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NPS
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2020 Q1 NPS Opioid Trend Report

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APHL Opioid Community of Practice: Thursday May 7, 2020

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NPS Discovery Trend Reports

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Trend Reports

www.npsdiscovery.org

Th CFSRE has received funding from the National Institute of Justice (NIJ) of the Department of Justice (DOJ) to develop trend reports associated with NPS in the United States. These trend reports are intended to provide near real-time information regarding NPS prevalence and turnover. Testing was performed using biological fluids, sample extracts, and/or datafiles. For more information regarding our trend reports, please contact us at npsdiscovery@frfoundation.org

https://www.npsdiscovery.org/reports/trend-reports/

NPS Discovery Trend Reports

The image shows a screenshot of the NPS Discovery website. The browser address bar displays <https://www.npsdiscovery.org/reports/trend-reports/>. The website has a green header with navigation links: [About Us](#), [Newsroom](#), and [Contact Us](#). Below the header, there is a search bar and a dropdown menu for [Reports](#). The [Reports](#) dropdown menu is open, showing options: [NPS Discovery Dashboard](#), [Monographs](#), [Trend Reports](#), and [Public Health Alerts](#). Two yellow arrows point to the [Reports](#) dropdown and the [Trend Reports](#) option. The main content area is titled "2020 Trend Reports" and lists several reports with "SUMMARY REPORT" links. Below this, there is a section for "2019 Trend Reports" with links for "SUMMARY REPORT" and "DETAILED REPORT".

Year	Report Title	Link Type
2020	2020 Q1 Synthetic Cannabinoids Trend Report	SUMMARY REPORT
	2020 Q1 NPS Stimulants and Hallucinogens Trend Report	SUMMARY REPORT
	2020 Q1 NPS Opioids Trend Report	SUMMARY REPORT
	2020 Q1 NPS Benzodiazepines Trend Report	SUMMARY REPORT
2019	2019 Synthetic Cannabinoids Q4	SUMMARY REPORT, DETAILED REPORT
	2019 Synthetic Cannabinoids Q3	SUMMARY REPORT, DETAILED REPORT
	2019 Synthetic Cannabinoids Q2	SUMMARY REPORT, DETAILED REPORT
	2019 Synthetic Cannabinoids Q1	SUMMARY REPORT, DETAILED REPORT
	2019 Opioid Trend Report Q4	SUMMARY REPORT
	2019 Opioid Trend Report Q3	SUMMARY REPORT

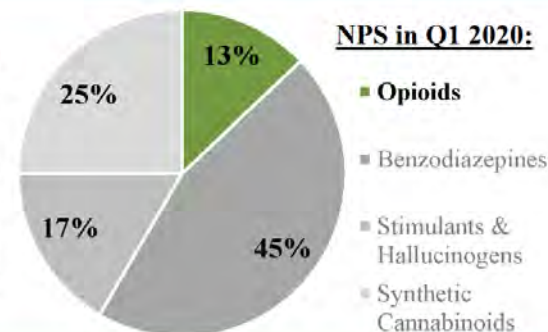
[npsdiscovery.org](https://www.npsdiscovery.org)

Department of Justice (DOJ) to develop trend reports associated with information regarding NPS prevalence and turnover. Testing was conducted regarding our trend reports, please contact us at

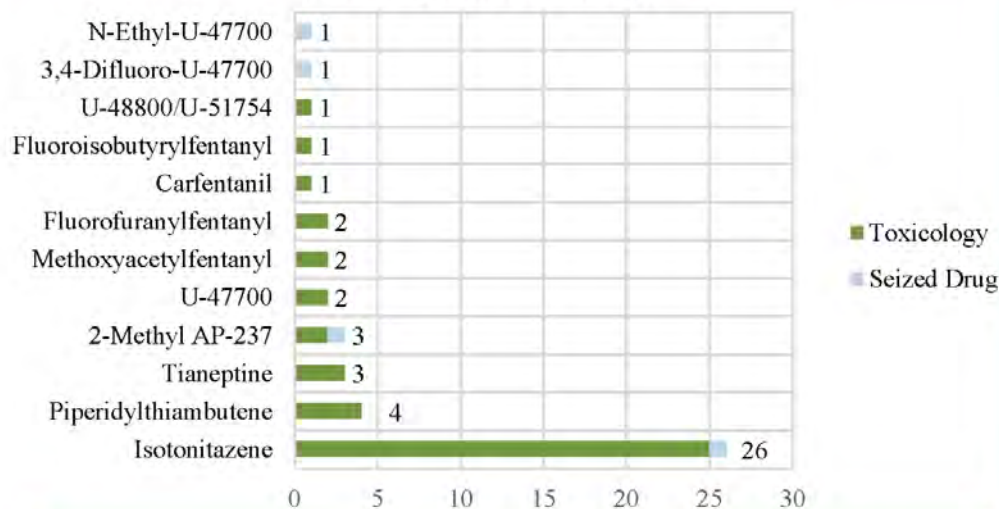
Purpose: This report provides up-to-date information regarding the status of NPS opioid prevalence and positivity within the United States.

Overview: Novel psychoactive substances (NPS), including NPS opioids, continue to pose great challenges for forensic scientists, clinicians, and public health and safety personnel. NPS opioids have been implicated in an increasing number of emergency room admissions, death investigations, and mass intoxication events. Maintaining a current scope of analysis can be challenging, often requiring comprehensive analytical methodologies and reference materials for identifications.

