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Scopus indexed, WOS, National & International Journals and few as chapters in edited books. She has also published 3 edited books. She has presented more than 35 research papers in National/ International Seminars/ Conference. In addition to her academic endeavors, Dr. Bhavana has earned several certifications / MOOC Courses like Children's Human Rights- An Interdisciplinary Introduction from University of Geneva, Feminism and Social Justice from University of California, SANTA CRUZ, Leadership and Emotional Intelligence from Indian School of Business, Human Rights for Open Societies from Utrecht University, Introduction to International Criminal Law from Case Western Reserve University, America's Written Constitution from Yale University and many more. She is associated as editors with reputed journals. She has been awarded by "Award of Honor", for contribution & Achievement in the field of Education, "Academic Excellence Award", Distinguish Academician Award, Excellence in Constitutional Law Teaching award & Best Research Paper award during her career



**Dr. Govind Prasad Goyal** is a seasoned academician and an accomplished scholar with a distinguished career in legal and interdisciplinary research. With numerous research publications in Scopus- indexed journals, ABDC-listed journals, and Web of Science, he has made significant contributions to contemporary academic discourse. He is the author of nine books and serves as an editor for several prestigious international publishers, including Cambridge Scholars Publishing, Routledge (Taylor & Francis), and Bentham Science, reflecting his deep expertise and editorial excellence. A committed innovator, Dr. Goyal has also been recognized for his creative and

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Applied Forensic Science and Law

# Applied Forensic Science and Law

**Prof (Dr.) Bhavana Sharma**

**Prof (Dr.) Govind Prasad Goyal**

*Foreword by*

**Justice (Retd.) Kurian Joseph**

Former Judge, Supreme Court of India



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## From Crime Scene to Courtroom: The Complete Journey of Toxicological Evidence in the Pursuit of Justice

Dr. Gaurav Gupta, Dr. Wasim Ahmad

### Abstract

Forensic toxicology is a critical pillar in the administration of justice, offering scientific insights into the involvement of chemicals, drugs, and poisons in legal investigations. Despite its growing significance, the discipline still suffers from procedural inconsistencies and challenges in the interpretation and communication of toxicological evidence. This chapter addresses this research gap by providing a systematic exploration of the toxicological evidence chain from crime scene collection to courtroom testimony highlighting the challenges and solutions at each stage. The objective of this chapter is to outline the scientific, procedural, and legal aspects involved in forensic toxicology, with a focus on maintaining evidence integrity, employing advanced analytical techniques, and effectively communicating findings in legal settings. The chapter uses a doctrinal research methodology supported by descriptive analysis of laboratory protocols, case law references, and standard forensic guidelines. Key findings include the importance of meticulous sample collection and preservation, the necessity of a robust chain of custody, and the role of confirmatory techniques such as GC-MS and LC-MS/MS in ensuring evidentiary reliability. Further, the chapter explores the complexities in interpreting toxicological results, including factors such as metabolism, post-mortem redistribution, and poly-pharmacy. The report writing process is evaluated, emphasizing scientific clarity, objectivity, and exclusion of speculative assertions.