

**PURPOSE:** This report provides new information regarding comprehensive drug testing of clinical toxicology specimens collected after suspected opioid overdoses in cities across the United States (U.S.).

**OVERVIEW:** Drug use can lead to adverse events and overdose scenarios where individuals present to emergency departments (EDs) for clinical evaluation and/or treatment. The culprit can be traditional drugs (e.g., heroin, fentanyl, cocaine, methamphetamine) or novel psychoactive substances (NPS); however, proper drug testing methodologies must be used for accurate identification and characterization. Street-level drug preparations can contain undeclared or unwanted substances (e.g., toxic adulterants or NPS) which can potentiate effects or lead to adverse reactions. Understanding emerging drug trends and drug testing results can help direct new or revised approaches to clinical treatment and harm reduction.

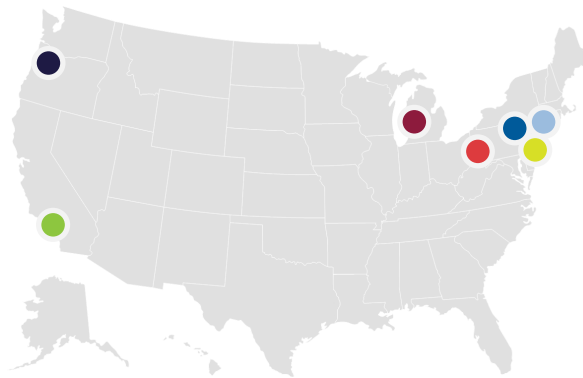
**OBJECTIVE:** A partnership between the American College of Medical Toxicology (ACMT) and the Center for Forensic Science Research and Education (CFSRE) was established to comprehensively assess the role and prevalence of synthetic opioids and other drugs among suspected overdose events in the U.S.

**SAMPLE SOURCE:** Patients presented to EDs within **ACMT's Toxicology Investigators Consortium (ToxiC)** experiencing a suspected opioid overdose. Residual, discarded biological samples were obtained for testing against an expansive library of drugs and other substances. Our findings provide a near real-time assessment of the drug market and allude to resulting implications on clinical institutions.

**TOXICOLOGY TESTING:** Analysis was performed via liquid chromatography quadrupole time-of-flight mass spectrometry (LC-QTOF-MS). The scope of testing targeted more than 1,000 drugs, including a vast majority of NPS and metabolites. Drug classes included opioids, benzodiazepines, cannabinoids, stimulants, and hallucinogens, among other drugs.

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## ● BETHLEHEM, PA

- ▶ 100% positive for at least one opioid
- ▶ Fentanyl (100%) was only traditional opioid
- ▶ Xylazine found alongside fentanyl (11%)
- ▶ Opioid and stimulant use was common (56%); benzodiazepine and opioid use was not observed
- ▶ **NPS: p-Fluorofentanyl (11%), o-Fluorofentanyl (11%)**

## ● PORTLAND, OR

- ▶ 100% positive for at least one opioid
- ▶ Fentanyl (86%) commonly detected, followed by buprenorphine (29%)
- ▶ Opioid and stimulant use commonly detected (71%); opioid and benzodiazepine use less common (14%)
- ▶ *Note: Xylazine not detected*
- ▶ **NPS: p-Fluorofentanyl (14%)**

## ● PITTSBURGH, PA

- ▶ 87% positive for at least one opioid
- ▶ Fentanyl (80%) commonly detected
- ▶ Xylazine found alongside fentanyl (36%)
- ▶ Opioid and stimulant use observed (42%); benzodiazepine and opioid use less common (16%)
- ▶ **NPS benzodiazepines (13%) detected (Clonazolam, Bromazolam, Etizolam)**
- ▶ **Other NPS: p-Fluorofentanyl (13%)**

## ● NEWARK, NJ

- ▶ 85% positive for at least one opioid
- ▶ Fentanyl (77%) commonly detected followed by methadone (15%) and tramadol (8%)
- ▶ Xylazine found alongside fentanyl (23%)
- ▶ Opioid and benzodiazepine (15%) and opioid and stimulant (15%) use observed
- ▶ PCP in opioid-negative samples (15%)
- ▶ **NPS: p-Fluorofentanyl (8%), Clonazolam (8%)**

## ● GRAND RAPIDS, MI

- ▶ 93% positive for at least one opioid
- ▶ Fentanyl (73%) commonly detected
- ▶ Xylazine found alongside fentanyl (20%)
- ▶ Opioid and stimulant use common (67%); opioid and benzodiazepine use (7%)
- ▶ *Note: Fluorofentanyl not detected*
- ▶ **NPS: Bromazolam (20%)**

## ● NEW YORK, NY

- ▶ 87% positive for at least one opioid
- ▶ Fentanyl (73%) commonly detected; heroin (7%) detected less frequently
- ▶ Xylazine found alongside fentanyl (24%)
- ▶ Opioid and benzodiazepine (35%) and opioid and stimulant (27%) use observed
- ▶ PCP detected alongside fentanyl (6%)
- ▶ **NPS benzodiazepines (bromazolam and flubromazepam) detected alongside fentanyl (7%)**
- ▶ **NPS: p-Fluorofentanyl (21%), o-Fluorofentanyl (8%), Bromazolam, Etizolam, 4'-Cl-Deschloroalprazolam, Flubromazepam, Alpha-PHP/PiHP, Protonitazene, Metonitazene, MDMB-4en-PINACA (all 1%)**

## ● LOS ANGELES, CA

- ▶ 93% positive for at least one opioid
- ▶ Fentanyl (67%) commonly detected, followed by heroin (13%), tramadol (13%)
- ▶ Opioid and stimulant use observed (67%), while opioid and benzodiazepine use less common (27%)
- ▶ *Note: Xylazine not detected*
- ▶ **NPS: p-Fluorofentanyl, Fluetizolam, Pentylone, HO-PCP, MeO-PCP, BZO-CHMOXIZID, 4F-MDMB-BINACA, CUMYL-TsINACA, MDMB-INACA (all 7%)**