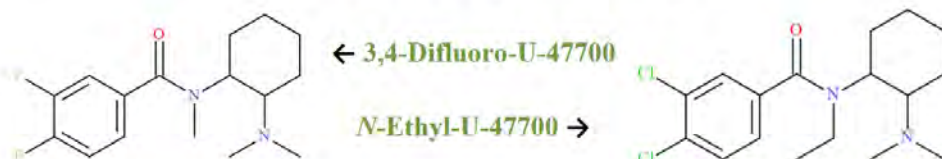
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NPS Opioid Positivity



New Discoveries in Q1 2020



NPS Opioid Combinations

Combination	Frequency
Isotonitazene + Flualprazolam	13
Isotonitazene + Etizolam	10
Isotonitazene + Fentanyl	8
Isotonitazene + Piperidylthiambutene	4

Acknowledgements: This report was prepared by Alex J. Kronulski, PhD; Amanda L.A. Mohr, MSFS, D-ABFT-FT; and Bary K. Logan, PhD, F-ABFT at the Center for Forensic Science Research and Education (CFSRE) at the Fredric Rieders Family Foundation. NPS Discovery would like to acknowledge staff and scientists at CFSRE and NMS Labs for their involvements and contributions. For more information about our programs and reports, please contact NPS Discovery at npsdiscovery@cfsre.org or visit our website at www.npsdiscovery.org.

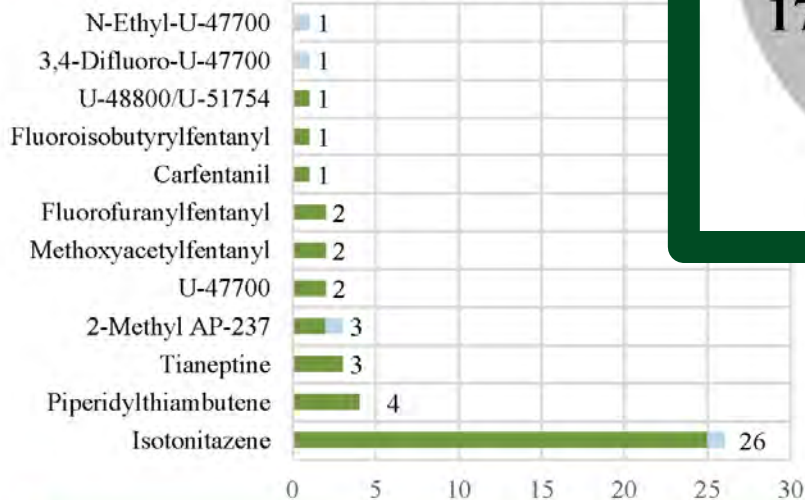


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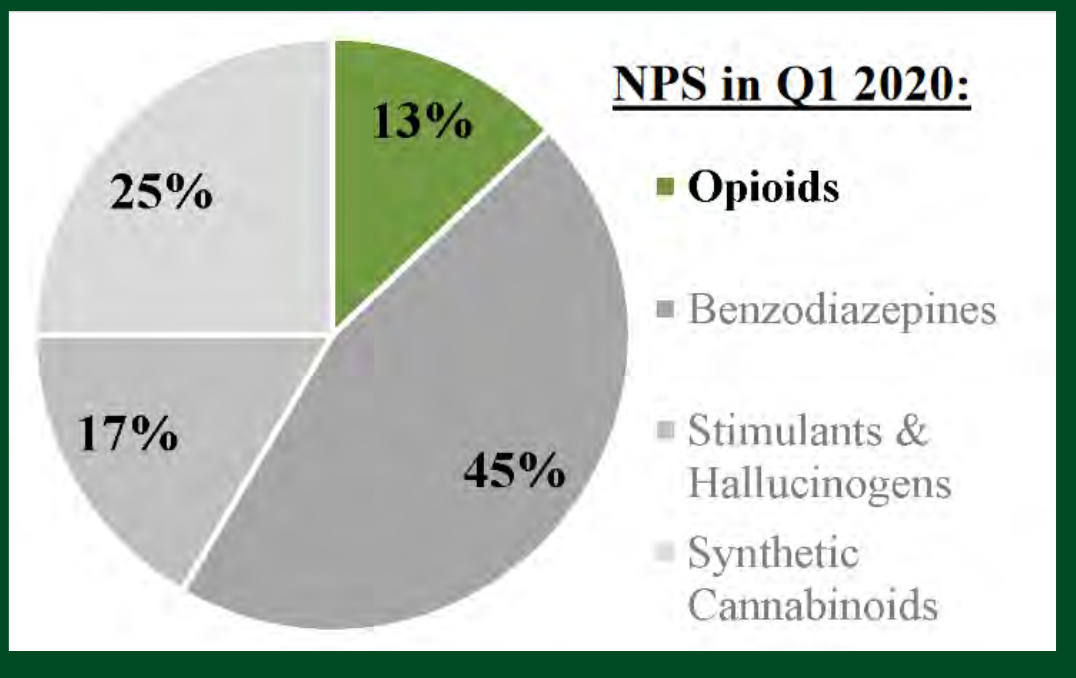
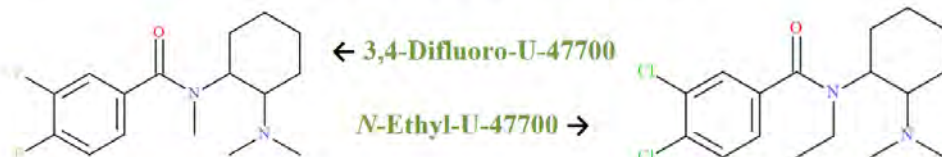
Overview: Novel psychoactive substances (NPS), including NPS opioids, continue to pose a significant public health and safety concern. NPS opioids have been implicated in an increasing number of deaths and mass intoxication events. Maintaining a current scope of analysis can be challenging due to the rapid emergence of new reference materials for identifications.

