



Survey of Forensic Laboratories Testing for Novel Psychoactive Substances (NPS)

Session 5: NPS – Society of Forensic Toxicologists (SOFT) Annual Meeting – Thursday November 2, 2023

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DISCLOSURES

- I have no conflicts of interest to disclose.
- I am a scientist and employee of FRFF / CFSRE, a 501(c)(3) non-profit research and educational facility.
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 - The opinions, findings, conclusions and/or recommendations expressed in this presentation are those of the author(s) and do not necessarily represent the official position or policies of the U.S. Department of Justice.



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SOFT NPS COMMITTEE

- Dani Mata – Chair
- Kayla Ellefsen – Co-Chair
- Alex Krotulski
- Donna Papsun
- Elisa Shoff
- Szabolcs Sofalvi
- Svante Vikingsson
- Michael Truver
- Celia Modell
- Lana Goodson

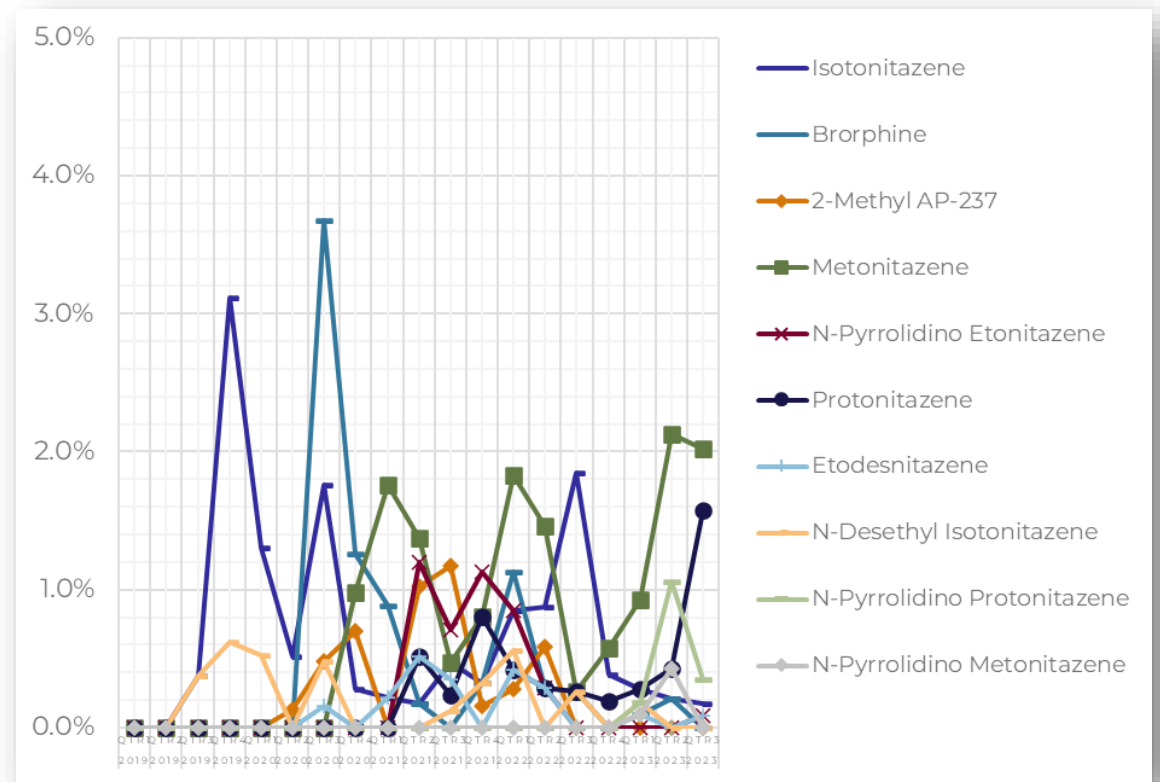
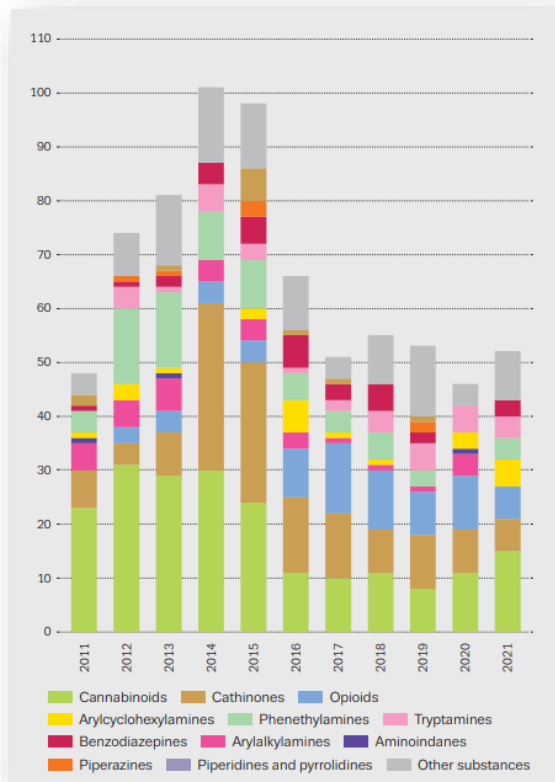


