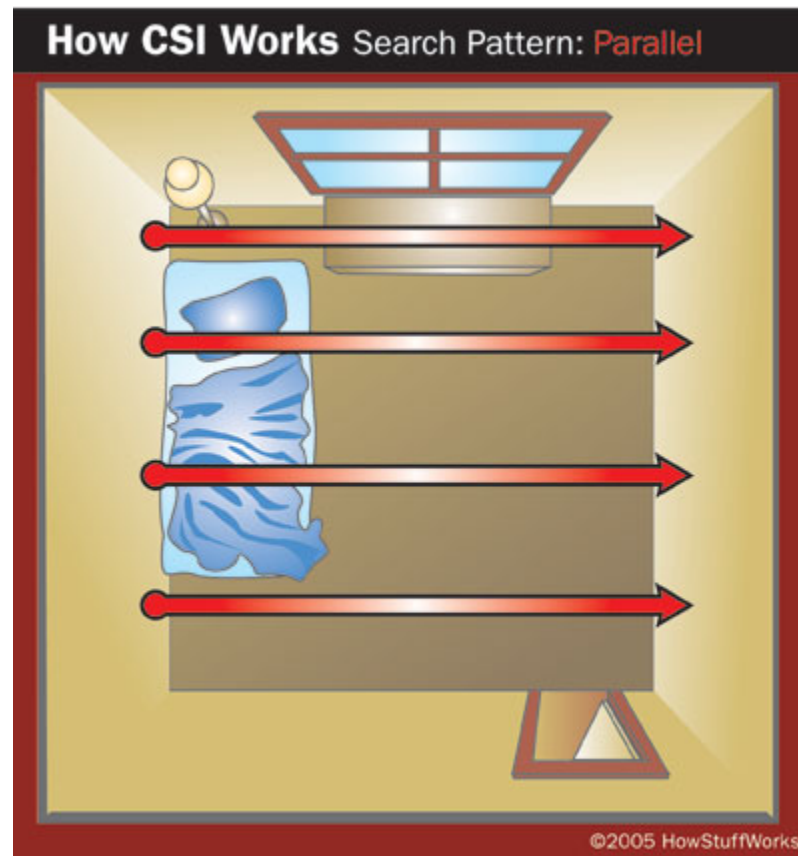
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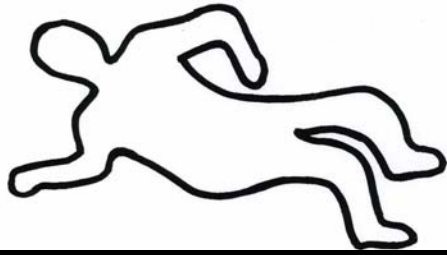




Search methods

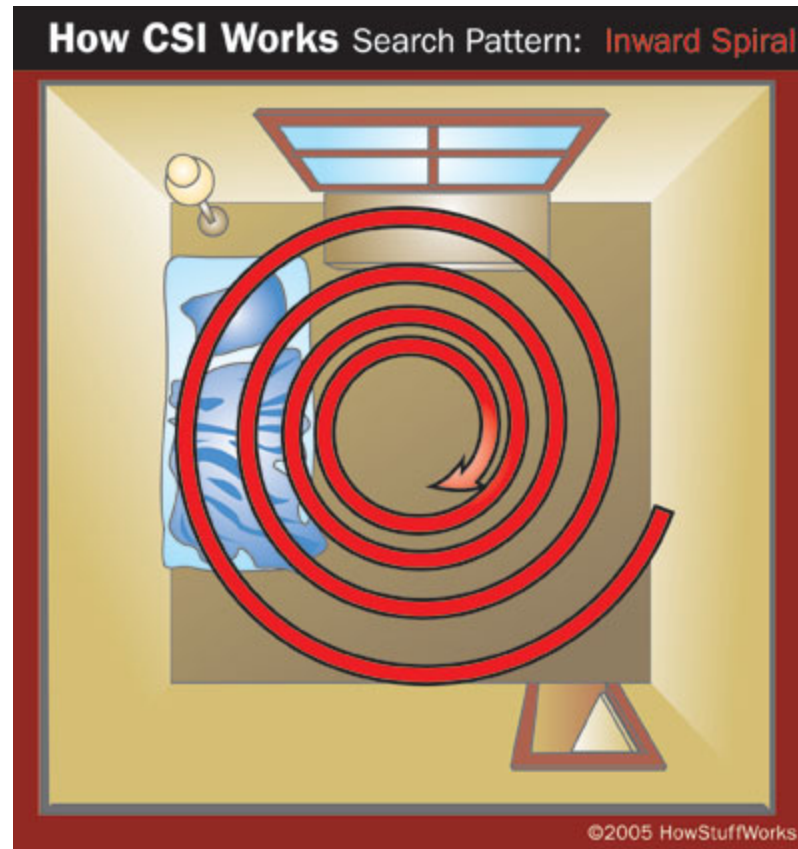
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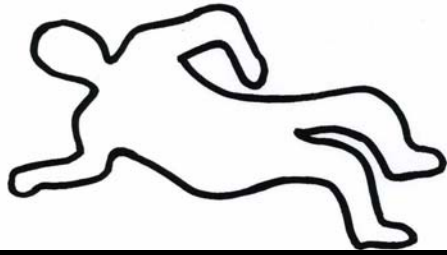




