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DEVELOPMENT OF SCIENTIFIC TECHNIQUES IN INVESTIGATION OF CRIMINAL CASES IN INDIA

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ABSTRACT

Presently Science and Scientific technology is expanding at an ever increasing rate and the application of scientific technology in crime investigation also increases with the changes occurring in the world. The forensic science consists of various disciplines of science and also touches every boundary of medical science. A crime scene is an important place where a criminal act has been taken place. The success or failure of investigation depends on careful handling of crime scene and processing of evidence. It is the skill of an investigating officer to collect, preserve and forwards the exhibits to the court or Forensic Science Laboratory without disturbing the material evidence. Any laxity in this regard will affect adversely to the prosecution.

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1. INTRODUCTION:

The law is dynamic in nature, not static. It changes accordance with the change of the society. The law is the basic of the society; it should be interpreted for the benefit of the society. The judiciary has the role to interpret the law for greater good. The development of Science and Technology and its application for administration of justice and for the detection of crime is not new to India. The use of new technology like DNA analysis, blood spatter analysis, hair and fiber analysis,3-D computer imaging, high performance liquid chromatography, mass spectrography and modern technology are being used by the forensic scientists to reconstruct the offence and so as to identify the exact criminals. The forensic science is connected to science and criminal investigation and therefore, it applies scientific technology to detect the offence.

The complexity of the crime and detection of actual offender emphasizes the importance of scientific investigation i. e forensic investigation. To solve a crime, a standardized scientific approach is used, it is said to be forensic investigation. The basic process of forensic investigation involves the analysis of crime scene and collection of physical evidences such as fingerprint, blood, semen, hair, residue and other forms of evidences which is the conclusive proof against the culprits and to ensure the evidence collected is credible and relevant. The principle of forensic is related to the famous Locard's principle. According to this principle, "the perpetrator always carries or leaves behind some traces of evidence at the crime scene."[i] A crime scene is a place where a particular crime has been committed. This is a place where there are possibilities of finding physical evidences of a crime which may be brought to the notice of the Police. In many cases, there may be multipoint crime scenes. This is the beginning point for an investigating officer which provides the information about the victim and the suspect and helps the investigator to reconstruct the crime scene[ii]. The collection, packing and forwarding of the collected evidence is very important in crime scene investigation. If the collected sample is packed without the presence of witnesses or not as per the guidelines, the court or the Forensic Science Laboratory may reject the evidence. Hence,

extra care should be taken while collecting, packing and forwarding of the exhibits to the court as well as to the Forensic Science Laboratory.

The Importance of the Study:

Crime scene investigation is to be done very carefully otherwise the material evidence from the scene of occurrence may have lost. There are many cases in which the investigating officers or forensic examiners do not take much importance in collecting and forwarding of samples to the FSL as well as to court. If the exhibits are forwarded not as per guidelines laid down by the investigating agencies, the court or the FSL may reject the exhibits. This invites the criticism from various parts of the society, the court might have exonerate the real culprits as the benefit of doubt results the acquittal of actual offenders. The study will be helpful to assess the issues and to take adequate steps to prevent the laxity on the part of investigating officers and forensic examiners while conducting crime scene investigation and forwarding physical materials to the court or FSL.

2. OBJECTIVE OF THE STUDY

1. To study the role of Forensic Science in Criminal Investigation.
2. to study the loopholes in the absolute investigation
3. to find out the reasons of in the defective investigation
4. To examine the kind of hurdles the key role players in the field of investigation are experiencing.
5. Actions taken at the outset of an investigation at a crime scene lead to assure proper resolution of a case..

3. RESEARCH METHODOLOGY

This paper is based on doctrinal research method. The secondary data is collected from text books, international journal and articles, guidelines issued by various investigating agencies, judgements and reports from various commissions.

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4. CRIME SCENE INVESTIGATION

The crime scene is the place where the criminal act or crime was committed. From this point, an investigating officer begins the investigation of a crime and determine the identities of the criminal. This is also a place from which the physical evidence is obtained. The criminal investigation depends upon the physical evidence and therefore, extra care should be given while handling the physical evidence. It is a very important place to an investigating officer where the success or failure of the entire investigation of crime decides. He should be able to recognize, collect and preserve the physical evidence available at the scene of occurrence. The first step of crime scene investigation is to establish a systematic plan for processing the efforts. Generally, the structure of crime scene processing is the

- assessment of the crime scene,
- search and recognition of the physical evidence
- collection, handling and packing of physical evidence and
- reconstruction of crime scene[iii].

