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Subject: **Criminology**

Production of Courseware

e- Content for Post Graduate Courses

Paper : **Police Science and Law Enforcement**

Module : **Investigation of Crime Scene: Sketching, Searching, Collection, Preservation and Transportation of physical clues to the experts**

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DESCRIPTION OF MODULE

Items	Description of Module
Subject Name	Criminology
Paper Name	Police Science and Law Enforcement
Module Name/Title	Investigation of Crime Scene: Sketching, Searching, Collection, Preservation and Transportation of physical clues to the experts
Module Id	Crim/PSLE/XVIII
Objectives	Learning Outcome: • To make the learners understand the various concepts of Investigation of Crime Scene; • To make the learners understand various methods of Sketching, Searching, Collection, Preservation and Transportation of physical clues to the experts • To familiarize the learners with various skills and techniques of crime scene investigation
Prerequisites	General understanding of the Investigation of Crime Scene: Sketching, Searching, Collection, Preservation and Transportation of physical clues to the experts.
Key words	Investigation, Crime Scene, Sketching, Searching, Collection, Preservation, Transportation of physical clues to the experts

Module 18: Investigation of Crime Scene, Sketching, Searching, Collection, Preservation and Transportation of Physical Clues to the Experts

1. Introduction

Crime scene investigation involves locating, collecting, and interpreting evidence found at the scene of a crime. To do this, forensic experts or forensic science specialists are necessary. Forensic science utilizes scientific methods or techniques to interpret evidence during investigations. Often, a special unit of forensic technicians enters a crime scene to properly perform the collection, documentation, and preservation of evidence such as blood, fingerprints, etc. The gathered evidence is then examined and analyzed to help determine exactly what happened at the time of the crime.

2. Investigation of crime scene

The circumstances that investigators encounter at the scene will largely dictate the approach used to process the scene. A homicide will likely require different treatment and processing than a burglary. However, to ensure a thorough process, the seven steps outlined below are often followed. These steps can be conducted in a different order, combined or even skipped altogether to meet the needs of the situation.

a. Establish the scene dimensions and identify potential safety and health hazards - Investigators initially locate the "focal point" of the scene, the main area of disturbance. This could be a ransacked bedroom, the area where an attack occurred, or the room in which a victim was found. Radiating out from that point, investigators establish an area that is sizeable enough to likely contain all relevant physical evidence that may be present. It is easier for investigators to condense the size of a scene at a later point than to discover that sensitive evidence outside the scene has been damaged or destroyed by other responders, media or onlookers. In addition, potential paths of perpetrator entry/exit are identified. Safety is of paramount importance during the initial approach to the scene. Weapons, biohazards, chemical hazards and even intentional traps could be waiting for responders. If medical, fire or coroners will be on scene, they will need to be advised regarding evidentiary issues as well.

b. Establish security - According to Locard's Exchange Principle, every person who enters or exits the scene will add or subtract material from the crime scene, so it's crucial to quickly secure the area. To control access, the scene may be cordoned off with yellow crime scene tape, cones or by other means. In addition, a common entryway is often established that all crime scene personnel will use to enter and exit the scene and all people entering or leaving the scene are documented once the boundaries have been established. Additional areas for consultation and evidence storage may also be established if necessary.

c. Plan, communicate and coordinate - Before collecting evidence, investigators must first develop a theory regarding the type of offense that occurred. Knowing the type of crime will help investigators anticipate the evidence that could be present. This may require gathering information from witnesses or persons of interest. Based on this information, the crime scene team will develop an evidence-collection strategy taking into consideration weather conditions,

time of day and other factors. Additional forensic resources may also be requested to handle special situations.

d. Conduct a primary survey/walkthrough - An initial survey of the scene is then conducted to prioritize evidence collection. During this walkthrough, the lead investigator will identify potentially valuable evidence, take notes and capture initial photographs of the scene and the evidence. The crime scene is documented to record conditions such as whether lights were on or off, the position of shades and doors, position of movable furniture, any smells present, the temperature of the scene, etc. To facilitate this process, crime scene specialists may create an evidence-free pathway leading to the primary area of interest by conducting a thorough sweep for evidence in that area.