Search methods

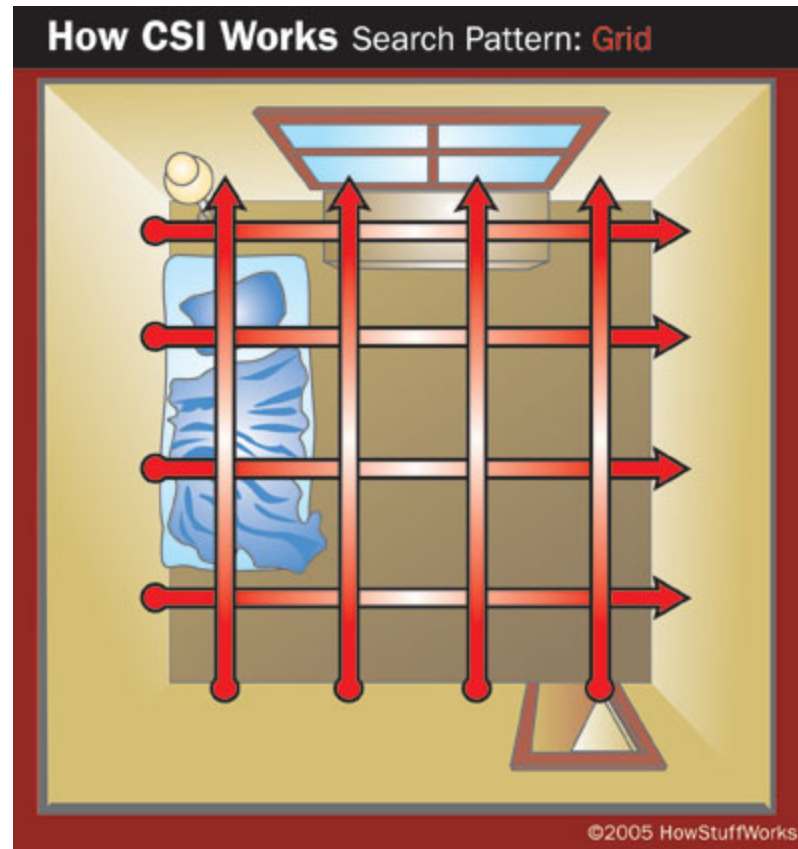
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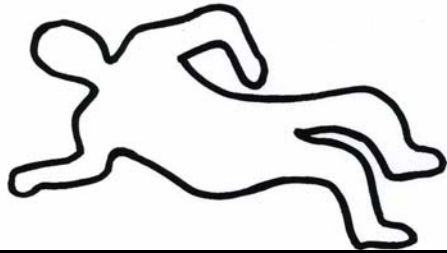




