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Significance of Forensic Toxicology in The Indian Criminal System

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ABSTRACT

Toxicology is said to be the study of drugs and chemicals in any biological substance. In other words, toxicology can be said as a branch that is the study of poisons. On the other hand, forensic toxicology uses the toxicology along with other studies including pharmacology, clinical chemistry. Its use is focused on cases that have medico-legal consequences and their results are admissible in court of law.

The paper will be concentrating on analyzing the significance of the forensic toxicology usage in the field of crime investigation along with explaining with its application and by adding several cases of forensic toxicology. The paper will also include the laws that govern forensic toxicology in India.

Keywords: *Toxicology, investigation, forensic.*

I. INTRODUCTION

The field of study "toxicology" has arisen those deals with pharmacology, chemistry, and medicine. It centers on researching and analyzing chemicals and their potential effects on living things throughout various ecological zones. Experts in this area identify potential effects of chemicals and handle medical issues brought on by a variety of toxicants. Over time, experts in the discipline of toxicology have been eager to investigate the characteristics of poisons and offer a variety of evidence-based strategies for maximizing safety. By examining both the positives and drawbacks of some of the substances utilized by people, this purpose is analyzed.

II. SIGNIFICANCE OF TOXICOLOGY IN CRIMINAL INVESTIGATIONS

Toxicologists are typically able to identify and foresee potential effects of chemicals through scientific analysis and investigations. In order to reduce some of the potential risks and health issues, they will share the information they have learned with the general public and decision-makers. Professionals in this industry will take into account a variety of factors to guarantee that results are documented in a timely manner in order to help the realization of positive results. In order to ensure that the desired outcomes are recorded, experts in this discipline typically use

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advanced technologies, computers, and chemicals in toxicology labs.

In order to detect chemicals and make an unequivocal determination on how they can damage people's lives or biological systems, they will adhere to precisely established protocols and methodologies². Such experts can isolate particular compounds during a criminal investigation and analyze how they might be connected to the particular case. The advancements made thus far in this subject have assisted juries, courts, and judges in reaching just verdicts and convictions based on the evidence presented. Toxicology is a procedure that can be quite effective in achieving forensic investigation objectives because of its strength. The field has become beneficial and capable of assisting in the delivery of justice to many individuals due to the globe being defined by several chemicals that are believed hazardous and capable of influencing human actions and goals.

For example, when police officers seek to look into the cause of death in post-mortem analyses, toxicology becomes a forensic profession. In such a case, the investigators could be eager to examine and determine whether a particular dose of medicine could be connected to the targeted fatality³. Players in the criminal court system would be able to accomplish their objectives using this strategy.

Similar to this, toxicology has developed into a crucial practice or technique in which scientists rely on their knowledge to track and investigate the characteristics of particular compounds that are thought to be dangerous. Experts can determine how different age groups or individuals embrace the use of particular substances, including illegal drugs and chemicals, through the study of toxicology. Homicides and accidents in the domestic setting are still frequent in various parts of the world. Reporters typically identify particular drugs and chemicals that people use to commit suicide⁴. Professionals can evaluate these patterns through toxicological research and offer new recommendations to assist more individuals in defending themselves against some of these toxins.

Some of the concerned stakeholders may support the creation of new regulations and laws to avoid the misuse of such drugs if toxicologists provide their analysis and findings. This strategy can assist governments in creating stronger regulations for the ownership and use of various

² T. Millo, A K Jiaswal, Kulbushan Prasad, *The Indian Laws Relating to Drugs and Poisons*, Volume 3, Journal of Forensic Chemistry and Technology, pg.17, pg. (2017) https://www.rfppl.co.in/subscription/upload_pdf/jfct3_4984.pdf

³ Shreenya Sharma, *Forensic Toxicology and Indian Laws*, LEGALDESIRE, (December 2 2022, 5.05 PM) <https://legaldesire.com/forensic-toxicology-and-indian-laws/>

⁴ Denise Stanworth, *Forensic Toxicology: get inside the crime*, LGCFORNSIC, (November 28 2010) https://www.labnews.co.uk/article/2028372/forensic_toxicology_get_inside_the_crime

substances that are classified as poisonous. This procedure illustrates how and why many jurisdictions have contributed to the introduction of extra recommendations that have assisted in reshaping the potential of forensic science.

Toxicology can assist the majority of the parties involved in criminal cases involving dosages of dangerous chemicals by explaining the particular chemical and suggesting the most effective treatments for the sufferer. This development explains why more medical facilities have assisted in saving the lives of numerous individuals who would have been given hazardous compounds as drugs. The field has also proved helpful in identifying environmental discharges and contaminations that may have detrimental effects on wildlife, aquatic life, and even people. Forensic toxicology has supported the presentation of superior procedures to help protect defenseless individuals in the domains of traffic, foreign immigration, and drug trade. These applications demonstrate that toxicology will keep taking center stage in forensic investigations.