e. Document and process the scene - With a plan in place, the crime scene team conducts a thorough, coordinated investigation of the scene, collecting all probative evidence. This entails detailed documentation with digital and video cameras or, if available, a 3-D scanner. For some situations, sketches and diagrams are also created. During the evidence-collection process, it is crucial that the crime scene investigator follow proper procedures for collecting, packaging and preserving the evidence, especially if it is of a biological nature. Biological evidence can be destroyed or damaged by weather conditions, individuals can inadvertently contaminate it, or it can be overlooked entirely if alternate light sources are not used to inspect the scene.

f. Conduct a secondary survey/review - To ensure that the scene has been thoroughly searched; a second survey of the area is conducted as a quality control step.

g. Record and preserve evidence - To make certain that all evidence is accounted for, an inventory log is created. The descriptions recorded into the log must match the photo of the evidence taken at the scene and the description included in the crime scene report. For instance, if a gun is collected, the serial number of the firearm in the evidence log must match the serial number shown in the photo that was taken at the scene. This paper trail establishes the chain of custody that will follow the evidence throughout the lifecycle of the case.

Evidence of one type or another exists in all crimes. There are different types of evidence but broadly it can be classified into testimonial evidence and physical evidence. Testimonial evidence is considered to be a verbal statement offered by a witness under oath or affirmation. Testimonial evidence may suffer due to various reasons like intimidation of witnesses, buying of witnesses, planting of stock witnesses or errors in the memory of the witnesses. On the other hand physical evidences are not vulnerable to such threats as the proverb aptly describes 'Men lie, but facts do not lie'. Hence the identification, collection and preservation of evidence are very important. The practice of following prescribed steps in the evidence and collection of evidence is critical in making an arrest and in subsequent prosecution of the offender.

A lot of valuable information can be obtained from the crime scene, provided that it has not been tampered with or altered in any way. Investigators must remember that the crime scene is a location where evidence of a crime may be found but it is not necessarily where the crime was found. Consequently, there are primary, secondary and tertiary crime scenes. Evidence may be obtained from the suspect's home, vehicle, etc. which may have been used in the planning or commission of the crime.

While investigating a crime scene one should remember that crime scene evidence is dynamic. Therefore it is important to protect and preserve the crime scene, because there is a possibility of contamination, loss, or unnecessary movement of physical evidence. When the evidence is not secured or collected properly, it is most likely that contamination will take place. Unfortunately, this leads to the evidence being usually rendered inadmissible by the court.

Hence the investigator needs to follow certain steps in order to avoid the destruction or contamination of evidence. The crime scene needs to be secured, the crime scene needs to be documented through sketches and photographs the crime scene needs to be surveyed and investigated, and all physical evidence needs to be collected, packaged, preserved and recorded in a proper manner.

2. Crime Scene Sketching

A crime scene sketch is a scale drawing that locates evidence in relation to other objects. Sketches are used along with the reports and photographs to document the scene. A crime scene sketch is simply a drawing that accurately shows the appearance of a crime scene. The sketch is simply drawn to show items, the position and relationship of items. It does not have to be an architectural drawing made to a scale, however it must include exact measurements where needed. The advantage of a sketch is that it can cover a large area and be drawn to leave Diagram immediate area of scene and orient diagram with sketch.

a. Use a point of reference.

b. Set forth major items of evidence on sketch.

c. Designate and label areas to be searched and advise team leader and all other search members of nomenclature for designated areas.

d. Obtain appropriate assistance for taking measurements and double check measurements.

e. Ensure necessary administrative information, such as scale disclaimer (not drawn to scale), is recorded on sketch

The crime scene sketch complements photographs and videos taken of the scene. Although with the advent of technology, videos and photos of crime scene are used, they may tend to distort the dimensions of the crime scene which does not happen in the case of a proper sketch. In most cases, the crime sketch is able to portray the crime scene in a more detailed manner as compared to a photograph. Photographs are often two-dimensional and there is a possibility that the distance between objects is not shown. Crime scene sketches are also able to show the entire crime scene.

There are various methods to develop a detailed sketch of the crime scene. The objective of the crime scene sketch is to give an accurate picture of the crime scene and not an artistic one. Hence most law enforcement officers can develop a crime scene sketch.

