Journal of Forensic Sciences And Criminal Investigation
ISSN: 2476-1311

Juniper Publishers key to the Researchers

Conceptual Paper
Volume 19 Issue 4 - June 2025
DOI: 10.19080/JFSCI.2025.18.556019

J Forensic Sci & Criminal Inves

Forensic Investigation and Analysis of Mephedrone Seizures in Maharashtra

Deepak Y Kudekar*, Kailas P Patil, Sandeep O Chetti, Atul S Patil, Vijay J Thakare

Directorate of Forensic Science Laboratories, Mumbai, Maharashtra, India

Submission: June 03, 2025; **Published:** June 12, 2025

***Corresponding author:** Deepak Y Kudekar, Directorate of Forensic Science Laboratories, Mumbai, Maharashtra, India, Tel: 919167828096, Email: deeppk@rediffmail.com

Abstract

The increasing illicit production and trafficking of synthetic cathinone's popularly known as bath salts, particularly Mephedrone, pose significant challenges for law enforcement and forensic investigators in India. This paper presents a crime scene management of drug seizure in two chemical companies situated at Ambernath MIDC, Thane, and the other in Ankleshwar GIDC, Gujarat. The investigation revealed large-scale illegal drug manufacturing operations linked to the prime suspect, who had an old degree in chemistry. This report consolidates crime scene management, forensic observations, and evidence collection followed by chemical analysis. The drug seizure was 2400 kg of Mephedrone, which was one of the largest drug bursts.

Keywords: Anti-Narcotic Cell; Mephedrone; Hydrochloric acid; Sulphuric acid; Cathinone; Mephedrone; Seizure; Drug Manufacturing; Forensic

Abbreviations: ANC: Anti-Narcotic Cell; UNODC: United Nations Office on Drugs and Crime; NDPS: Narcotic drugs and psychotropic substances

Introduction

Mephedrone (4-Methylmethcathinone) is a synthetic stimulant classified under the NDPS Act, 1985. Despite its ban in India, recent investigations highlight its continued production and distribution [1,2]. Crime scene related to Narcotic drugs and psychotropic substances is different from other scene of crime, here drug recovery is the crucial and only evidence, where sampling is applied. However, handling crime scene of synthetic drug where manufacturing is done is critical. Manufacturing of synthetic drug involves hazardous chemicals such as Mineral acids like Hydrochloric acid, Sulphuric acid, Nitric acid, Bromine, Acetic Anhydride and organic solvents. Handling and storage of these types of chemicals without safety and proper knowledge can lead to accidents. Seizure of synthetic drug from manufacturing site has more importance. If large scale seizure of suspected contraband from manufacturing site prevents illegal selling in society in the future and maintain law and order. For handling such crime scene United Nations Office on Drugs and Crime (UNODC) launched new module [3]. India has special act as Narcotic drugs and Psychotropic substances Act which defines the detail procedure from definition to disposal of substance [4]. This paper presents forensic findings from two drug seizures linked to the same suspect, demonstrating the methodologies used to uncover evidence and analysed seized substances.

Crime Scene Investigations

Case 1: Ambernath MIDC, Thane On 28th March 2022, the Anti-Narcotic Cell (ANC) Unit from Mumbai arrested two drug peddlers, selling a suspected synthetic drug sample of mephedrone and seized 2 kg of suspected Mephedrone from them. Interrogation of these two suspects led to other people who are highly qualified from whom they received this contraband; he disclosed the storage location where he kept an additional 701.74 kg of Mephedrone in Nalasopara near Mumbai. This large recovery of mephedrone from the warehouse is too much and it is obvious that it is not possible to synthesize such large-scale contraband in house. So Further investigation revealed that the manufacturing of this contraband took place at a chemical manufacturing company in Ambernath MIDC, Thane (Figure 1).

Observations

1. The forensic team, along with ANC officers, visited the chemical plant and discovered chemical reactors, some of which had been recently cleaned.