Objective: This project employs novel approaches for the analysis of biological samples using data acquisition by gas chromatography mass spectrometry (GC-MS) and liquid chromatography mass spectrometry (LC-QTOF-MS). The scope of analysis contains more than 800 drugs, including a focus on the real-time identification of novel opioids and further data analysis of important trends in forensic and criminalistics laboratories of NMS Labs. Forensic case types linked to the investigations, and/or driving under the influence of drugs (DUID) investigation, and drug identifications at CFSRE during this quarter, including those from sample-mining, c

NPS Opioid Positivity



New Discoveries in Q1 2020



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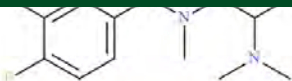
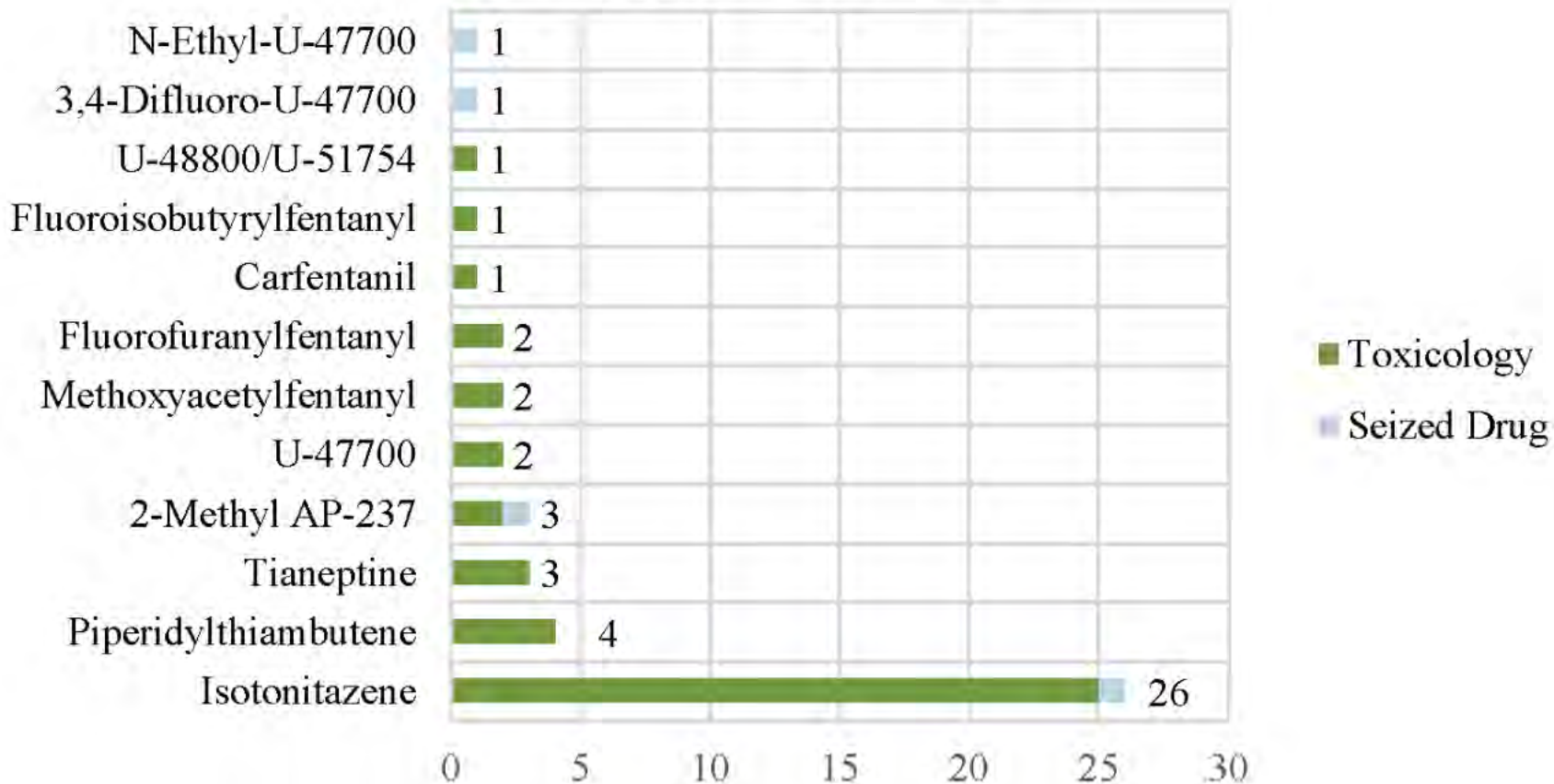


Purpose: This report provides up-to-date information regarding the status of NPS opioid prevalence and positivity within the United States.

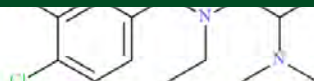
Overview: Novel psychoactive substances (NPS), including NPS opioids, continue to pose great challenges for forensic scientists, clinicians, and public health and safety personnel. NPS opioids have been implicated in an increasing number of emergency room admissions, death investigations, and...