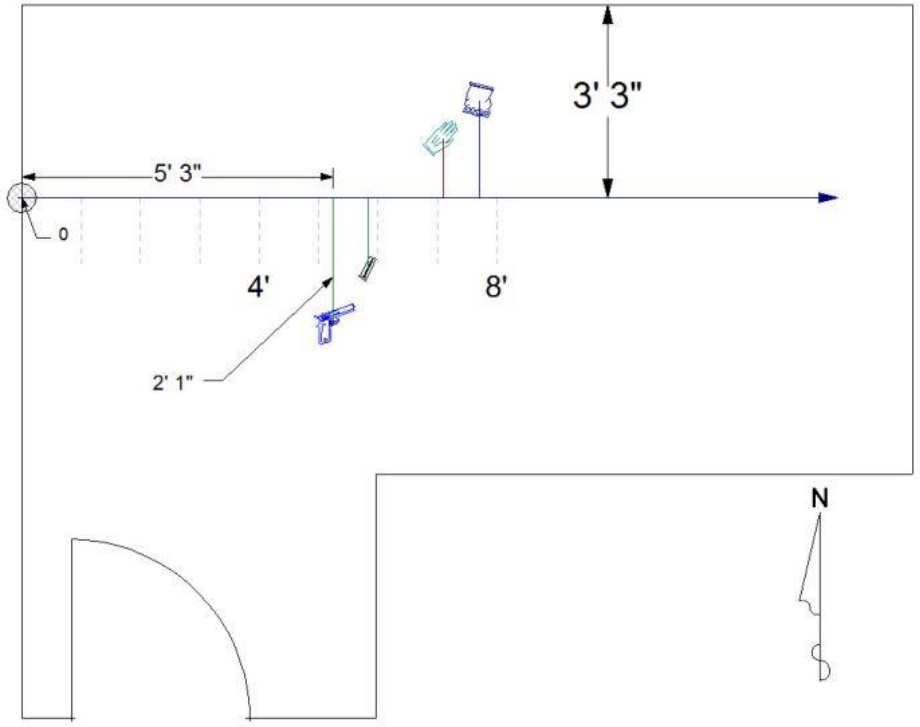
The most important rule of crime scene sketching is that the sketch should accurately portray the important details of the crime scene. The distance must be measured using the same method. For example, the distance of the weapon from the door must be measured and portrayed as accurately as the location of the dead body from the door. Measuring tape must be used in all cases for effectively measuring the crime scene. Other tools for crime sketching include paper for the sketch (preferably graph paper), clipboard, pencils, steel tape, thumbtacks to hold down one end of the tape if investigator is alone and straight-edge ruler.

There are generally two types of crime scene sketches: a rough sketch and a finished sketch. The rough sketch is the one drawn by police officers. It is not drawn to scale but should portray accurate distances and dimensions. The finished sketch is simply a completed sketch drawn to scale.

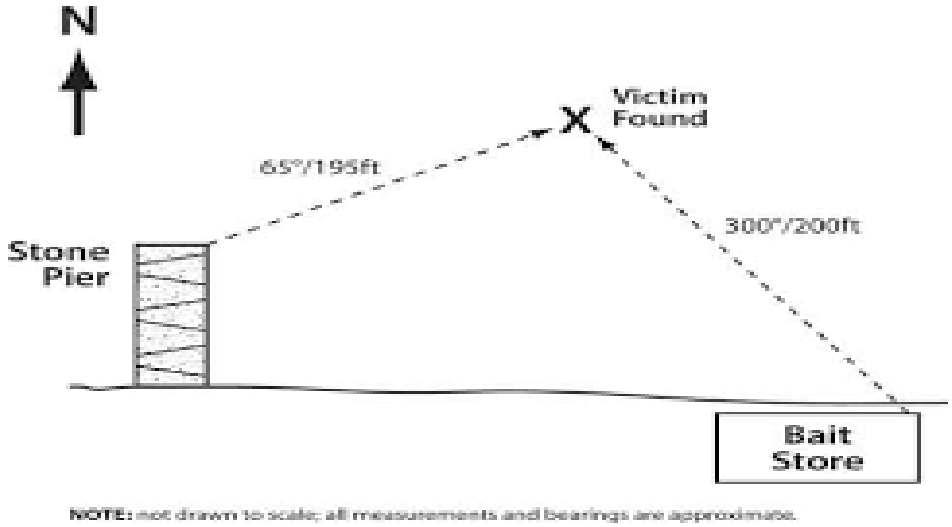
2.1. Methods of sketching

Some of the widely used sketching methods are:

