[Gayathri *, 5(5): May, 2018]
DOI: 10.5281/zenodo.1245874

ISSN 2349-6193
Impact Factor: 3.866

IJESMR

International Journal OF Engineering Sciences &Management Research

APPLICATION OF FORENSIC SCIENCE TECHNIQUES IN CRIME SCENE INVESTIGATION

Gayathri.S*
*Asst.Professor, Department of Law, Kannur University, India

Keywords: Forensic science, crime, crime scene, collection of physical evidence e.t.c

ABSTRACT
Forensic Science means the application of science to those criminal and civil laws that are enforced by the police agencies in a criminal justice system .Forensic Science plays a vital role in the criminal justice system by providing scientifically based information through the analysis of physical evidence. It involves the use of multiple disciplines such as physics, chemistry, biology, computer science and engineering for evidence analysis. In this paper I would like to analysis how far the forensic techniques are effective in the crime scene investigation and its importance in the present society.

INTRODUCTION
Crime in some form or other has existed since the beginning of human race. With the advancement in science and technology the concept of crime as well as the methods adopted by criminals in its commission have undergone a phenomenal change. The normal methods of detecting crime have also no place in a civilized society. In these circumstances, Forensic science has found its existence. Forensic Science is the application of a broad spectrum of sciences to answer questions of interest to the legal system. Forensic science, an amalgamation of almost all faculties of knowledge is an essential and efficient enabler in the dispensation of justice in criminal, civil and social context and it uses highly developed technologies to uncover scientific evidence in a variety of fields .Facilities to detect crime scientifically are available in Forensic Science Laboratory. This is mainly by the careful processing and analysis of the trace evidence left by the criminal at the crime scene while committing crime.

The concept of forensic science is not a new one. In ancient India , medical opinion was frequently applied to the requirements of the law. Sir William Herschel was one of the first to advocate the use of fingerprinting in the identification of criminal suspects . Fingerprint evidence was first accepted in an Argentine court and in English court in 1902.

WHAT IS CRIME SCENE?
A scene of occurrence of a crime is the place where a particular crime has been committed or where physical evidence of such crime is found when it is first brought to the notice of the police. The protection of the scene of crime is the most important pre-requisite for success in the application of science to investigation. as it will help to protect items of possible physical evidence . All criminal investigation is concerned either with people or with things .Only people commit crimes, but they invariably do so through the medium of things. It is these things that together constitute the broad field of physical evidence.

ISSN 2349-6193
Impact Factor: 3.866

IJESMR

International Journal OF Engineering Sciences &Management Research

Fig 1: Collecting of physical evidence from the crime scene

The value of contact forensic evidence was first recognized by Sir Edmund Locard in 1910.He was the director of the very fast crime laboratory in existence ,located in France. He observed that criminals often possess some clues on or near their person or they leave such clues on or near the scene of crime. He propounded the Theory of Mutual Exchange which state that "when two objects come in to contact there is always an exchange of material "This is known as Locard's Principle of Exchange. For example , burglers will leave traces of their presence behind and will also take traces with them. They may leave hair from their body or fibers from their clothing behind and they may take carpet fibers away with them. By a scientific comparison of the clue materials a suspect can either be linked with the crime scene if the material is matching or he can be eliminated if it is found negative. Crime scene investigation is a multifarious and multidirectional task ,involving : identification of individuals, dead bodies, skeletal remains, scene of occurence ,weapon of offence, evidentiary clues ,location and collection of physical evidence. For this purpose various forensic techniques like Hair comparison ,forensic analysis of body fluids like Blood, Saliva ,Semen and Blood stain pattern analysis, Bio metric identifications, DNA profiling ,Cyber forensics, Forensic Odontology .e.t.c .

ROLE OF FORENSIC SCIENCE IN CRIME INVESTIGATION

Forensic science is one of the important aspects of criminal justice .Basically ,it deals with scientific examination of physical clues collected from the crime scene. Forensic science explains the identity (Who) of the suspect who committed the crime. The evidence clearly indicates the type (what) of the crime committed. The circumstances speak out about the time (when) of the incident. The forensic evidence proves the location of the offence(where\crime scene).The forensic investigation finds out the modus operandi(how) of the offender. Lastly ,it establishes the movie behind the crime. The forensic Investigators reconstruct identity of the offender and the victim. During the investigation , evidence is collected at a crime scene or from person, analyzed in a crime laboratory and then the result presented in court .

Forensic scientist take blood, hair, saliva and other body tissues left by the perpetrator on the victim or at a crime scene and compare the samples to the DNA of suspects. Finger prints, shoe prints, samples ,purchase receipts and blood splatter are among the clues that forensic scientists use to solve a case. Forensic scientists also perform ballistics tests to match a bullet to the firing weapon and tests to match a bullet to the firing weapon and examine other evidence, such as blood splatter patterns , to determine where a shooter and victim must have been when the shot was fired. Others analyze fiber samples, such as a tiny bit of carpet fiber to determine the brand and colour, which may allow them to prove that the sample came from the suspect's home or car. This can prove that a victim was in that location ,even if the suspect denies ever having met the victim. Purchase receipts can prove that the suspect was in a certain location at a specific time or that he purchased items used in committing a crime. Some forensic scientists are generalists while others specialize in a particular area of laboratory analysis. Those employed in large laboratories typically special.

The role of forensic science services starts at the crime scene with the recognition and recovery of physical evidence. It proceeds with its analysis and the evaluation of the results in a laboratory , and the presentation of

ISSN 2349-6193
Impact Factor: 3.866

IJESMR

International Journal OF Engineering Sciences &Management Research

the findings to judges, prosecutors, lawyers and others in need of the factual information .From the first responders to the end-users of the information. From the first responders to the end users of the information ,all personnel involved should have an adequate understanding of the forensic process, the scientific disciplines and the specialized service provided by forensic laboratories.