III. GENERAL ASPECTS OF FORENSIC MEDICINE AND TOXICOLOGY PRACTICE IN INDIA

The Forensic Medicine and Toxicology Department will handle all postmortem and medicolegal examinations as follows:

All requests for postmortem examinations should be made to the Chief Medical Officer or Consultant in the absence of a full teaching department in the name of the Head of Department (HOD), Forensic Medicine and Toxicology⁵. The cases listed below are taken into consideration for debate.

- a. Clinical cases brought to the hospital from the designated area.
- b. incidents of postmortem brought to hospital from assigned area
- c. Cases that have been forwarded to referral institutes by the Central Bureau of Investigation or state intelligence agencies
- d. Cases recommended by other government entities to the Medical College are often referred to this institution.
- e. Cases that the Executive Sub Divisional Magistrate has forwarded to the Board – When a case needs to be evaluated by a group of doctors from several hospitals, the HOD will suggest a candidate. If the on-call doctors get this request, they are urged to contact the

⁵ Anusree, *Forensic Psychological test and Human Rights of the Accused*, SCHOOL OF LEGAL STUDIES COCHIN UNIVERSITY OF SCIENCE AND TECHNOLOGY, (December 2, 2022, 4.45 PM) <https://dyuthi.cusat.ac.in/xmlui/handle/purl/5323>

HOD so that their involvement can be verified. Before leaving the premises, you need obtain the appropriate permission or endorsement. The head of the institution should make an effort to publicise the hospital's stated policy about working on hospital property and under hospital control.

- f. Since medical colleges are supposed to provide specialised services, various courts frequently refer court cases to experts for their opinions.

IV. LAW GOVERNING FORENSICS INCLUDING TOXICOLOGY IN INDIA

The government has inserted rules relating the abuse of poison and admissibility of the results of medical examinations into the Indian legislation as a result of growing concern over the rising prevalence of poisoning worldwide and a lack of public understanding of its danger. It is discussed in the sections below:

Criminal offences in Indian panel code (IPC)

In India, poisons are primarily employed in robberies and suicides. For instance, the gang of thugs who poisoned travelers uses datura⁶. In India, traveler robberies and poisonings continue to happen often nowadays. Therefore, whenever a poison is administered, a crime is committed.

1. Intention to kill,
2. intention to cause serious injury,
3. reckless usage though no intention to kill,
4. to facilitate a crime, e.g., robbery or rape,
5. for procuring an abortion,
6. to make annoyance to the victim by throwing poison with intention to threat

Different sections of Indian penal code related to poisons are as follows:

1. Sec. 272 I.P.C.- Punishment for adulterating food or drink intended for sale;
2. Sec. 273 I.P.C.- Punishment for selling noxious food or drink;
3. Sec. 274 I.P.C.- Punishment for adulteration of drugs in any form with any change in its effect knowing that it Will be sold;
4. Sec. 275 I.P.C.- Punishment for knowingly selling adulterated drugs with less

⁶ Manish Yadav, Anindhya Tiwari, *Forensic Toxicology and Its Relevance with Criminal Justice delivery system in India*, Volume 4 Issue 4, Forensic Research & Criminology International Journal, pg.122, pg. (2017) <https://medcraveonline.com/FRCIJ/forensic-toxicology-and-its-relevance-with-criminal-justice-delivery-system-in-india.html>

efficacy or altered action;

5. Sec. 276 I.P.C.- Punishment for selling a drug as a different drug or Preparation;
6. Sec. 277 I.P.C.- Punishment for fouling water of public spring or reservoir;
7. Sec. 278 I.P.C.- Punishment for voluntarily making atmosphere noxious to health;
8. Sec. 284 I.P.C- Punishment for negligent conduct with respect to poisonous substance;
9. Sec. 328 I.P.C.- Punishment' for causing hurt by means of poison or any stupefying, intoxicating or unwholesome drug.

(A) Law governing expert witness

Insofar as the Indian legal system and its position are concerned, legislators could not have foreseen the enormous growth of modern science and technology and its profound impact on forensic science as well as the administration of justice when they passed the Indian Evidence Act 1872 or the Code of Criminal Procedure, 1973⁷. The Indian Evidence Act, which allows evidence of the opinions of people who are especially skilled upon a point of foreign law, science, art, or as to identity of handwriting or finger impressions, the opinions upon that point, later made the reports of the expert in relation to the results of forensic toxicology admissible. The value of expert testimony depends on a number of variables, including the expertise of the expert and the precision of the science⁸. Expert witnesses are typically asked to prepare a joint statement outlining points of agreement and disagreement to assist the court or tribunal since they may present expert evidence about facts related to their area of expertise.