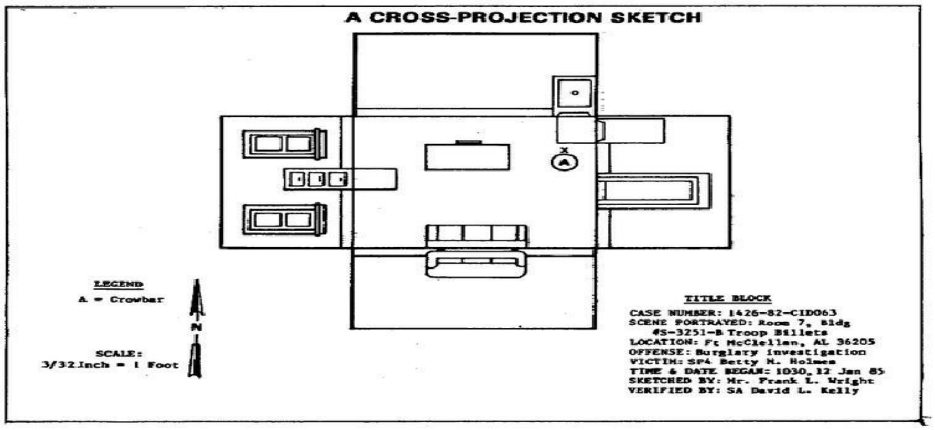
a) Coordinate method: The coordinate method uses the practice of measuring an object from two fixed points of reference. One such procedure is the baseline technique, in which a line is drawn between two known points. The baseline could also be a wall or a mathematically derived point along a designated area where exact measurements can be determined. The measurements of a particular item are then taken from left



b) Triangulation method: The triangulation method is a bird's-eye view of the scene that uses fixed objects from which to measure. This is particularly useful for sketching outdoor crime scenes where there are no easily identifiable points of reference. In this procedure, two or more widely separated points of reference are required. The item of interest is then located by measuring along a straight line from the reference points.



c) Cross-projection method: The cross-projection method is used in indoor crime scenes. It is basically a top-down view of the crime scene, with the walls of the room “folded down” to reveal location of bullet holes, blood-splatter evidence, and so on, which would not be apparent otherwise. Measurements are then made from a designated point on the floor to the area on the wall in the question.



3. Crime scene Search

Crime scene search scenarios involve significant teamwork. Each team member should be assigned a specific duty during the crime scene processing. Explorers handle the crime scene as if they are the actual evidence technicians, they also collect and process the evidence. Each explorer should make clear their assignment, and then follow through with the task. Explorers should be able to process a scene, have a clear understanding of what has happened and take appropriate action. The purpose of crime scene investigation is to help establish what happened (crime scene reconstruction) and to identify the responsible person. This is done by carefully documenting the conditions at a crime scene and recognizing all relevant physical evidence. The ability to recognize and properly collect physical evidence is oftentimes critical to both solving and prosecuting violent crimes. It is no exaggeration to say that in the majority of cases, the law enforcement officer who protects and searches a crime scene plays a critical role in determining whether physical evidence will be used in solving or prosecuting violent crimes.