2. A broken reactor behind the plant was tested, but no immediate traces of contraband were found.

3. A backroom of the Quality Control Lab, where scrap and unused material kept, found plastic bags with suspected powder, which were further tested with kits and seized. After laboratory analysis confirmed to contain Mephedrone (Figure 2).

Seized Evidence

1. Multiple plastic bags containing white and brownish powders labelled date back to 2020.

2. Several chemical drums and a contaminated reactor component (Figure 3,4).

Figure 1: Reactor used in synthesis of product.

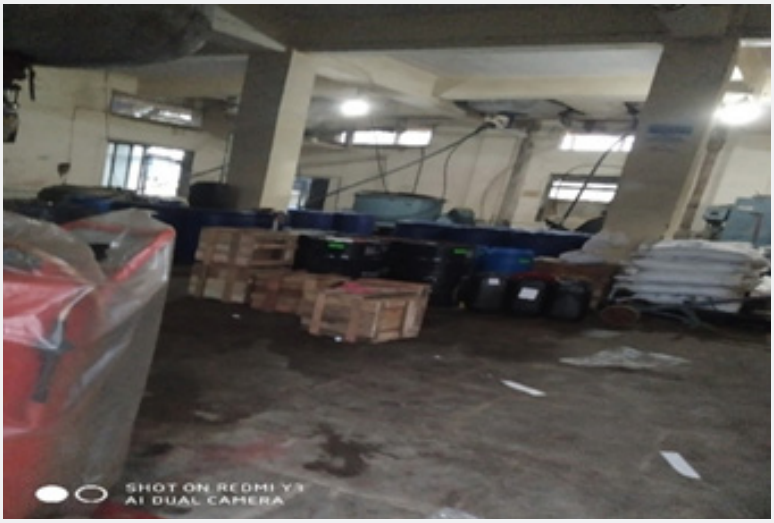

Figure 2: Raw material kept in tank and gunny bag.

Findings

1. Forensic analysis confirmed Mephedrone in 7 seized samples.

2. The suspect exploited gaps in regulatory monitoring to continue drug manufacturing.

3. The forensic team successfully recovered evidence despite the time elapsed and poor storage conditions.

Case 2: Ankleshwar GIDC, Gujarat

Findings from case 1 clear that the manufacturing of mephedrone in Amernath MIDC is discontinued in 2020. On the contrary, the contraband seized, judging by its appearance

How to cite this article: Deepak Y K, Kailas P P, Sandeep O C, Atul S P, Vijay J. Forensic Investigation and Analysis of Mephedrone Seizures in Maharashtra. J Forensic Sci & Criminal Inves. 2025; 19(4): 556019. DOI: 10.19080/JFSCI.2025.19.556019

must have just been produced. On 12th August 2022, based on additional information provided by the suspect, forensic officer accompanied the Anti Narcotic cell Unit of Mumbai to another illicit manufacturing site situated in Ankleshwar GIDC of Gujarat. This location was identified as another facility where accused had synthesized large quantities of Mephedrone.

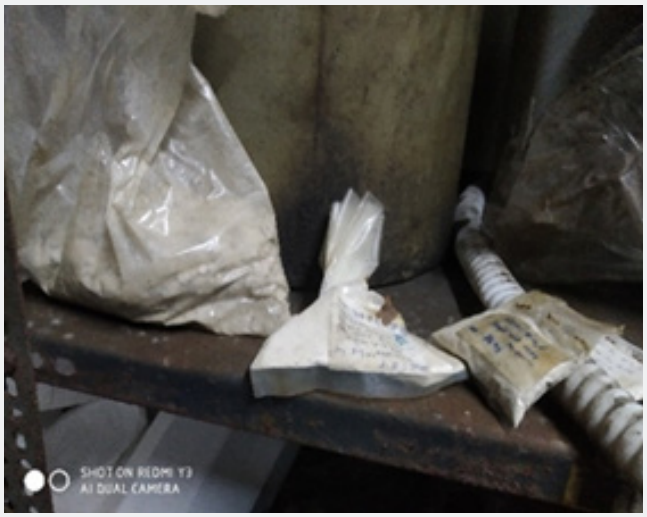

Figure 3: scrap room.