The examination of crime scene gives the following information;

- Whether the crime scene alleged is genuine or not?
- Details of entry and exit of criminal at the scene of occurrence?
- No. of criminals/victim involved in the crime?
- Modus operandi used by the criminal?
- The exchange of evidence between the criminals and victim.
- Behaviours of the criminal at the scene of occurrence so as to establish his profile
- The language used by the accused enable to identify the location/region to which the criminal belongs to
- the activity of the criminal after the committing offence.[iv]

Criminal Investigator and Scene of Crime:

The word investigation is coined by the term 'investigare' which means "to trace out or search into."[v] The duty of a Criminal Investigator is to bring out real unvarnished truth of a

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crime.[vi] According to Richard H. Ward "The primary function of the criminal investigator is to gather information, determine the validity of the information, identify and locate the perpetrator of the crime and provide evidence of his guilt before a Court of Law.[vii] Investigation of a criminal case is an intelligent duty but laborious and pains taking processes.

An investigating officer must have some basic and inherent talent to trace out the culprits. If he is not having such quality he should have achieved it by training and practices. Of all the qualities are necessary to an investigating officer, honesty and character are important.

When information about a crime is received, the investigating officer should visit the scene of crime immediately after registering FIR. A crime scene is the most important place for an investigating officer. He can get useful information regarding crime and can collect evidences about the crime from the scene of crime. As the crime scene is the best source of evidence, it should be protected safely till the examination and collection of evidence by the Forensic Experts is completed. The collected evidences are to be subjected to analysis so as to trace the real accused of the case.

Documentation of Crime Scene:

It is very important to a criminal investigator that documentation of the scene of crime. It begins at the moment that an officer gets information of a crime and continues till the case is closed. Even though the evaluation of crime scene is a time consuming and requires patience to get proper result. It enables to keep a detailed record of everything an investigating officer saw or did. Basically, there are four methods of documentation in criminal investigation. They are

1) Report and Note making
2) Photography
3) Videography
4) Crime Scene sketching and mapping[viii].

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The investigating officer should keep the documentation as a permanent record. While conducting preliminary survey of crime scene, an investigating officer can assess what type of documentation is needed i.e. photography, sketch, notes, measurements or video etc. A general description of the crime scene, just as the investigating officer observes it, should be narrated when he does the preliminary survey. The notes and reports should contain only facts, never include opinions, analysis or conclusions. They should be done in a chronological order.

Protection of the Crime Scene:

Every crime investigators must know that the criminal always leaves some kinds of traces; the traces are very important which can be used in the reconstruction of the crime. It may also provide a link between the suspect with the victim and the scene of crime. If it is not properly protected, it may lead to loss, contamination or destruction of various forms of evidence. It may also be noted that if the evidence is once neglected, it cannot be retrieved at a later stage. The first officer arriving at the crime scene should take measures to protect the scene from the family members and curious onlookers. He should mark the area as," CRIME SCENE, DO NOT CROSS". Once the scene is touched or altered or changed, it will make the task hurdle for the investigating officers and it will also be a great task to reconstruction of crime scene and collect the physical evidence[ix].

Collection, preservation, packaging and forwarding of evidence:

The collection of evidence can be started after completion of thorough documentation of the crime scene. While collecting the physical evidence, the extra care should be given to the most fragile or if there is a possibility of lost evidence to be collected first. The physical evidence should be collected in paper containers like packets, bags and envelopes. The physical clues of a crime be obtained from

- scene of crime
- the victim
- the suspect and his environment.

A thorough search is to be conducted at these three sources and materials in sufficient quantities are to be collected and to send them to the scientific expert for examination. The

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materials even microscopic fragments or debris may contribute to solve a crime. It is very important as well as essential to an investigator for handling, labeling and packing of materials from the scene of crime. If these processes done in a correct method, it would strengthen the weak link in a chain of evidence, sometimes supply one or more link. If the handling of material evidences done by an investigating officer in careless manner, the valid materials collected may become useless. If an object bearing fingerprint, dust or hair or any other rare materials may be displaced or disturbed due to careless handling. Similarly, forwarding of exhibits delayed and errors occurred in packing and labelling which may affect adversely to the prosecution case.

In Hema Vs Transport Inspector of Police, Madras in Crl.appeal No.31 of 2003 stated that the weapon used by the accused seized and produced before the court on a later stage was a serious lapse on the part of prosecution.