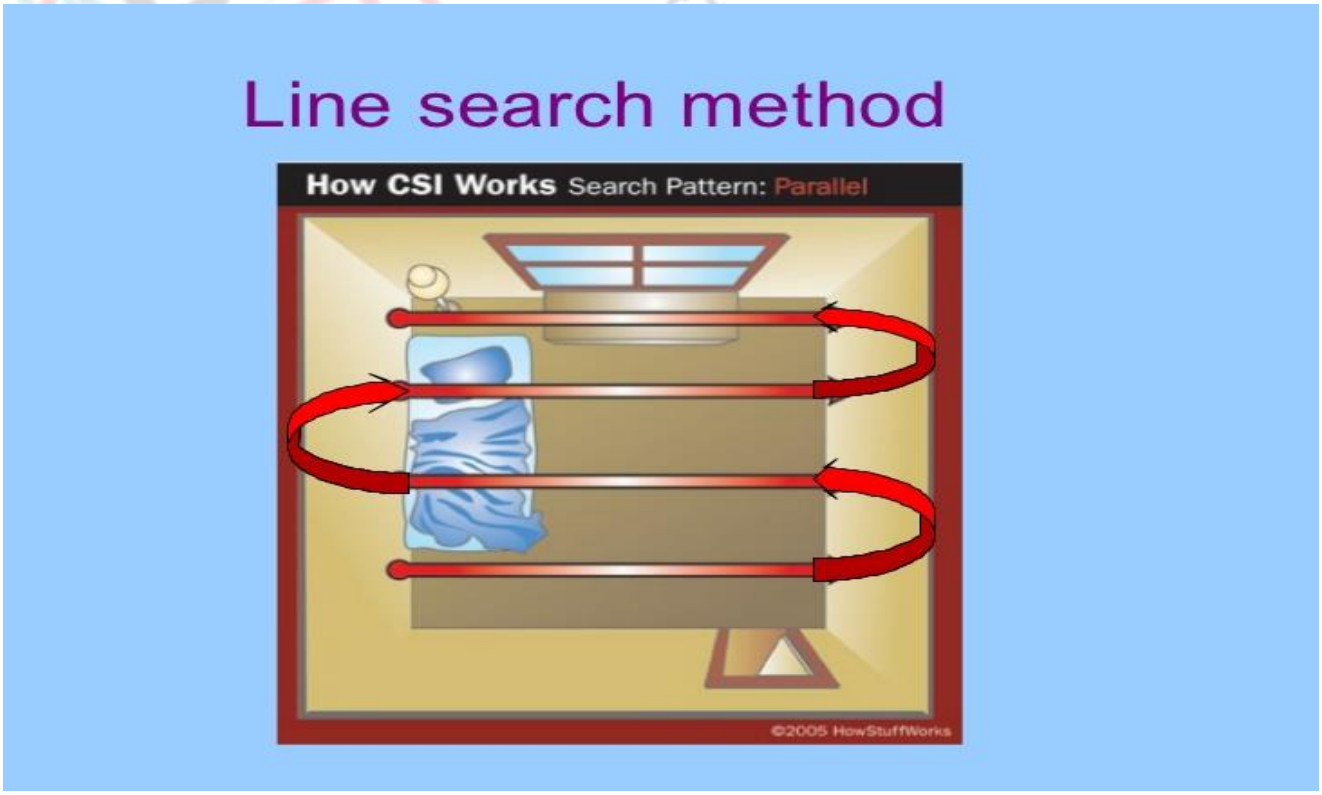
Initial search/Hot Search "High Risk" response, weapons drawn, quick building searches Assumes that perpetrator is still in vicinity of crime scene. Thorough search of crime scene and surrounding area is done immediately after crime scene is discovered

Cold Search: No chance that suspect is still on scene or in the area. It is done hours or days after crime scene has been discovered. It covers surrounding neighborhood residence, etc, canvassed for potential witnesses.