However, the Supreme Court has stated that medical jurisprudence is not a precise science in a case notably involving the medical examination of a rape victim. Expert opinion is only useful as a corroborative measure and insufficient to establish a conclusion on its own if the science is inexact. Therefore, in every case, these evidences must be considered alongside physical and circumstantial evidence. The primary legal provisions that control the use of expert testimony are found in:

1. Indian Constitution. (Article 20 (3)),

⁷ Manish *Supra* note 5

⁸ O. P Murthy, General aspects of Forensic Medicine and Toxicology in Indian Set-up: Working arrangement and Problems of Medico-legal work, Volume 27, Journal of Forensic Medicine and Toxicology, pg.1, pg. 4 (2010) https://www.researchgate.net/publication/282123208_General_aspects_of_forensic_medicine_and_toxicology_in_Indian_set-up_Working_arrangement_and_problems_of_medico-legal_work_-_OPMurty/link/5603c1dd08ae08d4f1717df1/download

2. Indian Evidence Act, 1872. (Sections 45 & 112),
3. Code of Criminal Procedure, 1972. (Sections 53, 194 & 293).

(B) Recent Amendments of IPC Dealing with Acid Attack Case, IPC 326 A (Voluntarily Causing Grievous Hurt by Use of Acid, etc.)

Anyone who administers acid to another person, throws acid on them, or uses any other method with the intent to inflict permanent or partial damage or deformity, burns, maims, disfigures, or disables any part or parts of their body or causes grievous harm shall be punished with imprisonment of either description for a term that shall not be less than ten years but which shall not exceed one hundred years. The victim must receive payment of any fine issued pursuant to this provision, provided that the fine is just and reasonable to cover the victim's medical costs of treatment. The J.S. Verma Committee's suggestion⁹ led to the introduction of the provision.

IPC 326 B (Voluntarily Throwing or Attempting to Throw Acid)

Anyone who throws acid at someone, tries to administer acid to someone, or uses any other method with the intent to permanently or partially harm, maim, burn, disfigure, or cause great harm to that person is punishable by either type of imprisonment for a term that must not be less than five years but may go as long as seven years, as well as by fine.

For the purposes of this section and section 326 A, "acid" means any material that has an acidic, corrosive, or burning tendency and that might cause bodily harm that results in scarring, disfigurement, or a temporary or permanent disability. For the purposes of this section and section 326 A, irreversibility is not necessary for permanent or partial harm or deformity.

Supreme court in *Laxmi Vs Union of India*¹⁰ directed the state to consider

- (1) Adoption of adequate legislation for the states and union territories to effectively regulate the sale of acid
- (2) Taking the right steps to heal, care for, and rehabilitate acid attack victims and meeting their demands
- (3) The state must give compensation to acid attack victims, or a special fund must be established for this purpose. The Supreme Court issued other orders in the same case¹¹ in a later judgement that sought to reduce the threat of acid assaults.

⁹ Shreenya Sharma, *Forensic Toxicology and Indian Laws*, LEGALDESIRE, (December 2 2022, 5.05 PM) <https://legaldesire.com/forensic-toxicology-and-indian-laws/>

¹⁰ *Laxmi vs union of India* 2014 SCC 4 427

¹¹ *Id* at 7

V. CASE STUDIES BOTH OUTSIDE AND IN INDIAN JURISDICTION

In both criminal investigations and legal trials, forensics has become essential. Toxicology is still frequently used to gather sufficient evidence that could be used to disprove convictions, familiarise or bolster witness testimony¹². The case involving Nicholas Odze, a 4-year-old boy who passed away strangely, is the first one involving the use of toxicology. According to the boy's mother Bernabe Raisa's official declaration, the boy passed away shortly after receiving a prescription for Lunesta. When she noticed that he couldn't fall asleep, his mother gave him such a medication. Following the incident, toxicology investigations and tests revealed the presence of several substances in the child's system, including eszopiclone, oxycodone, and ibuprofen. The competent authorities were unable to bring any charges against the boy's parents as a result of these findings and reports. The results of the investigations also showed that the child had not suffered any kind of internal trauma or harm. Consequently, this case demonstrates how toxicology is a vital discipline that can aid juries and judges in reaching an accepted judgement much more quickly.

The Janie Lou Gibbs¹³ case was the second unresolved case that was finally solved thanks to toxicology. This woman was suspected of plotting and carrying out the murders of her husband, one of her grandkids, and three of her sons. Gibbs would ultimately deliver some soup laced with arsenic following an unsuccessful effort to poison her husband with rat poison. Gibbs used chemicals in all of these killings, and she gave the local church the insurance payouts from the victims' deaths. Robert, one of Gibb's sons, would subsequently be subjected to certain toxicological testing by the family doctor. When the bodies of the other deceased family members were exhumed, forensic toxicologists discovered that each one had perished from poison-related homicide. Such discoveries would allow the court to arrest and declare Gibbs guilty of the three victims' deaths.