NPS Opioid Positivity



N-Ethyl-U-47700 →



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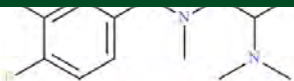
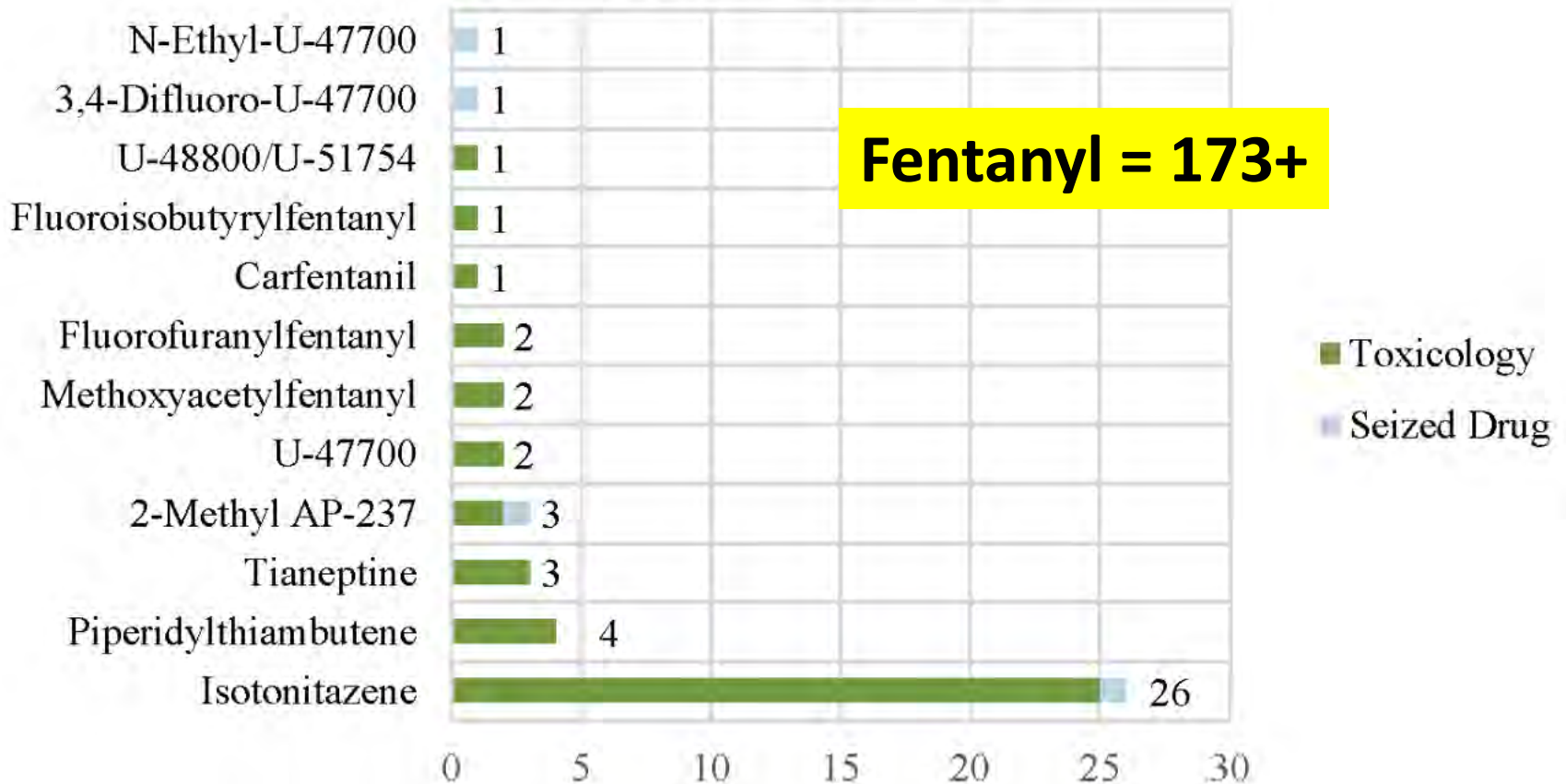


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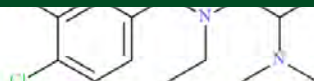
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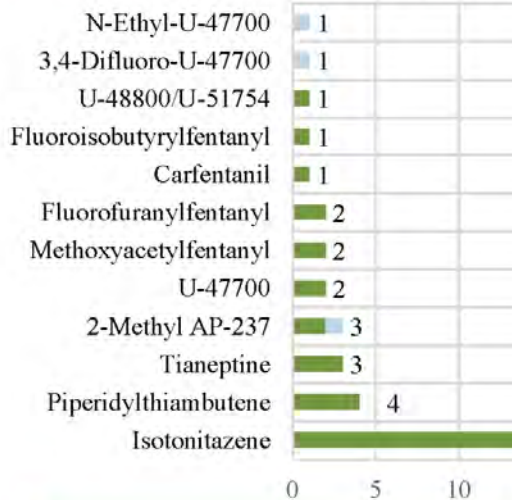
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NPS in Q1 2020:

Overview: Novel psychoactive substances (NPS), including NPS opioids, have been identified by public health and safety personnel. NPS opioids have been implicated in numerous overdose deaths and mass intoxication events. Maintaining a current scope of analysis and reference materials for identifications.

Objective: This project employs novel approaches for the analysis of NPS opioids. Data acquisition by gas chromatography mass spectrometry (GC-MS) and liquid chromatography mass spectrometry (LC-QTOF-MS). The scope of analysis contains more than 800 NPS opioids. The project includes real-time identification of novel opioids and further data analysis and reporting to the forensic and criminalistics laboratories of NMS Labs. Forensic case investigations, and/or driving under the influence of drugs (DUI) investigations at CFSRE during this quarter, including those from

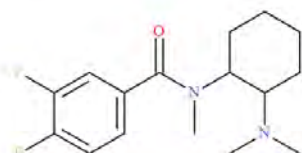
NPS Opioid Frequency



NPS Opioid Combinations

Combination	Frequency
Isotonitazene + Flualprazolam	13
Isotonitazene + Etizolam	10
Isotonitazene + Fentanyl	8
Isotonitazene + Piperidylthiambutene	4