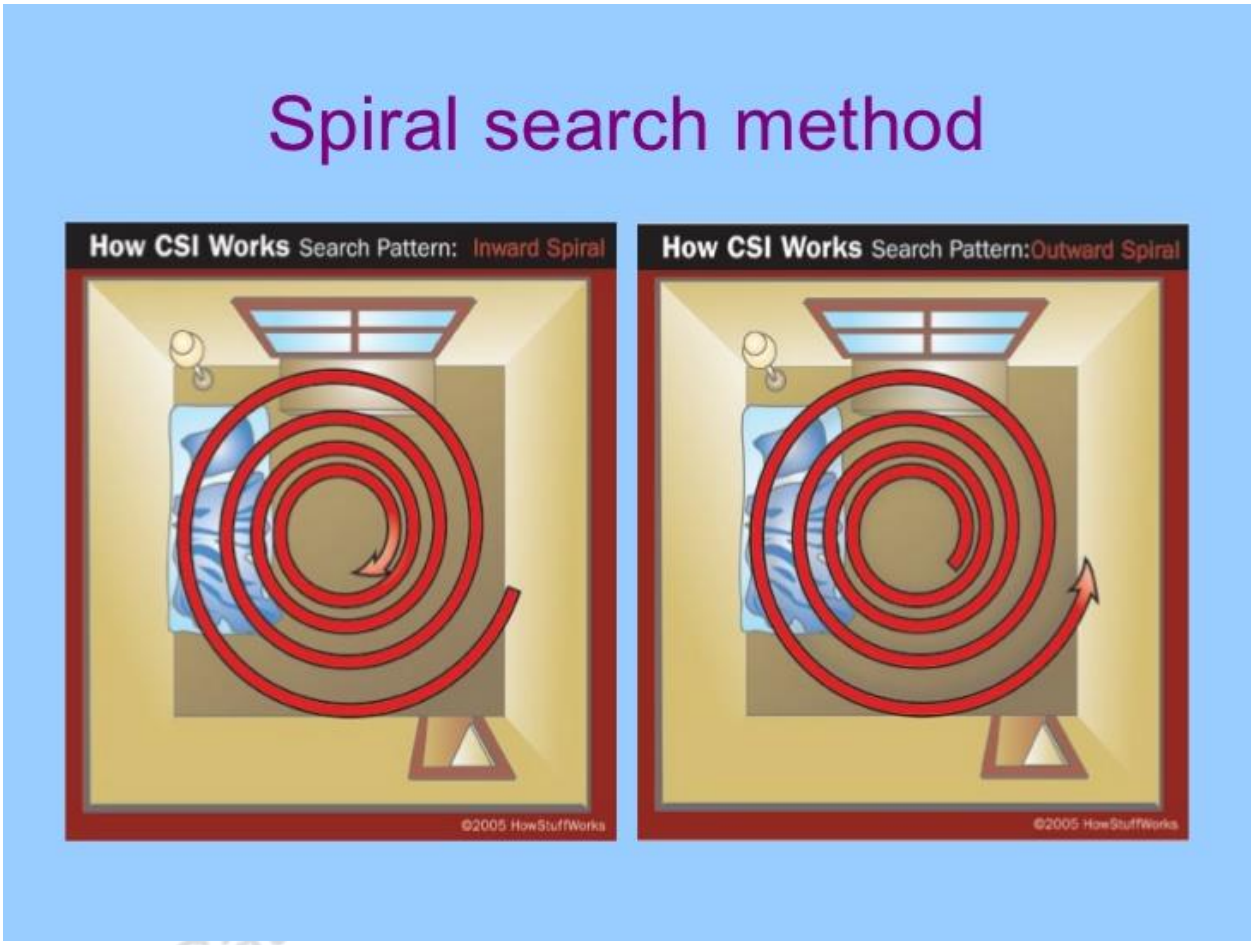
3.1. Search Methods or Search Patterns:

After the documentation of the crime scene, the searching of the crime scene is to be done. According to the crime, various crime scene evidences need to be searched including firearm evidence, trace evidence, tool mark evidence, bodily fluids, finger prints, etc.The search of the crime scene should be conducted in a systematic manner. There are several search patterns or methods which can be used. The most common search patterns include the spiral search method, grid search method, strip-or-line-search method, and quadrant –or zone-search method. Some methods of search are best suited for indoor scenes, and others are more applicable to outdoor crime scenes. Other scenes present unique problems are discussed next. Whichever method is adopted, the rule to remember is that the search must be thorough.