INTRODUCTION



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- Statement of problem → keeping current with NPS landscapes is difficult



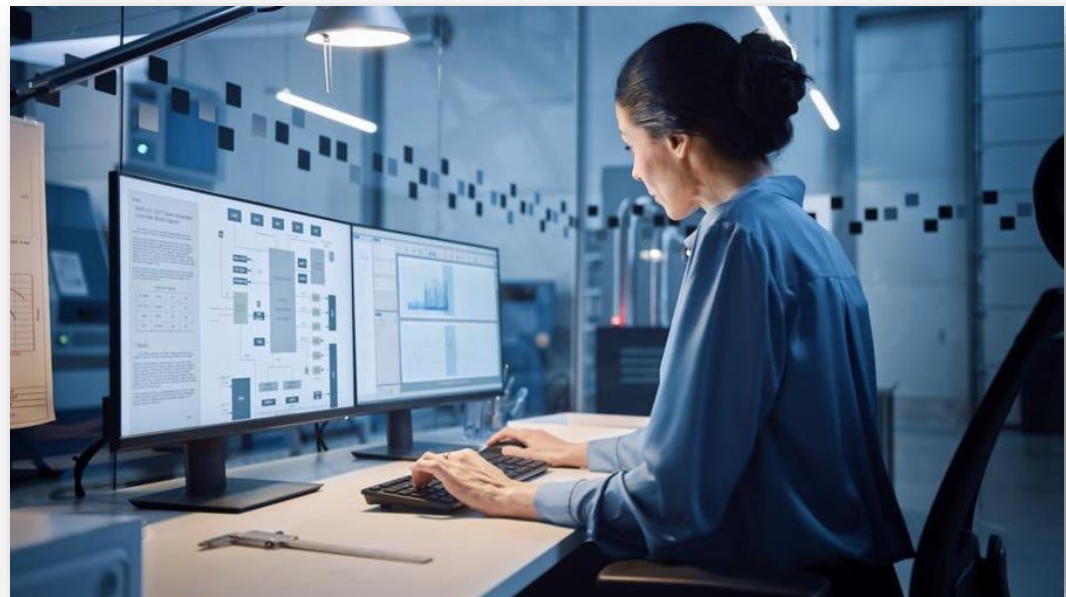
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- **SOFT NPS Committee** is frequently asked for advice on NPS scopes and new drugs



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- Initial goal of scope recommendations → provide a resource that is accessible and dynamic
- How do we format the document? → **DUID scope recommendations**

Recommendations for Toxicological Investigation—2021 Update 533

Table II. 2021 Recommended Scope and Cutoffs for Tier I Drugs/Drug Classes (ng/mL) for Screening and Confirmation in Blood, Urine and Oral Fluid