In State of Rajasthan vs Daulat Ram, the Supdt.of Police did not accepted the seized opium after a period of one month for onward transmission Public Analytical Laboratory. The Hon'ble Supreme Court in case of Valsala v State of Kerala[x] stated that the seized articles should be forwarded to the FSL for examination and the delay in sending the article will cause suspicious about the seizure of article. In Narain Singh v State[xi], Daya Nand v State [xii] and Ramesh v State[xiii] the court contended that the delay in sending samples and errors occurred while forwarding the exhibits to the court or FSL will be fatal to the prosecution.

Therefore, the following guidelines should be followed while lifting the materials from the scene of occurrence.

- ✓ Do not touch anything with bare hand, use rubber gloves.
- ✓ Make a preliminary examination before picking or touching an article and note the exact position of the material
- ✓ While lifting, hold the article carefully on such parts, there is a possibility for a fingerprint touched by the previous users.
- ✓ While lifting a knife or a fire arm, it should be handled very carefully without affecting the fingerprints of previous users.

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- ✓ Use forceps for picking small articles
- ✓ Handling should be done as minimum as possible and leave the article in its original position as much as possible

Packing:

- The collected materials/samples should be packed properly. This packing is to be done so as to avoid breakage, loss or contamination while transmitting from one place to other.
- The envelopes containing materials should be forwarded to Forensic Science Laboratory or court in a sealed condition and also be labeled properly
- All envelopes should be labeled, sealed and initials of investigating officers or witnesses are to be made without fail.

Labeling:

Evidence collected from the scene of crime should be properly labeled for positive identification. Date and time of collection, from whom and by whom the samples collected should be recorded properly. The collected sample should be preserved properly with same condition and for this proper containers are to be used. While transferring evidence from one place to another place signed receipt should be used. The errors occurred while packing and labeling of material evidence, the evidences will be inadmissible in the court of law.

Sealing:

If the seals are not affixed properly on the parcel, it may create the genuinity of the exhibits. Similarly if sample seal is not legible or if the sample is not attested by the investigating officer or if the details mentioned on the cover get destroyed due to leakage of fluids inside the container these will lead to the rejection of sample evidences by the FSL or by the court.

Forwarding of Exhibits:

While forwarding the exhibits to the court, the investigating officer should verify that the articles are enclosed in the parcel; otherwise the exhibits will not be accepted by the court

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or by the FSL. In the following circumstances, there is a possibility for rejection of exhibits from the court or from the Forensic Science Laboratory.

- If the road certificate is not forwarded along with the exhibits. It is highly necessary for the court to prove the chain of custody.
- If the details of parcel forwarded and mentioned in the road certificate do not match.
- If the exhibits are not forwarded to the FSL immediately after recovery from the scene of occurrence, there is a possibility for putrefaction of biological samples and therefore it may become unfit for examination.
- If the nature of examination required is not furnished in the forwarding note.
- If the authorization certificate from a gazetted officer is not forwarded along with the exhibits.

It may also be taken care while handling the evidence from the scene of crime.

Biological Evidences:

- Identify and secure evidence in container from the scene of crime
- Do not touch the biological evidence with bare hands due to health and safety concerns. Use gloves for collection of samples.
- Excessive handling of evidence after collection is to be avoided.
- Paper bags or paper sheets can be used for packing.
- Do not use printed paper for packing as the ink on paper may contaminate the exhibits.
- Articles collected from the crime scene should be packed separately and labeled. Do not pack more than one item. The labeling should be done on the cover not on the exhibits.
- Each article should be labeled with Crime No and date, name of Police Station, section of offence, name of investigating officer, district, state and signature of the investigating officer after sealing the exhibits.
- The labeled exhibits should be numbered consecutively and the forwarding officer should be signed.

- All the packed exhibits belonging to one case should be kept in one box or an outer covering.
- The dried blood sample can be collected by scrapping on a paper or can use fingerprint tape or cello tape to lift the stains of the blood. It can also be collected using filter paper or FTA card moistened with distilled water. Wet stains can also be collected in similar way, use cotton swab and kept in a paper bag after drying the same.
- If the biological samples not preserved on FTA cards, it creates problems in DNA analysis because the samples get putrefied.
- Use dropper or syringes to lift the sample of blood in EDTA (Ethylenediamine tetra acetic acid) from a pool of blood.
- Wet or moist items should not be kept in plastic or paper containers more than two hours. These articles should be air dried before packing.[xiv]

Hair:

- Minimum 10hair samples from the suspect are to be collected
- the pulled hair with roots are required for examination.
- black hair should be packed in white envelopes, white hairs in coloured paper and mixed hair in brown paper[xv]

Bones:

- If the bones are not get cleaned properly from the doctors, there is a possibility for growing fungus on uncleaned bones.
- The bones like femur, tibia and humors are to be preserved for examination.
- The burnt bones are to be packed properly i. e after wrapping in a cotton wool in a hand box[xvi]

Plant remnants- Stem, seeds, leaves etc:

- it is to be confirmed that the samples collected is sufficient for examination
- samples are to be packed separately for different items
- if samples are not protected from moisture, it may cause fungal growth.[xvii]

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Blood stained weapons:

Blood stained weapons like dagger, hacksaw, sword, gun etc., should be protected after wrapping with white paper with the help of thread. Otherwise, there is a possibility for destruction of blood stain due to rubbing.

Viscera:

During postmortem of the deceased, the visceral organs should be taken in airtight containers and they shall be preserved in

- saturated solution of sodium chloride for detection of common poison
- rectified spirit for suspected poisoning
- 1% sodium hydroxide for suspected cyanide poisoning
- for preservation of blood add 1 gm of sodium fluoride per 20 ml of blood
- blood with liquid paraffin or any vegetable oil for carbon monoxide poisoning[xviii]
- if the IOs do not sent viscera immediately, it will putrefies and therefore it will become unfit for examination
- Take sufficient quantity of viscera for examination[xix]

Phenolphthalein samples:

In bribery cases, the accused caught red handed, if the hand wash or pocket wash is taken in chlorinated tap water, the colour of the phenolphthalein may be decolorized. To avoid these, distilled water must be used.

NDPS substances:[xx]

- While taking samples, it should be taken sufficient quantity.
- The correct weight of NDPS substances should be mentioned in the docket.
- homogeneous representative sample to be sent for examination.
- seizure of substances should be done as per provisions of NDPS act.
- the exhibits are to be sent for examination within 24 hours of seizure
- NCB forms in triplicate should be sent to FSL along with the documents
- sample seal is to be affixed on the NCB forms

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Physics evidences:

- In cases of stolen vehicle, there is a possibility for changes in chassis number, engine number etc., Hence, whenever the vehicle seized, send the stolen vehicles immediately to the forensic science laboratory and get restore the chassis and engine number, otherwise the vehicle become wreckage.
- Similarly foot prints, tyre marks and plaster casts should be properly packed, otherwise, the exhibits may break down due to faulty packing.
- Send homogeneous samples of cement, mortar, concrete and other building material for examination

Fire arms:

- Bullets, pallets, empty catridges etc., recovered from the scene of crime should be sent to Forensic Science Laboratory for safe custody before recovery of the fire arm to avoid doubt of padding.
- Fire arms should be packed in a cotton bag otherwise, it may be tampered with.
- Blood stained bullets and pallets should be sending to the FSL without getting them washed.
- Recovery memo should be got signed by two independent witnesses while taking the items in custody, if not, the court will treat the evidence as no value.

Explosive:

- Live explosive or IED should be brought to FSL only after diffusing.
- Explosive should be packed as per SOP for sending to the laboratory
- Investigating officer take swabs of the gun shot residues from the suspected persons or from the deceased for examination. This will create link the arm with the firing person.

Paper Documents:

- Sample signature or writing should be at least five sheets are needed for comparison
- Admitted signatures or writings should be sent for comparison

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- Sample writings or signature should be taken before authorized witnesses and authorized officer.
- Same type of paper and same type of pen or writing instrument as in the questioned documents should be used as samples for comparison.
- Questioned documents and sample writings should be separately marked to avoid confusion at the time of examination.

Electronic documents:

- While taking custody of computer, hard disc, CDs, DVDs, pen drive, DPU etc., from the scene of crime, never operate them, otherwise, the 'hash value' of the document would have changed. These may become suspected in the eyes of the court.
- Do not let it fall from a height which may cause loss of the data.
- Do not place electronic document near a source of height or near a magnet which can cause destruction of data.

CONCLUSION:

The failure in investigation of criminal cases may cause sserious and far-reaching cosequences for the individuals as well as communities. Unsolved crimes results to erode the public faith in criminal justice system. Scientific methods of investigation helps the police to identify the real offenders and therefore extra care should be gien while seizing/collecting the materials and forwarding to the court or FSL. Investigating officer must try to minimize the risk of error by assessing the evidence accurately and to avoid pre-mature shifts suspect based investigation.

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