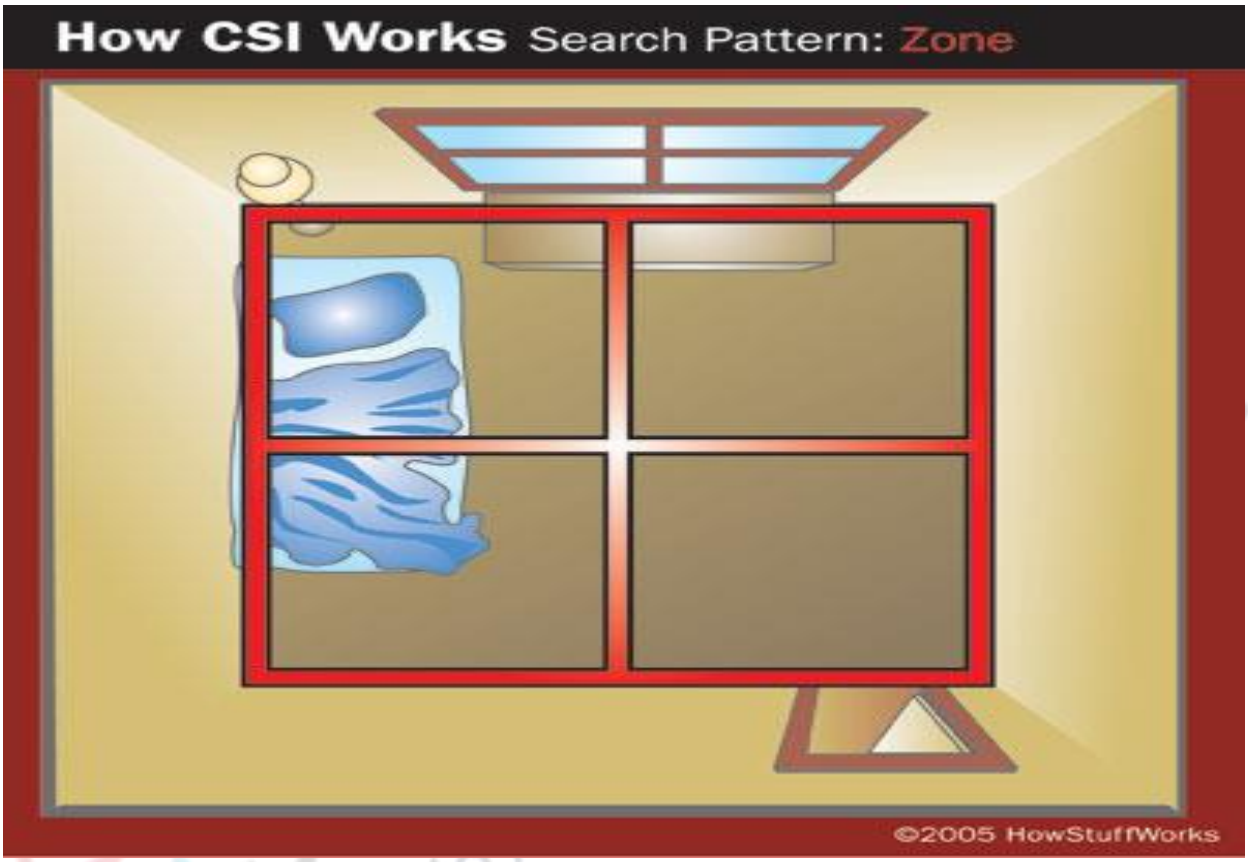
A. **Strip or Line search Method** – is useful in larger, outdoor areas but also inside. Implement and simple to use and can be done by a single person inside or out.



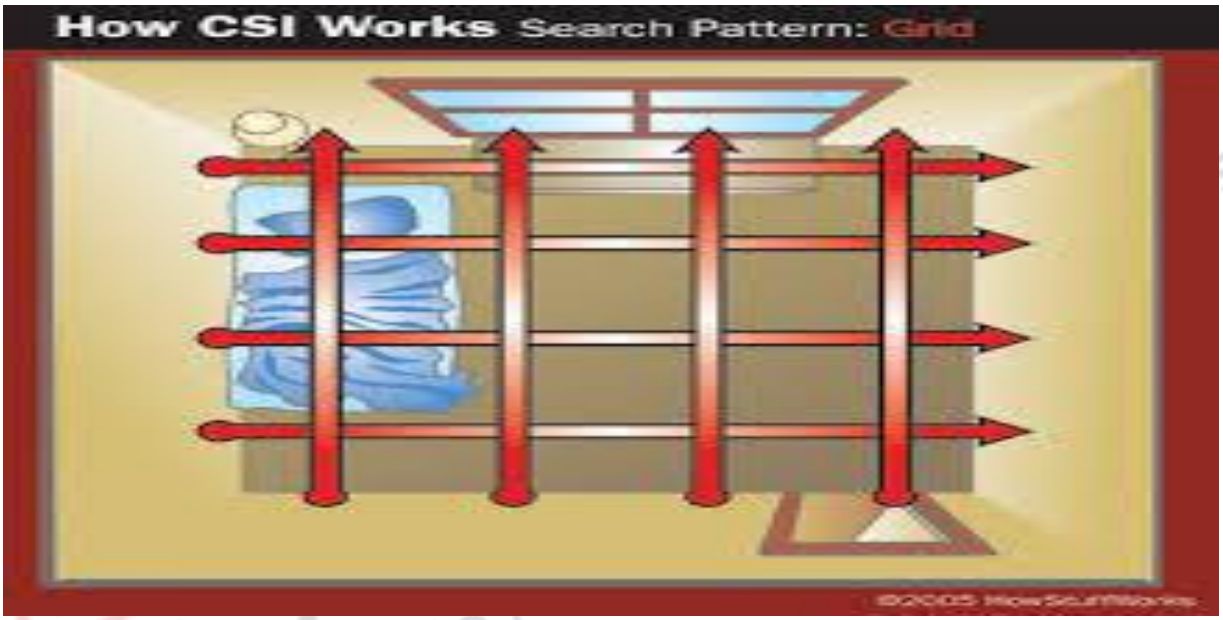
B. Spiral Method – this circular method is most effective in an indoor or small area, since as the circle gets bigger, evidence may be overlooked.