Crime scene investigation is a process that times at recovering the scene as it is first encountered and recognized and collecting all physical evidence potentially relevant to the solution of the case. The first responders, be they law enforcement officers play a critical role in the entire crime scene investigation process. The initial responsibilities are to preserve the integrity of the scene and the evidence. Furthermore ,t hey are responsible for the early documentation of the crime scene ,its evidence and all activities at the scene .Under ideal circumstances ,crime scene investigators who have received full fledged forensic training quickly take over the work at the scene. However, there are situations that may require first responders to carry out some basic recovery procedures before the arrival of the crime scene investigators, if there is a risk of the evidence being destroyed ,lost or contaminated. Crime scene investigators start their investigation by walking through the scene of a crime and determining what should be collected as evidence. They also determine the best way to collect the evidence without disturbing the rest of the crime scene and without hindering the ability of officers to investigate the scene.

SAMPLES THAT MAY BE COLLECTED AT A CRIME SCENE

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

1. 1.Biological evidence(eg .blood ,body fluids, hair and other issues)
2. 2.Latent print evidence(eg, fingerprints ,palm prints, footprints)
3. 3.Footwear and tire track evidence
4. 4.Trace evidence (eg,. fibers, soil ,vegetation, glass fragments)
5. 5.Digital evidence(eg, cell phone records, Internet logs ,email message)
6. 6.Tool and tool mark evidence, Drug evidence, Firearm evidence

Fig 2: Blood samples

Fig 3: finger prints

ISSN 2349-6193
Impact Factor: 3.866

IJESMR

International Journal OF Engineering Sciences &Management Research

Fig 4: Digital evidence

Crime scene is considered as the most important factor in criminal investigation .In order to record the evidence the forensic scientists should takes an immediate action to protect the crime scene .Some of the evidence gets lost soon after the occurrence ,the other evidence disappears, gets contaminated or altered with further passage of time. The opportunity to examine the scene is available only once. If the same is not fully exploited the wealth of information is lost forever

.

Crime scene evidence can be recorded by the following methods:

1. **Recording of Notes**

The investigator has to begin his investigation by recording pertinent facts and details observed by him at the crime scene. The discovery of every significant item of evidence, when and where it was found ,should be accurately described.

2. **Skectching the Crime Scene**

The investigator must make a rough sketch of the crime scene. The sketches in combination with the photographs provide an ideal presentation of the scene .The sketch should show and locate important objects at the scene.

3. .**Photography**

The scene of occurrence should be photographed as a matter of routine. It is a best way to record and illustrate the details of a crime scene and its evidence. Some times the eyes may not observe certain facts. The camera will photograph them and keep a permanent record, verifiable at later stages of the investigation also.

LEGAL PROVISION RELATED TO CRIME SCENE EVIDENCE

The provisions of The Indian Evidence Act and Criminal Procedure Code allows the crime scene evidence. Sec 73 of the Indian Evidence Acct empowers the court to direct any person including an accused to allow his finger impressions to be taken..The Supreme court has also held that being compelled to give fingerprints does not violate the constitutional safeguards given in Art 20(3).

There are questions as to whether forensic evidence violates Art.20(3) of Indian constitution or not? In The ***state of Bombay v Kathikalu & others*** .the court held that giving thump impression, specimen signature, blood, hair, semen etc by the accused do not amount to being a witness within the meaning of the said Article .The accused ,therefore has no right to object to DNA examination for the purpose of investigation and trial Under Indian Evidence Act 1872 forensic report is considered as "opinion" tendered by expert .The credibility of an expert witness depends on the reasons stated in support of conclusion and the tool technique and materials ,which form the basis of such conclusion.

The National Draft Policy on Criminal Justice Reforms has suggested that Indian Evidence Act needs to be amended to make scientific evidence admissible as "substantive evidence "rather than "opinion evidence" and establish its probative value, depending on the sophistication of the concerned scientific discipline.

CONCLUSION

Forensic evidence plays a crucial role in helping the courts of law to arrive at logical conclusions. But modern techniques of investigations are still unknown to the police. They are not taught about them. The police are accused of investigating crimes by using traditional methods and techniques It has been maintained that improper scientific knowledge with improper handling of scene of crime ,may either contaminate the samples

ISSN 2349-6193
Impact Factor: 3.866

required to be tested or destroy the evidentiary value, could be obtained on proper lifting ,sealing, forwarding to the Expert/Laboratory for examination. Therefore, association of Forensic Experts with the police investigation right from the beginning and their effective liaison with the Medico-Legal Expert can contribute very significantly and sometime decisively ,to the solving of the crime.

I conclude by saying that Forensic science in today's world is an advanced scientific technique which is used in criminal and civil investigations ,it is capable of answering important questions and forms an integrated part of criminal justice system.

REFERENCES

1. *B.S.NABAR,"Forensic Science in Crime Investigation",(Asia Law House 2012)*
2. *Isha Thyagi and Niveditha Grover,"Development of Forensic Science and Criminal Prosecution-India,IJSRP,Vol.4(2014)*
3. *Manisha chakrabarthy and Dr.Deepa,"Applicability of forensic science in criminal justice system"*
4. *".Crime Scene and physical evidence awareness for non-forensic personnel,"United Nations Publication, ISBN 978-92-1-1-13-273-8*
5. *B.R SHARMA, "Forensic Science in Criminal Investigation and Trials",,ISBN 978-93-503*
6. *B.P Tiwari, " Evidentiary value of expert opinion ,23 IIRRJ Vol. IV(2012)*
7. *Report of the committee on Draft National policy on criminal Justice, Ministry of Home affairs, Government of India, July 2007.*