



## **Investigation of Accidental Propoxur Exposure: Clinical and Forensic Toxicology**

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### **I. Abstract Body (up to 250 words)**

Propoxur, carbamate compound is a non-systematic insecticide, classified as highly toxic substance to humans. It shows depletion in whole blood cholinesterase activity. The fatal and specific signs/symptoms for carbamate pesticides are CNS depression with coma, seizures, hypotonicity in serious toxic exposures. The present case study explains accidental exposure of propoxur in which the symptomatic treatment has been provided to the patients. In some areas, the homemade liquor is prepared to get the recreational effects. Sometimes, during preparation of the liquor is contaminated with other substances accidentally, which can be more toxic than the liquor. One incident was happened in which, the victims (n=21) were admitted to the hospital with ill effect including of nausea, vomiting, abdominal cramps, sweating, diarrhea etc after the consumption of the homemade liquor. Treatment had started in the hospital and the blood samples of all 21 victims sent to the Forensic Laboratory for the detection of the toxic chemicals. The laboratory reports reveal the presence of propoxur in all 21 blood samples along

with ethanol. During investigation it was further discovered that the victims were consumed alcohol (local brand), which was accidentally contaminated with propoxur (baygon). Due to health status of the victims and amount of consumed liquor by them, three deaths had occurred within 24-48 hours of the consumption of the liquor. With symptomatic treatment and as propoxur can be eliminated from the body in due course of time, 18 patients had recovered. Both Gas Chromatography-Head Space (GC-HS) analysis and Gas Chromatography with nitrogen phosphorus detector (GC-NPD) revealed the presence of ethanol and propoxur respectively in all 21 blood samples. Thus, chemical findings support the investigation that the liquor was contaminated with the propoxur, a carbamate and those three deaths might be due to propoxur toxicity.

**Biography:** Rakhi Agarwal is serving at Gujarat Forensic Sciences University since its inception i.e. July 2009, joined as Assistant Professor. She is having more than 16 year's professional experience including 11 years academic experience. She has completed M.Sc. in Forensic Science from the Agra University (2003) and awarded with Ph.D. in Toxicology jointly from the CSIR-Indian Institute of Toxicology Research, Lucknow and Jamia Hamdard, New Delhi in 2008. Dr. Agarwal has received many prestigious Awards, Honors and Fellowships viz. UGC-JRF, SFR, CSIR-RA. Dr. Agarwal has delivered talk in many national, international conferences and served as Resource Person in DST-Inspire and FDP Activities. She has to her credit 24



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publications in peer reviewed international/national journals, one Patent and two Articles. The total citation of her research work is 533 with h-index 9 (<https://scholar.google.co.in/citations?hl=en&user=3fm9MfMAAAAJ>). In the span of 11 years academic career, her 02 Fellows have been awarded with PhD Degree, 01 has submitted PhD Thesis and currently, 03 Research Fellows are working for the award of Ph.D. degree. Further, she has guided more than 80 Dissertation fellows from India and Overseas countries. She is serving as Resource Person in Forensic Toxicology Field and imparting training to Judges, Public Prosecutors, Police Officers and Forensic Experts across the Globe. Dr. Agarwal is actively involved in

consultancy services for insurance sectors and pharmaceutical industries as expert. She is also associated with many public and private bodies as subject matter expert for setting up of question papers in the field of forensic science. She is a member of Academic Council, GFSU and also holds other administrative positions in various committees at GFSU. Dr. Agarwal is a Life member of various professional bodies in India and Full Member of Society of Toxicology (SOT), USA. She has served as Executive Member for Society of Toxicology, India from 2012-18. In January 2020, she has been selected as Associate Member- Toxicology Section, American Association of Forensic Science, USA.

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