Search methods

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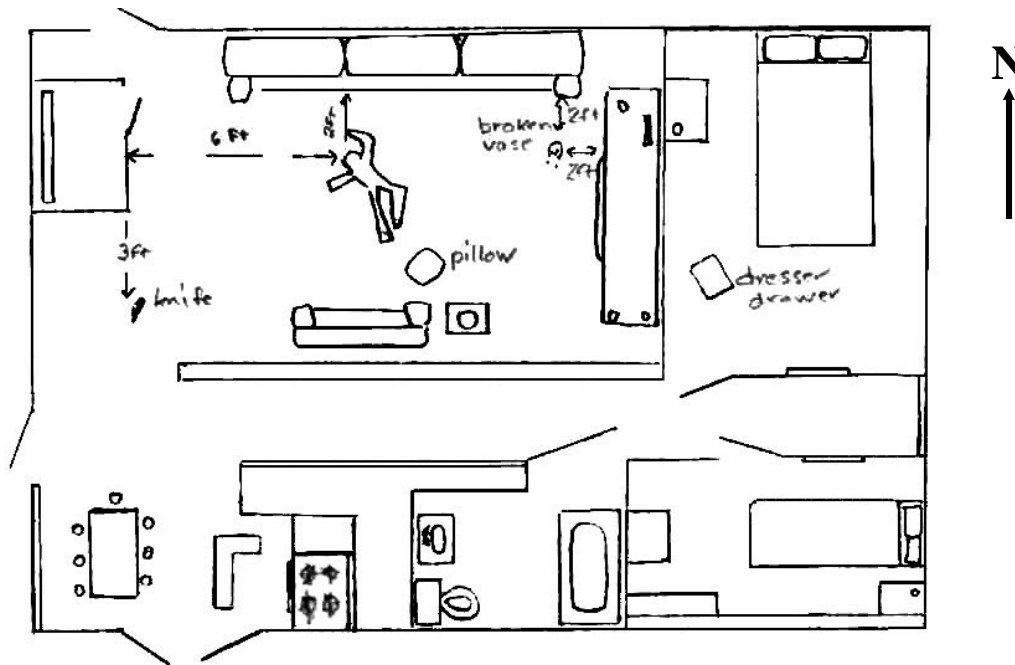


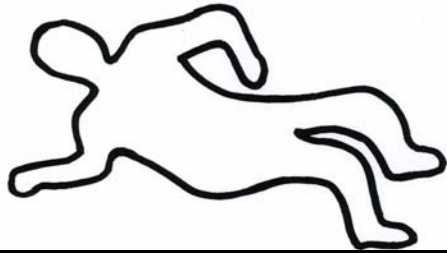
CRIME SCENE SKETCH

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

Date: August 14, 2005
Time: 11:35 am

Criminalist: Ann Wilson
Location: 4358 Rockledge Dr, St. Louis, Mo.



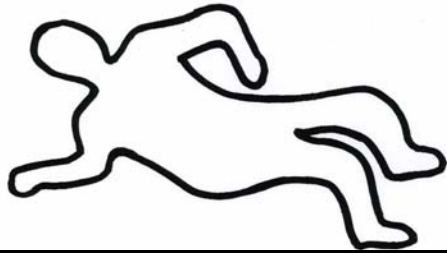


Crime Scene Sketch

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

One of the most important roles of the sketch is to give the measurements, scale, and relative placement of all important details in the crime scene.

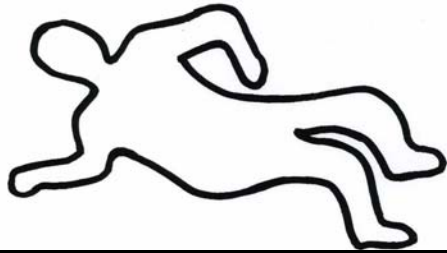
Should include the date and time, scale; reference points; distance measurements; the name of investigators, victims, and suspects, and a legend.