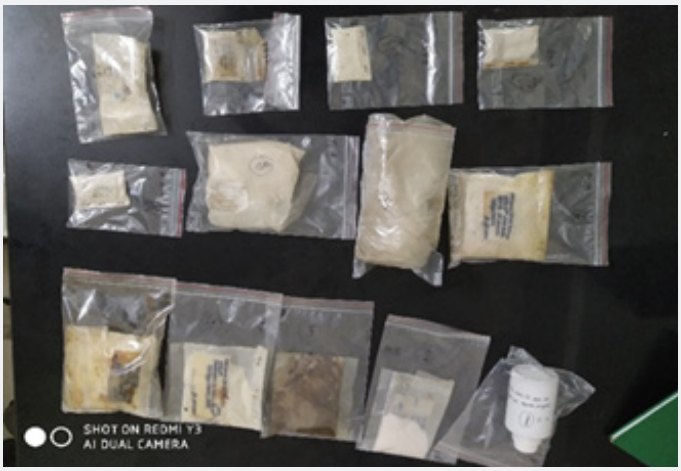

Figure 4: Sample seized from scrap room.

Observations

1. The chemical plant was a three-story building with manufacturing, storage, and research facilities. (Figure 5-7).

2. Large quantities of labelled and unlabelled chemical bags were found, including Calcium Hydroxide and Aluminium Chloride. Large synthesis reactors were discovered on the upper floors, with plastic bags containing raw products.

Chemicals such as sulphuric acids, Monomethyl Amine, Chloroform, and large number of plastic boxes labelled with bromine containing bottles of liquid bromine were found on ground and first floor. Chemicals like Monomethyl Amine, Bromine and Chloroform are used in the synthesis of Mephedrone.

Seized Evidence

1. Properly packed gunny bags containing white powder from the ground floor, which were ready for delivery (Figure 8).

2. 14 transparent plastic bags containing brownish crystals from the centrifuge machine situated on the first floor of a raw product.

3. 26 transparent plastic bags containing white powder near the first-floor centrifuge machine. Representative samples from these bags tested with kits and then seized them.

How to cite this article: Deepak Y K, Kailas P P, Sandeep O C, Atul S P, Vijay J. Forensic Investigation and Analysis of Mephedrone Seizures in Maharashtra. J Forensic Sci & Criminal Inves. 2025; 19(4): 556019. DOI: 10.19080/JFSCI.2025.19.556019

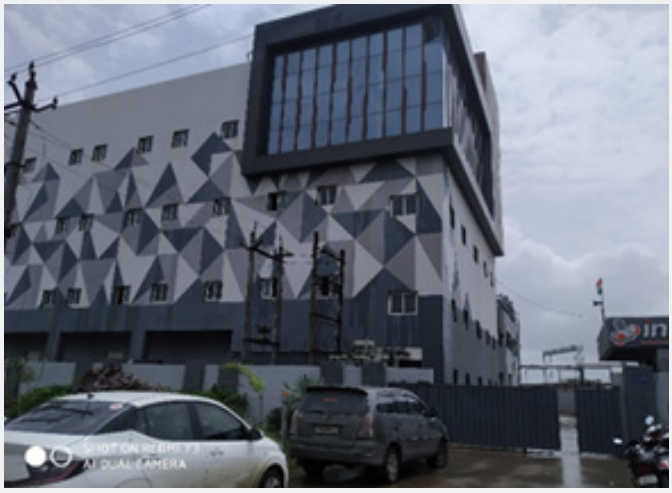

Figure 5: Manufacturing Site.

Figure 6: Liquid bromine bottles kept in box.