Drug	Blood		Urine		Oral fluid	
	Screen	Confirm	Screen	Confirm	Screen	Confirm
DRE category; cannabinoids						
Δ ⁹ -THC	–	1	–	–	4	1
Carboxy-THC	10	5	20	5	–	–
11-hydroxy-THC	–	1	–	–	–	–
DRE category; CNS stimulants						
Methamphetamine	20	20	200	50	20	20
Amphetamine	20	20	200	50	20	20
MDMA ^a	–	20	–	50	20	20
MDA ^a	–	20	–	50	20	20

Table III. Recommended Tier II Drugs/Drug Classes

DRE category; cannabis
 Synthetic cannabinoids
 DRE category; CNS stimulants
 Cathinones
 Methylphenidate
 Mitragynine
 DRE category; CNS depressants
 Atypical antipsychotics
 Barbiturates
 Carbamazepine
 Chlordiazepoxide
 Chlorpheniramine
 Cyclobenzaprine
 Diphenhydramine
 Doxylamine
 Gabapentin

D’Orazio et al. (2021) JAT

NPS SCOPE RECOMMENDATIONS

- Development of the matrix → drug classes vs. tiers

BENZODIAZEPINES	OPIOIDS	STIMULANTS & HALLUCINOGENS	SYNTHETIC CANNABINOIDS
TIER ONE (STRONGLY RECOMMEND)			
TIER TWO (RECOMMEND)			
TIER THREE (CONSIDER)			

Note: This may not be an all-inclusive list. Laboratories should consider additional NPS for inclusion (or exclusion) based on local, national, and/or international trends.

NPS SCOPE RECOMMENDATIONS

- Development of the matrix → drug classes vs. tiers
- Filling in the matrix → consultation with available NPS data and input from committee**

NFAIS DRUG snapshot
June 2023

Newly Reported Substances: The following substances were reported to NFAIS-Drug for the first time between April 1, 2023, and June 30, 2023.

West: 4-ethyl norfenfluramine, ADB-504-4en-PIWACA
Midwest: 4-Propylidene metamizole, Pyrazolone
South: Methoxybenzocyclopentane, ADB-504-4en-PIWACA
Northeast: 4-ethyl-THIP
South and Northeast: 4-Piperidyl etomidate

Snapshot of Drug Reports Received by NFAIS-Drug

Category	Count
Benzodiazepines	7,347
Synthetic Cannabinoids	1,241
Depressants and Tranquilizers	5,301

Upward Trends, by Date Submitted to Laboratory

Protonix, Acetylfentanyl, Ketamine

DEA TOX
DRUG ENFORCEMENT ADMINISTRATION
TOXICOLOGY TESTING PROGRAM

QUARTERLY REPORT
First Quarter - 2023

U.S. Department of Justice
Drug Enforcement Administration
Drug and Chemical Evaluation Section

FORENSIC SCIENCE PRODUCTS

Product Search 4
Drug Identification Tools

N-propyl Ephedrine (hydrochloride)
Item No. 39449
CAS No. 4266-42-8
Formulation: A solid

2,4,6-TMPEA-NBOMe (hydrochloride)
Item No. 39465
CAS No. 28281-49-4
Formulation: A solid

4-fluoro MBZP
Item No. 39382
CAS No. 144734-44-1
Formulation: A solid in methanol

3,4-Methylenedioxypropiphenone
Item No. 39438
CAS No. 28281-49-4
Formulation: A crystalline solid

NPS Benzodiazepines in the United States
TREND REPORT Q3 2023

PURPOSE: This report provides up-to-date information regarding the status of NPS benzodiazepine prevalence and positivity in 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 health events, marked by emergency room admissions and death investigations, especially when ingested in combination with opioids. Maintaining a current scope of analysis can be challenging, requiring comprehensive analytical methodologies and reference materials for identification.