COLLECTING AND PACKAGING EVIDENCE

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

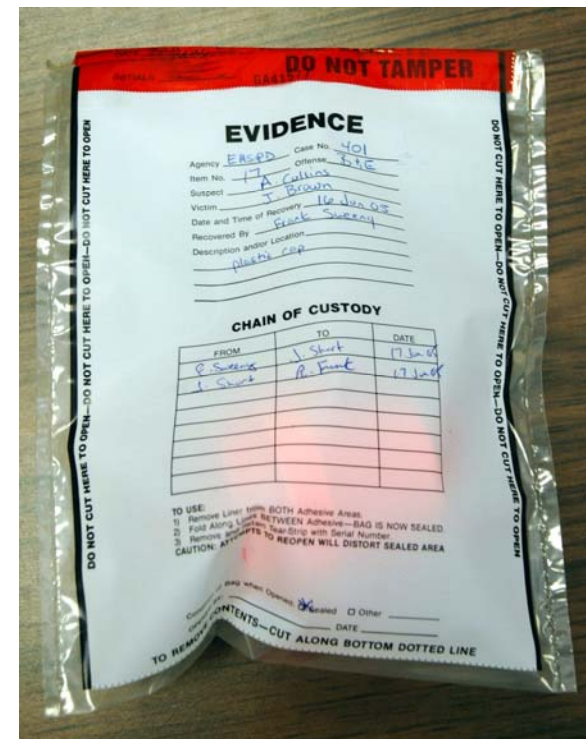
- One individual should be designated as the evidence collector to ensure that the evidence is collected, packaged, marked, sealed, and preserved in a consistent manner
- Each item must be placed in a separate container, sealed, and labeled
- Most fragile is collected and packaged first
- Different types of evidence require specific or special collection and packaging techniques
- The body is the property of the coroner or medical examiner. The collection of evidence on the body is done by that department

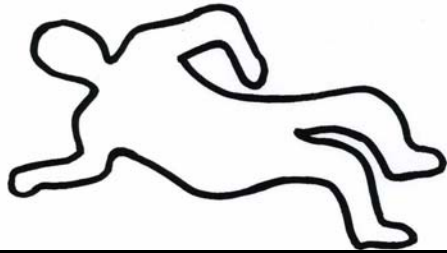


PACKAGING

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

Most items should be packaged in a primary container and then placed inside a secondary one. These are then placed inside other containers such as paper bags, plastic bags, canisters, packets and envelopes depending on the type and size of the evidence.





CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

<http://www.shodor.org/workshops/forensic/lessons/bankpic2.html>

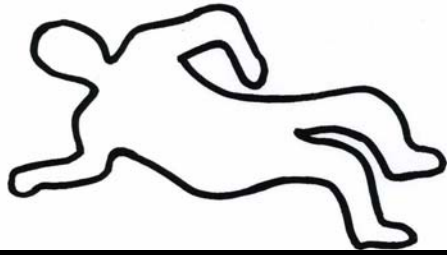
What time was it on the clock?

How many people were in the scene? How many males? females?

Describe the person at the front of the line. Was it a man or a woman? Was he or she wearing a hat? What kind of clothes was the person wearing? Could you tell how tall the person was? Did he or she have any distinguishing features?

What day of the month was it?

Did you notice anything unusual in the picture?



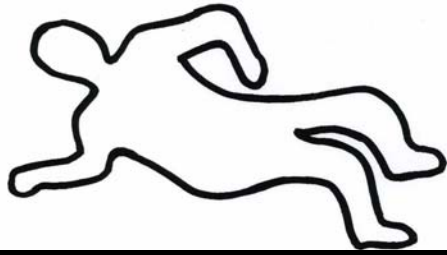
Evidence Collection

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

Blood and semen stains are the two most commonly tested biological evidence.

Moisture allows for bacterial growth and **destroys DNA**. Therefore:

- Stains should be thoroughly air dried.
- Samples should be packaged in paper envelopes, **not** plastic bags.



CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

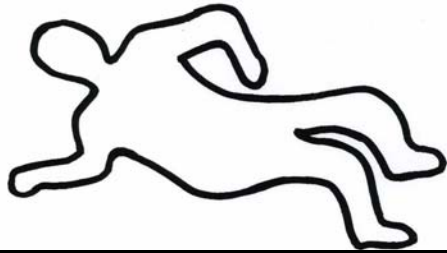


Avoiding Contamination:

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

If evidence is contaminated at the scene, it is difficult to obtain useful information and effectively present the evidence in court

- Do not touch area with bare hands, sneeze or cough over evidence.
- Clean latex gloves for collecting each item.
- Each item of evidence packaged separately.