New Discoveries



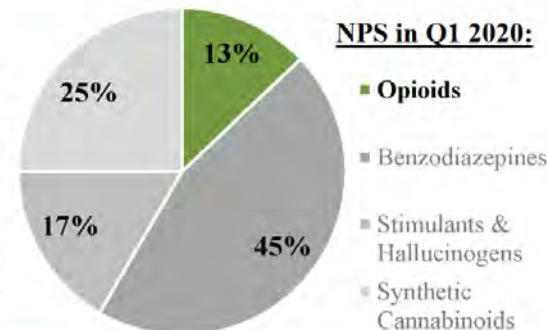
← 3,4-Difluoro

N-Ethyl-U-4

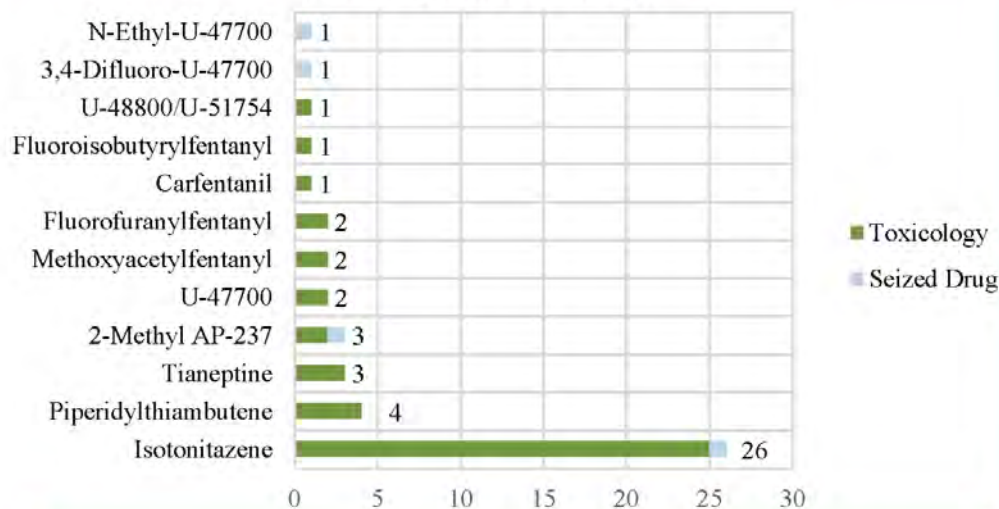
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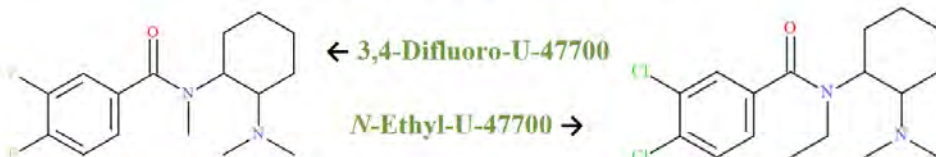
NPS Opioid Positivity



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New Discoveries in Q1 2020

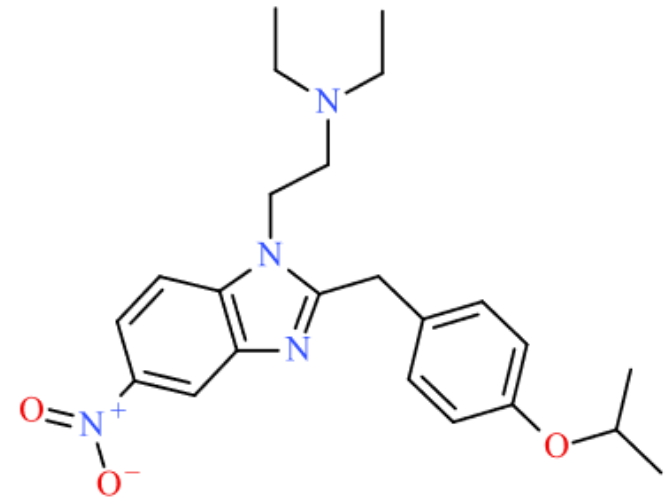


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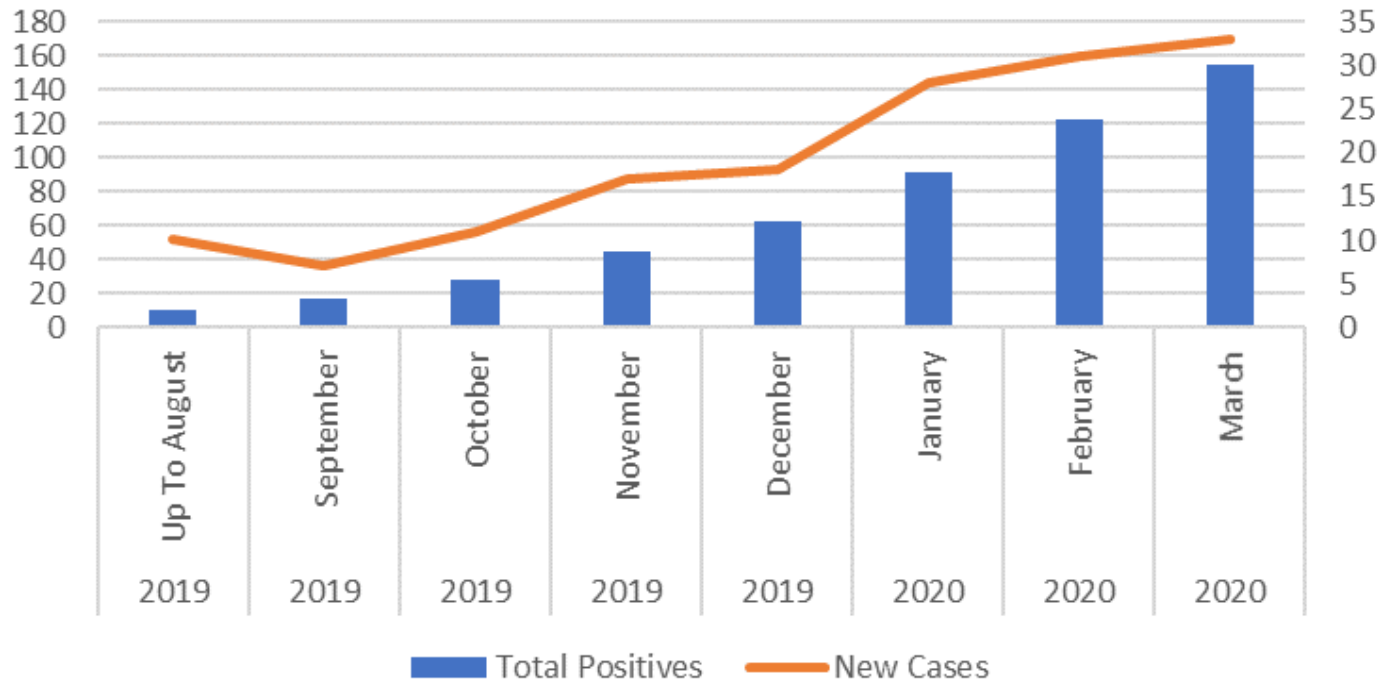
Isotonitazene