OBJECTIVE: Our laboratory utilizes novel approaches for the analysis of drugs in biological samples and seized materials using comprehensive non-targeted data acquisition by gas chromatography mass spectrometry (GC-MS) and liquid chromatography quadrupole time-of-flight mass spectrometry (LC-QTOF-MS). The scope of analysis contains more than 1300 drugs, including a vast majority of NPS and their metabolites. This approach allows for real-time identification of new benzodiazepines and further data analysis of important trends. This project was conducted in collaboration with the toxicology and criminalistics laboratories of NPS Labs. Forensic case files linked to these results include illicit drug investigations, motorcycle death investigations, and/or driving under the influence of drugs (DUI) investigations. The results in this report represent the total number of NPS identifications at the QTOE during the quarter, including those from sample mixing, data mining, and/or forensic testing.

NPS IN Q3 2023:

- Opioids (18%)
- Benzodiazepines (16%)
- Stimulants & Hallucinogens (65%)
- Synthetic Cannabinoids

NPS BENZODIAZEPINES IDENTIFIED

Drug	Toxicology	Drug Material
Flubromazepam	1	0
Desalkylflurazepam	3	0
Pyrazolam	4	0
Etizolam	9	0
Desalkylgidazepam	11	0
Flualprazolam	12	0
Flubromazepam	17	0
Bromazepam	0	349

SELECT POSITIVITY: Q4 2020 to Q3 2023

Etizolam, Flualprazolam, Flubromazepam, Bromazepam, Desalkylgidazepam

ACKNOWLEDGMENTS: This report was prepared by Alex J. Kintanor, PhD, Sam G. ...

NPS SCOPE RECOMMENDATIONS

- Development of the matrix → drug classes vs. tiers
- Filling in the matrix → consultation with available NPS data and input from committee
- **Review process** → shared amongst committee and reviewed for acceptance



NPS SCOPE RECOMMENDATIONS

- Development of the matrix → drug classes vs. tiers
- Filling in the matrix → consultation with available NPS data and input from committee
- Review process → shared amongst committee and reviewed for acceptance
- First: **Q1 2021** → Most Recent: **Q3 2023**
- Received overwhelming positive feedback
- Available publicly – SOFT website linked to CFSRE's NPS Discovery webpage →

The screenshot shows the CFSRE website's 'NPS Discovery' section. The header includes navigation links for 'EDUCATION', 'RESEARCH', 'NPS DISCOVERY', and 'SEARCH'. The main content area is titled 'Scope Recommendations' and contains a paragraph explaining the NPS landscape and the purpose of the recommendations. Below this is a section for 'Most Recent Recommendations from Q3 2023' which includes a table of drug classes and their tiers.

Benzodiazepines		Opioids		Stimulants & Hallucinogens		Synthetic Cannabinoids	
TIER ONE (STRONGLY RECOMMEND)							
Bromazolam	1-10	Metonitazene	<1	NN-Dimethylpentylone	>10	MDMB-4en-PINACA	<1
Desalkylgizapam†	1-10	N-Pyrrolidino Protonitazene	<1	Pentylone	>10	ADB-BINACA (-BUTINACA)	<1
Etizolam	1-10	Protonitazene	<1	alpha-PHP / alpha-PIHP	>10	MDMB-BINACA (-BUTINACA)†	<1
Flualprazolam	1-10	N-Pyrrolidino Metonitazene†	<1	Eutylone	>10	ADB-5'B'-BINACA	<1
Flubromazepam	1-10	o/m/p-Fluorofentanyl	1-10	Fluoroxetamine / 2F-2-oxo-PCE†	>10	CH-PIATA	<1
TIER TWO (RECOMMEND)							

Recommended Scope for NPS Testing in the United States

NPS
SCOPE

Q3
2023

PURPOSE: The objective of this report is to provide updated guidance in developing an appropriate analytical scope of testing for novel psychoactive substances (NPS) in the United States (and around the world) based on current trends and intelligence. *This report is based on information available in Q2 2023 and early Q3 2023 and is subject to change along with the drug market.*