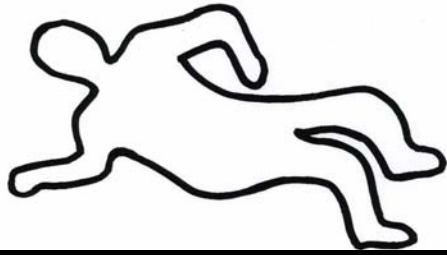


CHAIN OF CUSTODY

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

There must be a written record of all people who have had possession of an item of evidence.

- The evidence container must be marked for identification
- The collector's initials should be placed on the seal
- If evidence is turned over to another person, the transfer must be recorded.



CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

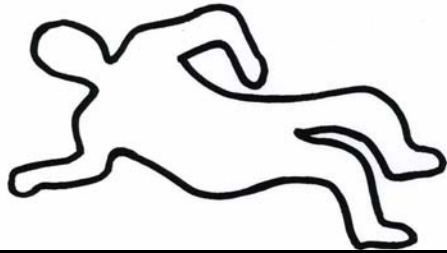


Outside of packaging:

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

- Type of case
- Date
- Location of Collection
- Item Description
- Case Number
- Collector's name and identifier information
- Serial number or garment identifier
- Where item is being routed to for analysis

Usually a chain of custody form or envelope will contain this information

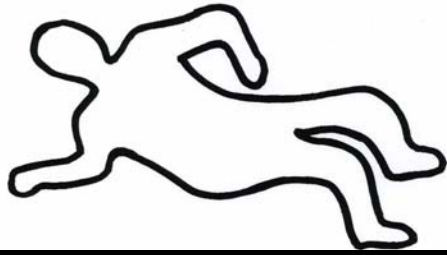


CRIME SCENE RECONSTRUCTION

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

Stages

- Data collection
- Hypothesis formation
- Examination, testing and analysis
- Determination of the significance of the evidence
- Theory formulation



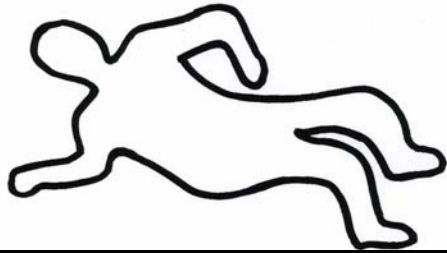
INVESTIGATORS

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

“The wise forensic investigator will always remember that he must bring all of his life experiences and logic to find the truth. This means common sense, informed intuition, and the courage to see things as they are. Then he must speak honestly about what it adds up to.”

—Dr. Henry Lee

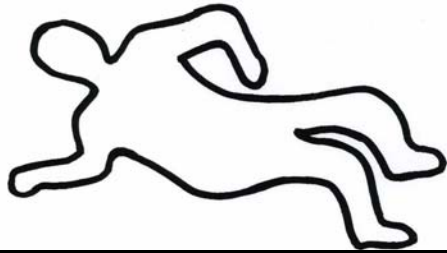
Chief Emeritus for Scientific Services and the
former Commissioner of Public Safety for the state of Connecticut



THE MEDICAL EXAMINER AND THE CORONER

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

- A medical examiner is a medical doctor, usually a pathologist and is appointed by the governing body of the area. There are 400 forensic pathologists throughout the U.S.
- <http://www.youtube.com/watch?v=DNrnEIfk68k&NR=1>
- <http://www.youtube.com/watch?v=8CSI799Fulk&NR=1>
http://www.youtube.com/watch?v=QnLdr_gqtC0&feature=channel
- A coroner is an elected official who usually has no special medical training. In four states, the coroner is a medical doctor.
- <http://www.youtube.com/watch?v=YFGAeaGUdWk>



