Mini Review
Volume 8:5, 2023

Journal of Forensic Medicine

ISSN: 2472-1026 Open Access

Contemporary Approaches in Forensic Toxicology

Goyal Ananya*

Department of Forensic Medicine, Jawaharlal Nehru Technological University, Hyderabad, India

Abstract

Forensic researchers face substantial hurdles when it comes to retrieving fingerprint evidence from gunshot casings. At crime scenes, both fired and unfired casings are commonly found, yet the recovery of fingerprints and the establishment of a connection between the shooter and the firearm remain persistently challenging tasks. This difficulty arises from the extreme conditions that projectile casings undergo during firing, as well as the methodologies employed for the creation and detection of fingermarks.

Keywords: Forensic science • Techniques • Toxicology

Introduction

A novel methodology has been pioneered to achieve enhanced subtlety and precision compared to conventional forensic practices when recovering high-resolution images of fingerprints from curved surfaces such as bullet casings. Professors affiliated with the Biomedical Forensic Sciences program at Boston University School of Medicine (BUSM) have published a paper in WIRES Forensic Science, where they delve into test preparation protocols and offer insights into typical sample types utilized in legal toxicology cases.

Literature Review

When a bullet is discharged, the casing endures extreme conditions of heat, pressure, and abrasive forces within the firearm's barrel. Residues from the propellant charge and gunpowder, responsible for propelling the bullet, can also accumulate on the casing. The delicate elements crucial for fingermark development, such as water, amino acids, and low-molecular-weight organic compounds like lipids, often suffer expulsion, dispersion, or degradation due to these cumulative effects, potentially leading to smudging or blurring of the fingerprint. These factors pose challenges for conventional fingermark recovery techniques like fluorescent staining and cyanoacrylate fuming.

Discussion

Advancements in instrumentation have paralleled improvements in sample preparation tools. Innovative techniques, such as solid-phase and more recently, supported liquid extraction, allow for the retention of unwanted organic components on common substrates like silica or diatomaceous earth. These extraction methods yield purified concentrates containing the targeted substances and enhance laboratory efficiency, particularly in the analysis of cases involving multiple drugs [1-6].

Conclusion

ToF-SIMS-generated images have revealed intricate details, including grating edges and sweat pores, even in cases where fingermarks were not readily apparent using conventional methods like cyanoacrylate and Basic Yellow 40 dye. Over a seven-month testing period, researchers monitored the evolution of fingermarks left on the surface of the Webley MkII pistol. Moreover, the ToF-SIMS technique demonstrated durability, as multiple tests conducted under ultra-high vacuum (UHV) conditions showed no signs of image degradation over time.

Acknowledgement

None.

Conflict of Interest

None.

References

1. Hall, W, and Degenhardt L. “Adverse health effects of non-medical cannabis use.” *Lancet* 374(2009):1383-1391.
2. Volkow, ND, Swanson JM, Evins AE, and DeLisi LE, et al. “Effects of cannabis use on human behavior, including cognition, motivation, and psychosis: a review.” *JAMA Psych* 73(2016):292-297.
3. Amato, L, Minozzi S, Mitrova Z, and Parmelli E, et al. “Systematic review of safeness and therapeutic efficacy of cannabis in patients with multiple sclerosis, neuropathic pain, and in oncological patients treated with chemotherapy.” *Epid Preven* 41(2017):279-293.
4. Castaneto, MS, Gorelick DA, Desrosiers NA, and Hartman RL, et al. “Synthetic cannabinoids: epidemiology, pharmacodynamics, and clinical implications.” *Drug Alcohol Depend* 144(2014):12-41.
5. Winstock, A, Lynskey M, Borschmann R, and Waldron J. “Risk of emergency medical treatment following consumption of cannabis or synthetic cannabinoids in a large global sample.” *J Psychopharmacol* 29(2015):698-703.
6. Hempstead, Katherine and Emel O Yildirim. "Supply-side response to declining heroin purity: Fentanyl overdose episode in New Jersey." *Health Econ* 23 (2014): 688-705.

***Address for correspondence:** Goyal Ananya, Department of Forensic Medicine, Jawaharlal Nehru Technological University, Hyderabad, India, E-mail: ananya_g9@gmail.com*

Received: 04 September, 2023, Manuscript No. JFM-22-114787; **Editor assigned:** 06 September, 2023, PreQC No. P-114787; **Reviewed:** 18 September, 2023, QC No. Q-114787; **Revised:** 23 September, 2023, Manuscript No. R-114787; **Published:** 29 September, 2023, DOI: 10.37421/2472-1026.2023.8.226

How to cite this article: Ananya, Goyal. “Contemporary Approaches in Forensic Toxicology.” *J Forensic Med* 8 (2023): 226.