SUMMARY: The NPS landscape is changing rapidly, requiring laboratories to constantly remain abreast of new and emerging drugs locally, nationally, and internationally. To meet individualized needs, laboratories amend existing methods or develop new ones for detection and confirmation of NPS. This can be challenging for scientists as information about NPS detections can be regionalized and/or out-of-date, making it difficult to determine which drugs should be prioritized at a given time. **CFSRE's NPS Discovery** and the **SOFT NPS Committee** have established the below recommendations for NPS scope based on information from extensive collaborations, partnerships, and initiatives which yield national and international perspectives. Suggested cut-off concentrations or reporting limits (in ng/mL) are listed for each NPS. These values are categorized (i.e., <1, 1-10, and >10 ng/mL) and determined based on currently available quantitative data and/or comparison to structurally similar NPS within the given sub-class.

BENZODIAZEPINES		OPIOIDS		STIMULANTS & HALLUCINOGENS		SYNTHETIC CANNABINOIDS	
TIER ONE (STRONGLY RECOMMEND)							
Bromazolam	1-10	Metonitazene	<1	N,N-Dimethylpentylone	>10	MDMB-4en-PINACA	<1
*Desalkylgidazepam†	1-10	N-Pyrrolidino Protonitazene	<1	Pentylone	>10	ADB-BINACA (-BUTINACA)	<1
Flubromazepam	1-10	Protonitazene	<1	alpha-PiHP / alpha-PHP	>10	*MDMB-BINACA (-BUTINACA)	<1
Etizolam†	1-10	*N-Pyrrolidino Metonitazene	<1	Eutylone	>10	ADB-5'Br-BINACA	<1
Flualprazolam	1-10	o/m/p-Fluorofentanyl	1-10	*Fluoroxetamine / 2F-2-oxo-PCE	1-10	CH-PIATA	<1
TIER TWO (RECOMMEND)							
*Clonazolam‡	<1	Isotonitazene	<1	*N-Propyl Butylone	>10	*CHO-4'Me-5'Br-FUBOXPYRA	<1
8-Aminoclonazolam‡	1-10	*N-Desethyl Isotonitazene	<1	N-Cyclohexyl Butylone	>10	*ADB-4en-PINACA	<1
*Desalkylflurazepam†	1-10	N-Pyrrolidino Etonitazene	<1	N-Cyclohexyl Methylone	>10	ADB-FUBIATA	<1
*Deschloroetizolam	1-10	Carfentanil	<1	2F-Deschloroketamine	<1	ADB-5'Br-PINACA	<1
TIER THREE (CONSIDER)							
*Flubromazolam	1-10	Brorphine	<1	2,3,4-Methylmethcathinone	1-10	*5F-MDMB-PICA	<1
*4'Cl-Deschloroalprazolam	1-10	Etodesnitazene	1-10	3-HO-PCP / 4-HO-PCP	<1	*4F-MDMB-BINACA	<1
Pyrazolam	1-10	Ethyleneoxynitazene	1-10	3-MeO-PCP / 4-MeO-PCP	<1	*4F-ABINACA (-ABUTINACA)	<1
Bromazepam†	1-10	N-Piperidiny Etonitazene	<1	MDPHP	>10	*NMDMSB	<1

Note: This may not be an all-inclusive list. Laboratories should consider additional NPS for inclusion (or exclusion) based on local, national, and/or international trends.



OBJECTIVES



OBJECTIVES

- **Conduct a survey of forensic laboratories testing for NPS**
 - Determine the effectiveness of our scope recommendations and other pertinent information regarding testing (e.g., instrumentation, NPS subclasses tested for, prevalence of specific NPS, etc.)
- Primary purpose of the survey was to **solicit feedback** about who uses the scope recommendations and how they are being used
- The survey also allowed for suggestions on **future improvements and developments**