- Synthetic opioid
- Patented in the 1950's
- High potency and efficacy
- Several other potent analogues
 - E.g. Etonitazene



Isotonitazene Prevalence

Number of Isotonitazene Cases by Month

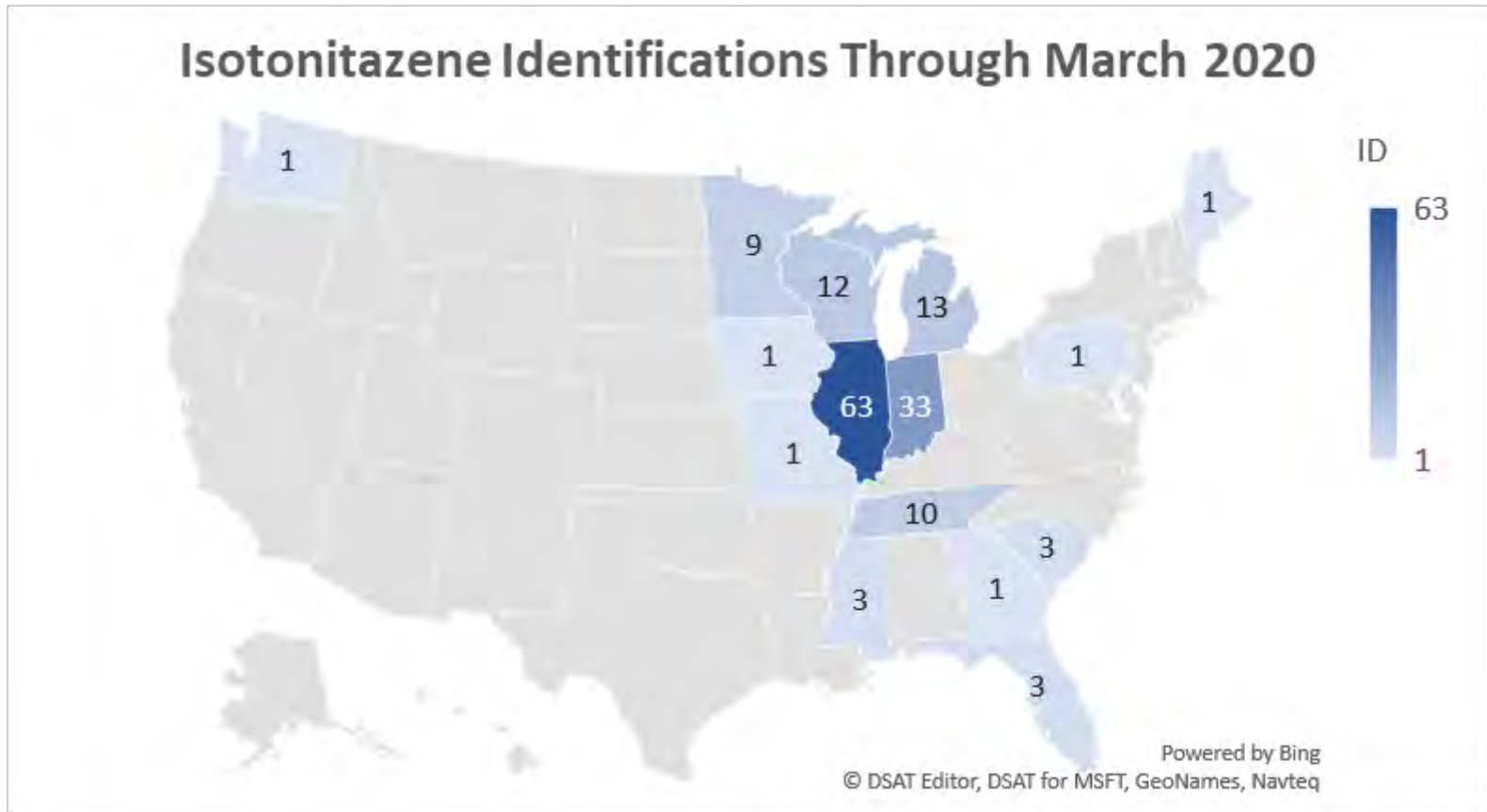


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NPS DISCOVERY

Isotonitazene Proliferation



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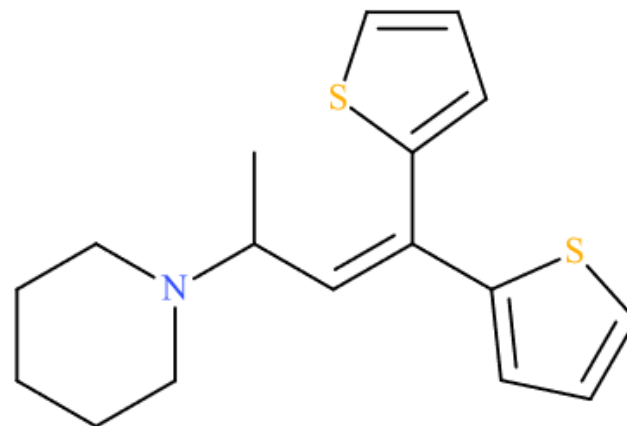
NPS DISCOVERY