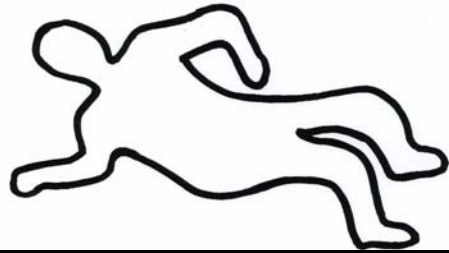
MEDICAL EXAMINER'S RESPONSIBILITIES

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

- Identify the deceased
- Establish the time and date of death
- Determine a medical cause of death—the injury or disease that resulted in the person dying
- Determine the mechanism of death—the physiological reason that the person died
- Classify the manner of death
 - Natural
 - Accidental
 - Suicide
 - Homicide
 - Undetermined
- Notify the next of kin

Collecting and returning any personal belongings on the body to the family of the deceased

Signing the death certificate

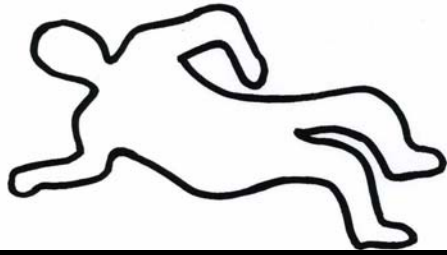


Determining Time of Death

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

Rigor Mortis-

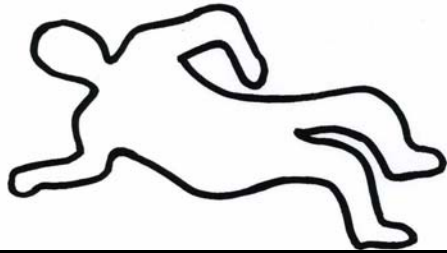
is a stiffening of the body and is not due to a contraction of muscles. After death, lactic acid is produced which interacts with actin and myosin causing cross-linking to occur.



Rigor Mortis

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

- Due to the disappearance of ATP which breaks cross-linkages of actin and myosin
- Actin and myosin filaments become permanently complexed
- Complex remains until decomposition

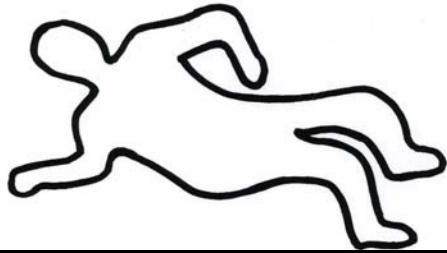


Rigor Mortis

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS



This man has been dead for approximately 10 hours.

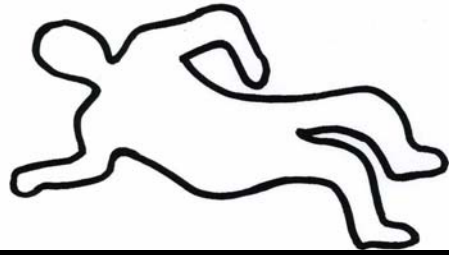


Time of Death

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

Algor Mortis

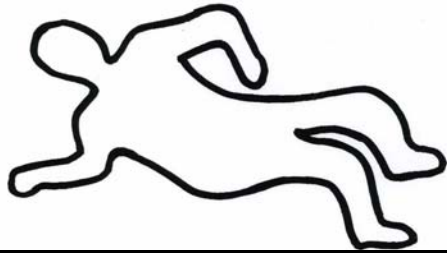
- Normal body temperature varies
- Body cooling does not occur at a uniform rate
- Under average conditions, the body cools at the rate of about 2.0-2.5 degrees Fahrenheit per hour during the first few hours, then slower afterwards
- Skin cools more rapidly than the inside of the body -that is why the inner body core temperature should be taken at the scene



Importance of Time of Death

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

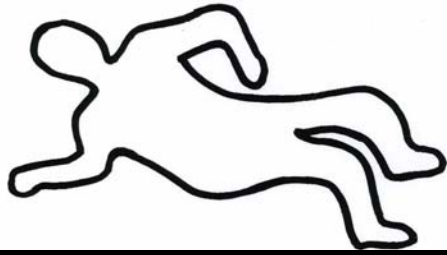
- Life insurance policies
- Implicating or excluding suspect
- Time of assault vs. time of death
- Always an estimate