Tandoor case¹⁴ murder (1995) Delhi- The culprits attempted to hide a shooting homicide by setting the dead body on fire in the first criminal case in India to be solved with the use of forensics. However, the real cause of death was discovered after a thorough and smart forensic investigation. The victim was shot by the victim's spouse, Shushil Sharma, and then placed in a

¹² Balvant S Khajja, Mukesh Sharma, Rajveer Singh and Girish K Mathur, *Forensic Study of Indian Toxicology Plants as Botanical Weapon A Review*, Volume 1 Issue 4, Journal of Environmental and Analytical Toxicology, pg.1, pg.2 (2011)
https://www.researchgate.net/publication/271102092_Forensic_Study_of_Indian_Toxicological_Plants_as_Botanical_Weapon_BW_A_Review#:~:text=The%20Botanical%20weapons%20are%20may,body%20in%20the%20buses%2Ftrains

¹³ Gibbs vs State 235 Ga. 480 (1975)

¹⁴ State vs Shushil Sharma 2007 CriLJ 4008

tandoor in the incident at hand. After killing his wife, Sharma drove her body to the Bagiya restaurant where he attempted to burn her in a tandoor with the assistance of the manager, Keshav Kumar. Sharma's gun and blood-stained clothing were found by police, who then sent them to the forensic lab on Lodhi Road. They also collected blood from Sahni's parents, Jaswant Kaur and Harbhajan Singh, and sent it for a DNA test. The blood samples that the doctor saved while doing the post-mortem and the blood stains on two leads removed from the deceased Naina's skull and neck are both of the "B" blood group, according to the lab report. The DNA result stated that the tests "show beyond a reasonable doubt that the charred body is that of Naina Sahni who is the biological offspring of Mr. Harbhajan Singh and Jaswant Kaur," confirming that the body was Sahni's. Finally, Mr. Shusil Sharma was determined to be guilty using forensic evidence.

Murder of Sister Abhaya in Kerala in 1995 that the Sister Abhaya Case¹⁵ concerns the passing of a Knanaya Roman Catholic nun who was discovered dead in an Indian town of Kottayam's water well on March 27, 1992. She belonged to the women's St. Joseph's Congregation in the Knanaya Catholic diocese of Kottayam, Kerala, India, and was 19 years old when she passed away. She awoke from her sleep at around 4 am on the day of her death to prepare for her exam, and she then went downstairs to the hostel's kitchen to collect water from the refrigerator. Later, in the convent/hostel complex, her body was discovered in the well outside the kitchen. The case was solved using scientific investigation techniques like polygraph exams, brain mapping/brain fingerprinting, and narco-analysis. In August 2007, as part of its inquiry, the CBI tested for narcoanalysis. Two church fathers were subsequently detained with the aid of these.

Aarushi talwar murder case¹⁶ (2007) Noida Aarushi Talwar, the 14-year-old daughter of a prosperous dental couple, was discovered dead with her throat cut in her parent's Noida, Delhi, house in 2008. Hemraj, the home servant, was discovered dead alongside the girl. In this instance, DNA was taken from the blood-stained garments and fingerprints were used to identify the suspect. On the glasses at the residence at the time of the murder, many fingerprints were also discovered. On the basis of CBI suspicions, Aarushi's father underwent a number of narcoanalysis tests; however, because there was no supporting evidence, he was found not guilty. The Court has not yet rendered a decision in this matter. The case included discussion of whether drug testing might be used as evidence in court.

Anant Chintaman Lagu v. state of Bombay¹⁷ The prosecution must prove three things in a case

¹⁵ CBI vs Father Thomas Kottor & ors SC No. 1114/2022

¹⁶ Nupur Talwar vs State of Uttar Pradesh (CRL) NO. 45 of 2012

¹⁷ Anant Chintaman Lagu vs State of Bombay 1960 AIR 500

of poisoning, according to the court:

1. that the death was brought on by poison;
2. that the accused had access to the poison; and
3. that the accused had a chance to provide the poison to the victim.

The court may be able to conclude that the accused gave the dead the poison, which caused his death, if these facts are shown and there was a purpose.

VI. CONCLUSION

It would be reasonable to conclude from these precedent-setting instances that toxicology is a beneficial science that will continue to influence forensic investigations. Experts in the industry have discovered that it is simpler to review the available information and reach pertinent conclusions that make it simpler for legal professionals and judges to reach the most appropriate conclusions¹⁸. The cases under study also provide evidence that forensic toxicology should be promoted and expanded since it has the potential to help resolve even the majority of the most difficult criminal cases now pending.

¹⁸ DENISE, *supra* note 3 at 2