Isotonitazene Cases

- **Identifications:**
 - More than 150
 - **Confirmations:**
 - About 60
 - **Quantifications:**
 - 20+
- **Concentrations: (!)**
 - Mean: 2.2 ± 3.1 ng/mL
 - Median: 1.1 ng/mL
 - Min: 0.2 ng/mL
 - Max: 17 ng/mL

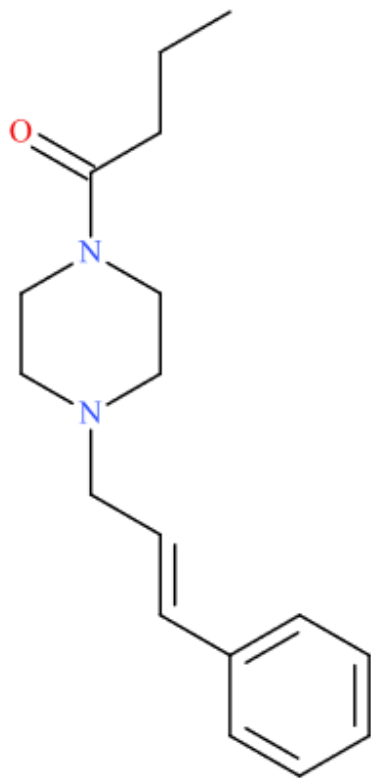
Piperidylthiambutene

- Synthetic opioid
- Studied 1950's
- Potency similar to morphine
- Found in combination with isotonitazene
- Concentrations: ~ 0.3 ng/mL