Other Factors Used

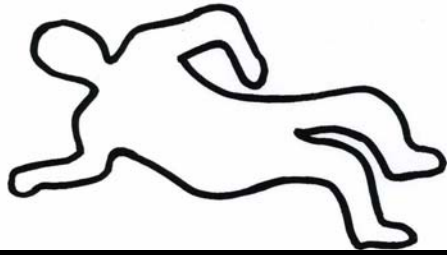
CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

- Witnesses -when last seen
- Scene -newspapers, mail
- Body temperature (Algor mortis)•Lividity (Livor mortis)
- Body rigidity (Rigor mortis)
- Decomposition changes
- Insect Invasion
- Gastric (stomach) contents
- Vitreous (eye fluid) potassium levels



CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

- Gastric contents -normally takes approximately two hours for a meal to be emptied from the stomach
- Vitreous fluid potassium -increases after death, range of plus or minus ten hours for the time of death

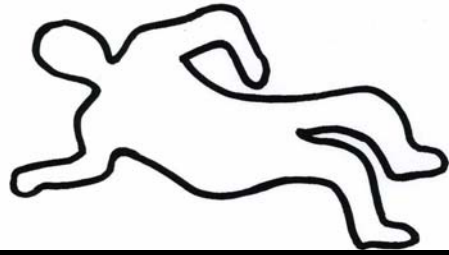


Algor Mortis

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

Conduction: heat transfer by items in contact

- Radiation: infrared heat transfer
- Convection: heat transfer by air movement
- These are all passive processes

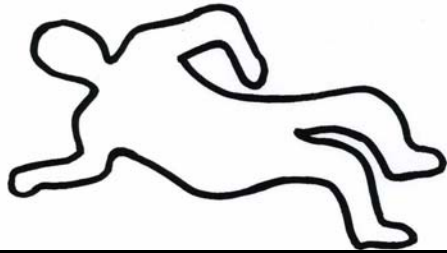


Factors Affecting Algor Mortis

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

Time -body cools to environmental temperature

- Environmental temperature
- Location of the body -in water, the temperature equalizes rapidly with the medium; in the ground, it cools slowly because of the insulating effect of the soil
- Body build and clothing -obesity or heavy clothing slows cooling because of insulation
- Humidity and air currents -body exposed to wind will cool rapidly

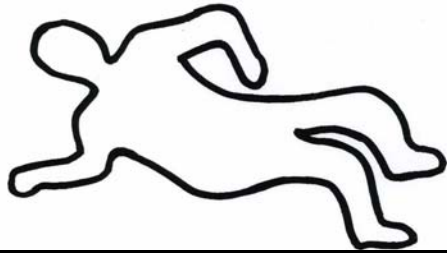


Late Changes of Death

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

Decomposition

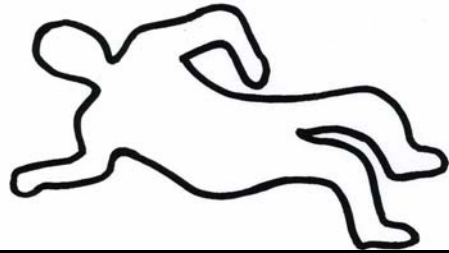
- Adipocere
- Mummification
- Skeletonization



Decomposition

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

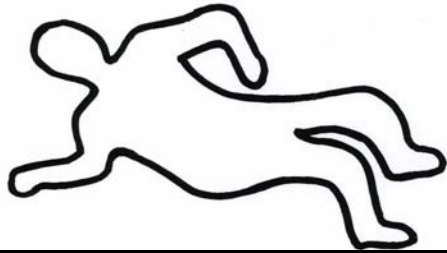
- Autolysis -digestive enzymes within the body cells break down carbohydrates and proteins
- Putrefaction -due to bacterial activity, it is the major component of decomposition
- Remains often become discolored and malodorous



Decomposition Rule of Thumb

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

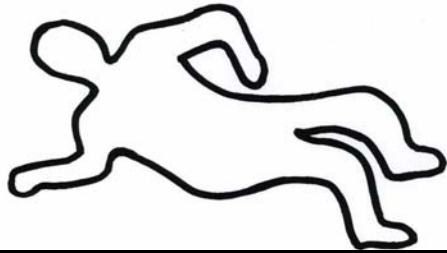
1 week of decomposition on land is roughly equivalent to 2 weeks in water, and 8 weeks if buried.