C. Zone Method – most often used indoors, this method divides the search area into sections or squares and a separate officer is designated to search a given section



D. Grid Method - This is one of the best for detailed searching of large areas. This method can be modified depending on the number of searchers and the area covered. When done correctly, each area will be searched twice



3.2. Searching of different types of crime scenes:

Indoor Crime Scene Searches: It is generally recommended that at least two officers search an indoor crime scene. This may best be accomplished by dividing the room in half and having each investigator search half of the room (also known as the quadrant or zone-search method).At the conclusion of the search, the investigators switch halves. In this fashion, each half of the room is searched twice.

Outdoor Crime Scene Searches

In most cases, the outdoor crime scene covers a broader area than those that are indoor. If this is the case, more investigators are required. Accordingly, with the increased size of the scene, a more systematic searching method must be used. One way is to rope off the scene in to a grid. Each square, averaging about 6 square feet, represents a specific search area that is a manageable size for each investigator (also known as the grid search method).

Night time Crime Scene Searches

If possible, investigators should wait until daylight to search a crime scene. Obviously, circumstances may require investigators to proceed with the search at night. These may include inclement weather or other emergency circumstances. In the event that such a search is to be conducted, lighting generators should be used to provide sufficient illumination for the search.

Vehicle Searches

The search of a vehicle requires the same degree of attention as indoor and outdoor searches. Obviously, the nature of crime dictates the area of the vehicle to be searched. For example, whereas a drug smuggling or murder case requires closer examination of the interior of the vehicle; a hit-and-run investigation necessitates examination of the exterior of the vehicle. Similar to an interior search

4. Collection

Evidence that may be collected at a crime scene

A wide variety of physical evidence can be collected at a scene that is deemed valuable ("probative") for collection and investigation:

- biological evidence (e.g., blood, body fluids, hair and other tissues)
- latent print evidence (e.g., fingerprints, palm prints, foot prints)
- footwear and tire track evidence
- trace evidence (e.g., fibers, soil, vegetation, glass fragments)
- digital evidence (e.g., cell phone records, Internet logs, email messages)
- tool and tool mark evidence
- drug evidence
- firearm evidence

Collection of evidence must be done in a patient, comprehensive and non-destructive manner, within a reasonable period; and with a minimum of unnecessary movement at the crime scene. It is important that trained specialists collect and preserve evidence. The evidence collected first is usually that which is most fragile. Therefore, finger-prints should be lifted as a priority. Next, other fragile evidence, such as blood and other trace evidence should be collected. Evidence that has been collected must be protected and preserved until the case goes to court.

Officers collecting evidence must preserve the chain of possession or chain of custody of all evidence collected. When possible, one police officer should serve as the evidence collector so that all evidence is collected in a uniform manner. Another important rule to remember during the evidence collection process is that all evidence must be marked immediately upon seizure to ensure proper identification later because it is common for the officer who seizes evidence to

identify at trial. The signatures of the officer who seized or collected the evidence along with the date of the collection are the most important markers.

5. Preservation

Evidence must be preserved in a proper manner so that it does not get contaminated or destroyed. To avoid reducing its evidentiary value, soaked clothing should be air dried before being bagged. Organic matter containing moisture to any degree may be subject to delay if sealed in a nonporous container. Such items should be packaged in porous containers so they can breathe. Evidence samples that may be subject to DNA testing must be kept in a frozen state to avoid deterioration, and samples destined for blood typing and certain other forensic tests should be refrigerated. A freezer and refrigerator are required in nearly all evidence rooms for this type of evidence as well as any perishable products that must be stored for evidentiary purposes.

6. Transportation

When transporting chemicals or explosive substances, a chemist or other qualified individual should always be available. The experts are appropriate for making decisions on the packaging, transportation, and storage of all chemical substances.

7. Conclusion

Crime scene management including crime scene investigation consists of various steps which should be performed in a very co-ordinated and efficient manner in order to avoid damage or contamination of physical evidence as that will lead to the evidence being declared inadmissible and incompetent in the court.

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