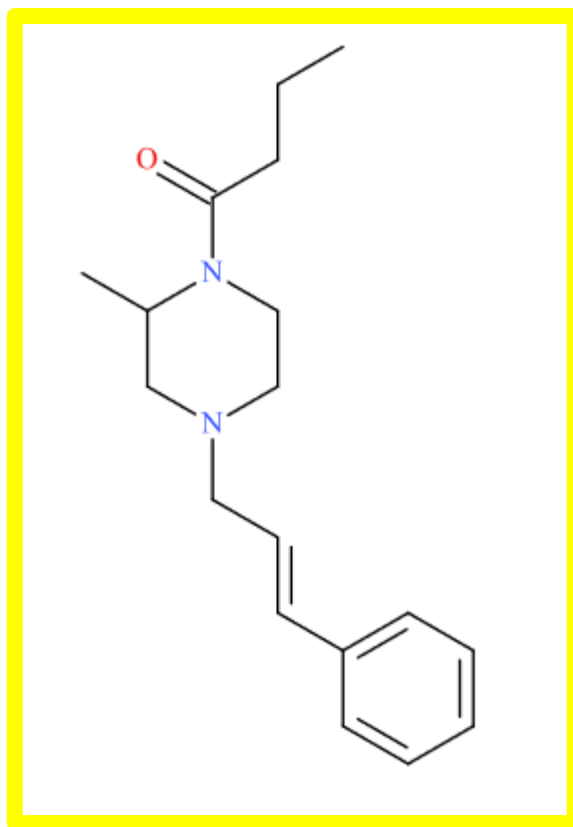


AP-237 Analogues

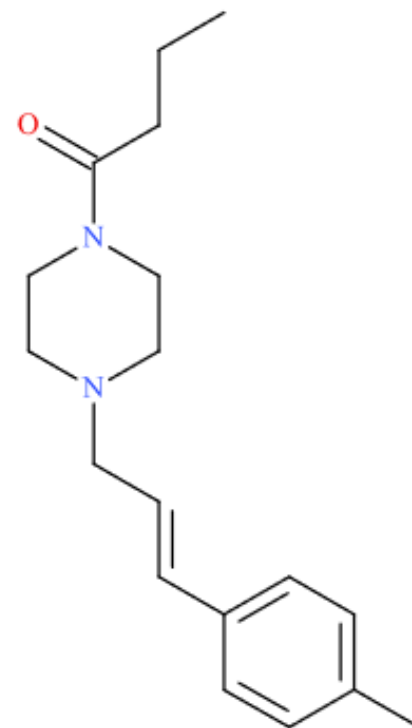
AP-237



2-Methyl AP-237



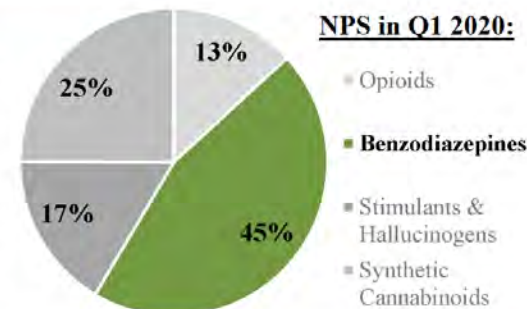
para-Methyl AP-237



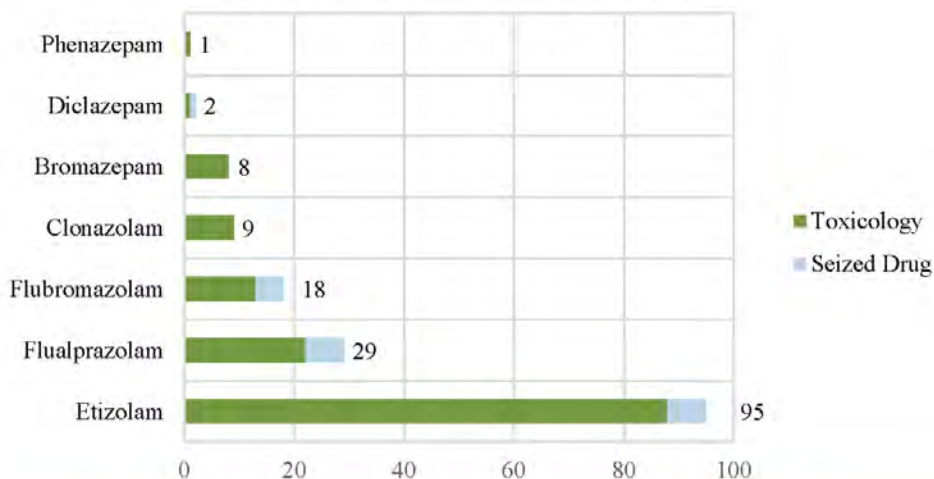
Purpose: This report provides up-to-date information regarding the status of NPS benzodiazepine prevalence and positivity within the United States.

Overview: Novel psychoactive substances (NPS), including NPS benzodiazepines, continue to pose great challenges for forensic scientists, clinicians, and public health and safety personnel. NPS benzodiazepines have been implicated in an increasing number of adverse event scenarios and death investigations, especially in combination with opioids. Maintaining a current scope of analysis can be challenging, often requiring comprehensive analytical methodologies and reference materials for identifications.

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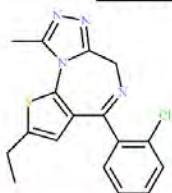
NPS Benzodiazepine Positivity



NPS Benzodiazepine Combinations

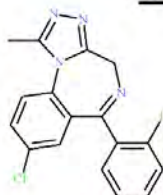
Common Combinations	Frequency
Etizolam + Fentanyl	55
Etizolam + Stimulant (Cocaine or Methamphetamine)	32
Etizolam + Traditional Benzodiazepine (Alprazolam or Diazepam)	22
Flualprazolam + Fentanyl	11
Etizolam + NPS Benzodiazepine (Clonazolam, Flualprazolam, and Flubromazolam)	9

Most Prevalent



Etizolam was the most prevalent NPS benzodiazepine identified; a common trend since 2016.

Trending



The prevalence of **Flualprazolam** continues to increase, impacting jurisdictions in most states.

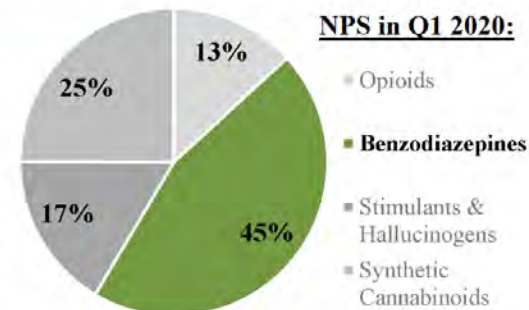
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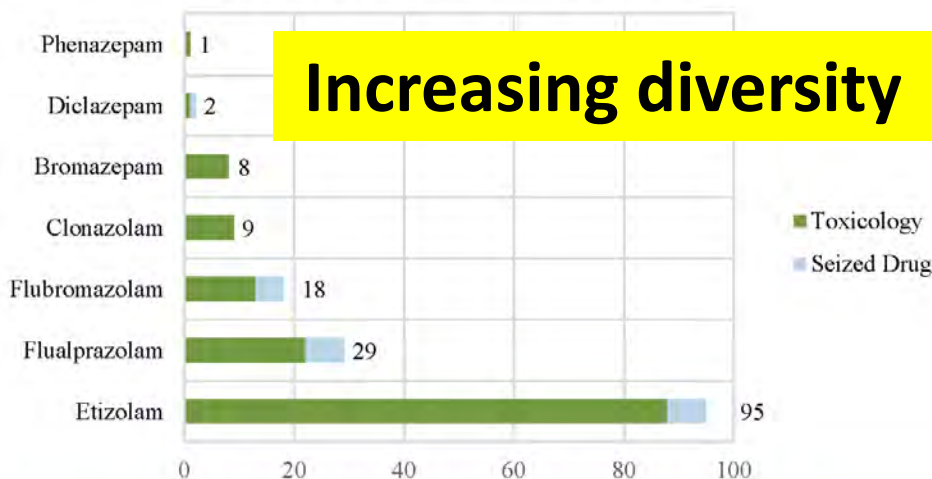
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NPS Benzodiazepine Positivity

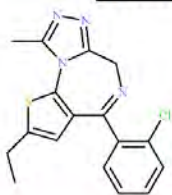


NPS Benzodiazepine Combinations

Common Combinations	Frequency
Etizolam + Fentanyl	55
Etizolam + Stimulant	37
Etizolam + Stimulant (Alprazolam or Diazepam)	1
Flualprazolam + Fentanyl	11
Etizolam + NPS Benzodiazepine (Clonazolam, Flualprazolam, and Flubromazolam)	9

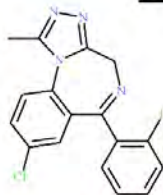
Combination with opioids

Most Prevalent



Etizolam was the most prevalent NPS benzodiazepine identified; a common trend since 2016.

Trending



The prevalence of **Flualprazolam** continues to increase, impacting jurisdictions in most states.

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Questions?

Contract Information

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Website/Social Media

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Twitter: @NPSDiscovery