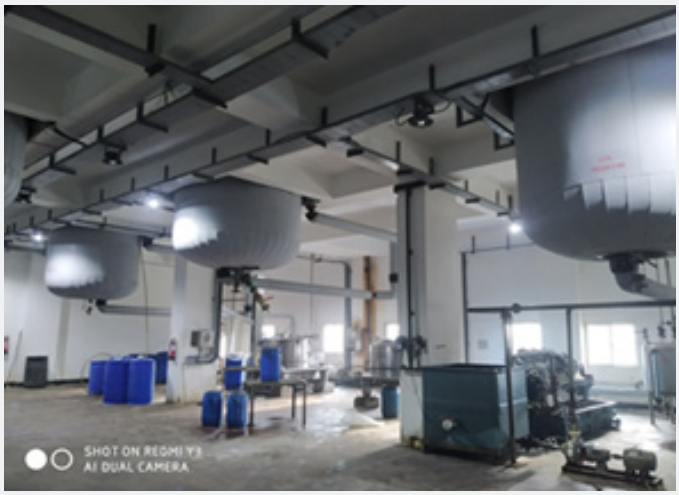

Figure 7: Huge Reactor for synthesis.

How to cite this article: Deepak Y K, Kailas P P, Sandeep O C, Atul S P, Vijay J. Forensic Investigation and Analysis of Mephedrone Seizures in Maharashtra. J Forensic Sci & Criminal Inves. 2025; 19(4): 556019. DOI: 10.19080/JFSCI.2025.19.556019

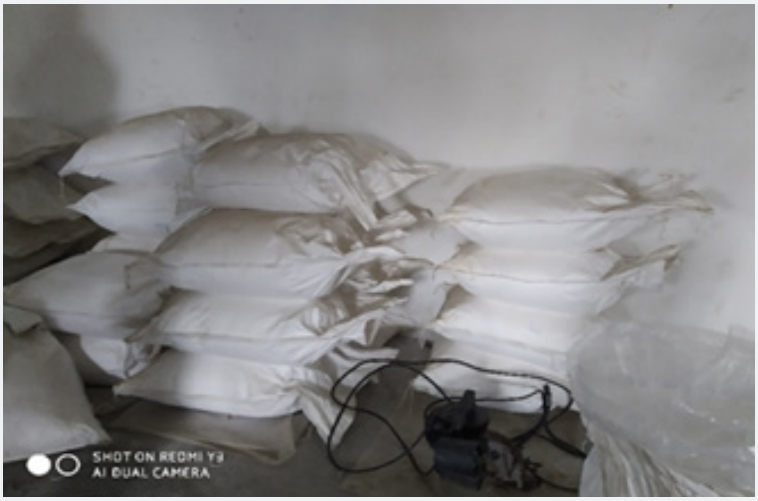

Figure 8: Final Product for Delivery (seized).

Findings

1. Forensic analysis confirmed the presence of Mephedrone in all samples.

2. Approximately 1700 kg of drug material was seized, with an estimated market value of over Rs. 5000 crores.

3. The accused demonstrated extensive knowledge of organic synthesis and evaded law enforcement through multiple clandestine operations.

Conclusion

The forensic investigation of both sites revealed large-scale, highly sophisticated Mephedrone production. The accused used multiple locations to manufacture and store illicit drugs. The combined seizures of approximately 2400 kg of Mephedrone represent a landmark case in Indian drug enforcement history. This case underscores the importance of forensic science in dismantling drug networks and highlights the need for stringent monitoring of chemical manufacturing units.

Acknowledgments

We acknowledge the Ex. Director and the efforts of the forensic teams and law enforcement officers who played a critical role in evidence collection and analysis.

References

1. DNA web team (2022) Breaking bad's Heisenberg in Mumbai? Cops arrest chemistry post- graduate in RS 1400- Crore drug dull, DNA.
2. PTI, In Largest Mephedrone Seizure in Maharashtra in A year, Rs. 1400 crore Drug found near Mumbai. 5 held, The Times of India.
3. https://syntheticdrugs.unodc.org/toolkit
4. The Narcotic drugs and Psychotropic substances Act 1985

DOI: 10.19080/JFSCI.2025.19.556019

How to cite this article: Deepak Y K, Kailas P P, Sandeep O C, Atul S P, Vijay J. Forensic Investigation and Analysis of Mephedrone Seizures in Maharashtra. J Forensic Sci & Criminal Inves. 2025; 19(4): 556019. DOI: 10.19080/JFSCI.2025.19.556019