Putrefaction

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

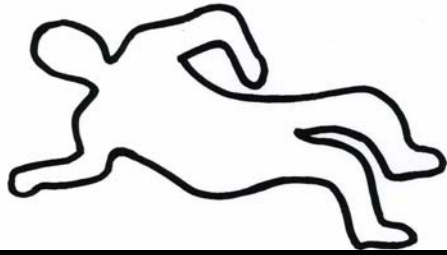
- Green discoloration of abdomen (24-36 hours)
- Marbling -intravascular hydrogen sulfide-producing bacteria
- Gas formation and bloating (60-70 hours) - blisters and skin slippage, loss of hair and nails



Cause of Death

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

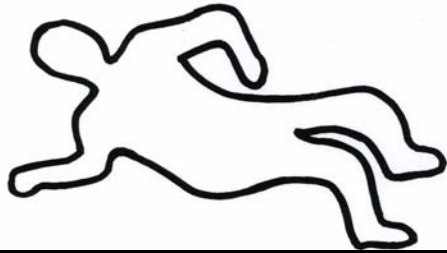
Pathologist will look for obvious signs of trauma then run tests for drugs or poisons if thought necessary.



ME Testifying

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

<http://www.youtube.com/watch?v=ikk8BwnJG8Y>

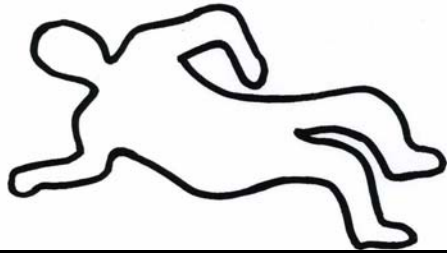


THE CORPSE

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

“The way I see it, being dead is not terribly far off from being on a cruise ship. Most of your time is spent lying on your back. The brain has shut down. The flesh begins to soften. Nothing much new happens, and nothing is expected of you.”

—Mary Roach. Stiff. W. W. Norton & Company. 2003



PEOPLE IN THE NEWS

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

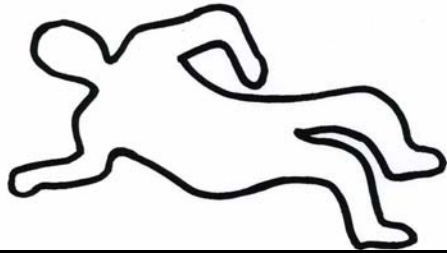
Dr. Michael M. Baden is a renowned pathologist and was the Chief Medical Examiner in NY City and for Suffolk County.

Dr. Baden was on the panel that investigated the assassinations of president John F. Kennedy and Dr. Martin Luther King, Jr. He has been involved as an expert in forensic pathology in many cases of international interest including:

- The remains of Tsar Nicholas of Russia and his family
- The Claus Von Bulow murder trial
- Expert witness for the defense in the O.J. Simpson trial
- Re-autopsy of Medgar Evers, Civil Rights leader
- Re-examination of the Lindberg Kidnapping and murder
- Autopsies of the victims of TWA Flight 800

Dr. Baden is the host of [HBO's Autopsy](#) series and is featured on many of the crime talk shows.





MORE INFORMATION

CRIME SCENE — DO NOT CROSS — CRIME SCENE — DO NOT CROSS

For additional information on crime scene investigation, check out Court TV's Crime Library:
www.crimelibrary.com/criminal_mind/forensics/crimescene/5.html

On Michael Baden and the autopsy:
<http://www.hbo.com/autopsy/multimedia/casebook2/casebook2.htm>
1