METHODS



METHODS

- **SurveyMonkey** → disseminated and facilitated online
- **29 total questions:**
 - Required vs. optional
 - Single answer
 - Multiple choice
 - Open-ended response
- Estimated **10-15 minutes**
- **Distribution** → SOFT membership, TIAFT membership, CFSRE's NPS Discovery listserv, etc.
- **Questions** → Generic, analytical, scope recommendations, and NPS detections



DATA CLEANING AND TABULATION

Dashboard showing survey results for 'SOFT NPS Committee - NPS Scope Recommendations'. Key metrics include:

- TOTAL RESPONSES:** 103
- OVERALL SURVEY STATUS:** OPEN
- ESTIMATED COMPLETION RATE:** 69%
- ESTIMATED TIME TO COMPLETE:** 15 Minutes
- Responses Volume:** A bar chart showing response volume from January 9 to June 5, with a peak in late March.

Buttons for 'ANALYZE RESULTS' and 'Edit design' are visible.

Excel spreadsheet showing a list of respondents with columns for ID, Name, and Contact Information. The data is organized into a table with 49 rows of individual entries.

ID	Name	Contact Information
1	Home of Lab Assays (Will be used to remove duplicate for same question during survey analysis)	
2	Open State Bioreactor	
3	1 Monroe County OME Toxicology	Rubeca Hartman
4	2 APHIS	Erin Kuecher
5	3 RHP	Mathias Duranier
6	4 Travis County Medical Examiner	Kyle Elford
7	5 OFSE	Alex Kruticki
8	6 North Dakota Office of Attorney General - Criminal Laboratory Division	Jessica Paruchally
9	7 Lansing State Dept of Michigan State Police Forensic Science Division	Scott Penabaker
10	8 Sección de Análisis de Ilícitos Sustancias de Salud Pública	Ernie Duffes
11	9 Michigan State Police Evidence/Forensic Lab	Edina Ouseberry
12	10 ACOHE	Angela Mitchell
13	11 Axis Forensic Toxicology	Karin Shahr
14	12 Toxicology, Newcastle General Hosp, UK	Hugh Brown
15	13 University of Aarhus, Institute of Forensic Medicine, Denmark	Tine Skov
16	14 Private Toxicology Consultant	Wayne Jeffrey
17	15 NATIONAL REFERENCE LABORATORY (E01H)-EAST AVENUE MEDICAL CENTER	Jennifer C. Deane/Marcela
18	16 LAPD Forensic Science Division	Jennifer Ference
19	17 Washington State Patrol	arlene
20	18 South Carolina Law Enforcement Division	Gene E. Barton
21	19 Raleigh/Wake County -County Bureau of Identification	RICHARD WAGGONER
22	20 Pennsylvania State Police - Lima Lab	Elizabeth Martin
23	21 Monroe County OME Lab	Eric
24	22 Tennessee Bureau of Investigation - Nashville	Melinda Guinn
25	23 NYO Office of Chief Medical Examiner	Gail Cooper
26	24 Department of Pharmaceutical and Toxicology, Raymond Pain Relief Hospital, AP-HP, 92389 Garches, F. Ansis, Lab 081	F. Ansis, Lab 081
27	25 Dixie Hill Medical Laboratory SA	Claudia Amey Valasco
28	26 PFSA, Pakistan	Muhammad Mubasher
29	27 Forensic toxicology unit, National Institute for Legal Medicine and Forensic Science	Elisavete Varsovska
30	28 Toxicology Laboratory	Belenki
31	29 Missouri State Public Health Laboratory	Martin Lindankuhk
32	30 South Carolina Law Enforcement Division	Jay Cartwright
33	31 Tarrant County Medical Examiner's Office	Robert Johnson
34	32 Owen Diagnostic	Meredith Sweeney
35	33 Oklahoma State Bureau of Investigation	Patricia Cain
36	34 Eurofins Forensic Services	
37	35 HLCL	
38	36 Houston Forensic Science Center	Cecelia Duvall
39	37 MS Forensic Laboratory	Leura Fuller
40	38 Broward County Medical Examiner's Office	Jackie Baldwin
41	39 Health Services of Forensic Medicine	Robert Krause
42	40 North Dakota Office of Attorney General - Criminal Laboratory Division	Jessica Paruchally
43	41 Montana Forensic Science Division	Elizabeth Smalley
44	42 St. Joseph County Office of Forensic Science Center	Heather Dineen
45	43 Waukesha County Dept. Lab & Research	Christopher Carding
46	44 Health Science Authority Singapore	Yi Juyun
47	45 Victorian Institute of Forensic Medicine	Matthew DeRose
48	46 North Carolina Plasma Center Laboratory	Gina Heilik
49	47 San Diego Medical Examiner Department	Theresa Magallanes
50	48 University of Maryland Medical Center	Patrick Kille
51	49 Ontario Bureau of Investigation	Stephanie Olfert
52	50 Local County Coroner's Office Toxicology Laboratory	Robby J. Shinnor
53	51 Oklahoma State Bureau of Investigation	April Marie Tomasz
54	52 Laboratoire de sciences judiciaires et de médecine légale	Blatrice Genuoux
55	53 El Paso County Coroner's Office	Andrea
56	54 Oklahoma Department of Forensic Science	Carla Valencia
57	55 Owen Diagnostic, Chesley, VA	Sarah H. Bantock, PhD
58	56 Palm Beach County Sheriff's Office - Toxicology Unit	Nick Tucciano
59	57 NIS	
60	58 Axis Forensic Toxicology	Sherril Kurze
61	59 Las Vegas Metropolitan Police Dept.	Nicole Van Alben
62	60 Lab County Medical Examiner	Frank Burton Jr. Quintana
63	61 SO Law Enforcement Division	Dustin Smith
64	62 Hennepin County Coroner's Office and Criminal Laboratory	Matthew Schuchert
65	63 DC OME	Stephan Rose
66	64 University of North Carolina at Chapel Hill	Eric Tracy
67	65 Wisconsin State Lab of Hygiene	Ryan Pitzer
68	66 Oregon County OME Lab	David Rice
69	67 North Carolina Office of the Chief Medical Examiner	Leora Friedlich
70	68 Bostor County Medical Examiner	Veronica Bergene
71	69 Sicca Toxicologia e Fisiologia Legal/Policia Civil de Minas Gerais	Patricia Abreu Martins

Excel spreadsheet showing a summary table of survey data. The table is organized into several sections, each with a header row and a data table.

Country	#	%
United States	64	77%
Canada	3	4%
United Kingdom	2	2%
Australia	1	1%
Brazil	1	1%
France	1	1%
Denmark	1	1%
Philippines	1	1%
Paraguay	1	1%
Pakistan	1	1%
Algeria	1	1%
Sweden	1	1%
Singapore	1	1%
Serbia	1	1%
Mauritius	1	1%
Other	2	2%
Total	83	100%

Lab Type	#	%
Public	59	71%
Private	9	11%
Non-Profit	3	4%
University	6	7%
Other	6	7%
Total	83	100%

Area	#	%
Toxicology	70	84%
Chemistry	30	36%
Other	2	2%
Total	102	-

Work	#	%
Postmortem	54	65%
DUI/D	48	58%
DFI/PSA	39	47%
Clinical	21	25%
Other	3	4%
Drug Material	36	43%
Total	201	-

State (USA)	#	%
Pennsylvania	6	8%
Texas	5	8%
California	5	8%
Ohio	4	8%
Florida	4	8%
New York	3	5%
Michigan	3	5%
South Carolina	3	5%
North Carolina	3	5%
North Dakota	2	3%
Indiana	2	3%
Virginia	2	3%
Mississippi	2	3%
Kansas	2	3%
Colorado	2	3%
Delaware	1	2%
Washington	1	2%
Tennessee	1	2%
Missouri	1	2%
Louisiana	1	2%
Montana	1	2%
Illinois	1	2%
Oklahoma	1	2%
Nebraska	1	2%
Alabama	1	2%
Nevada	1	2%
District of Columbia	1	2%
Wisconsin	1	2%
Maryland	1	2%
Massachusetts	1	2%
Utah	1	2%
Oregon	1	2%
Total	64	100%

Cases	#	%
<100	1	1%
101-500	7	8%
501-1,000	6	7%
1,001-10,000	45	54%
10,001-50,000	19	23%
50,001+	5	6%
Total	83	100%

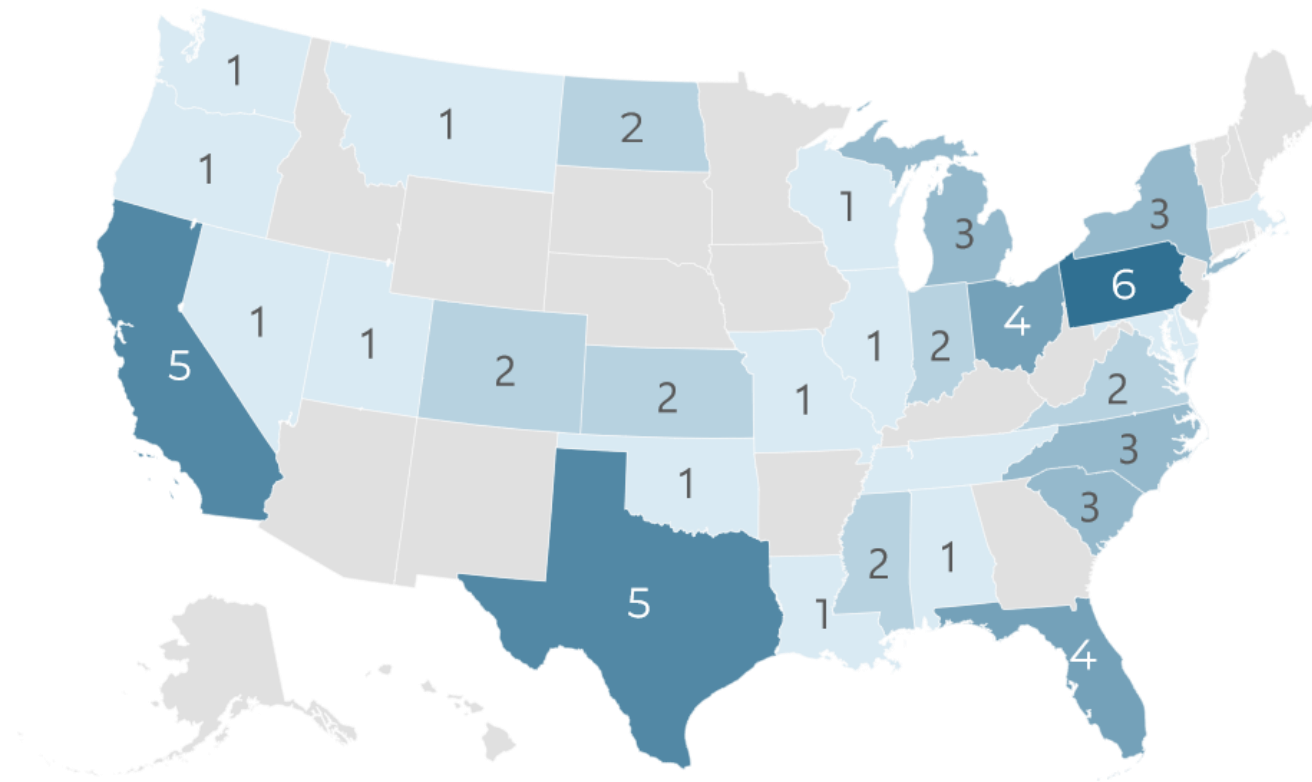
Years Experience	#	%
0 years	7	8%
1-2 years	5	6%
3-5 years	17	20%
6-10 years	25	30%
10+ years	29	35%
Total	83	100%



RESULTS & DISCUSSION

RESPONDENTS

- 83 respondents completed survey

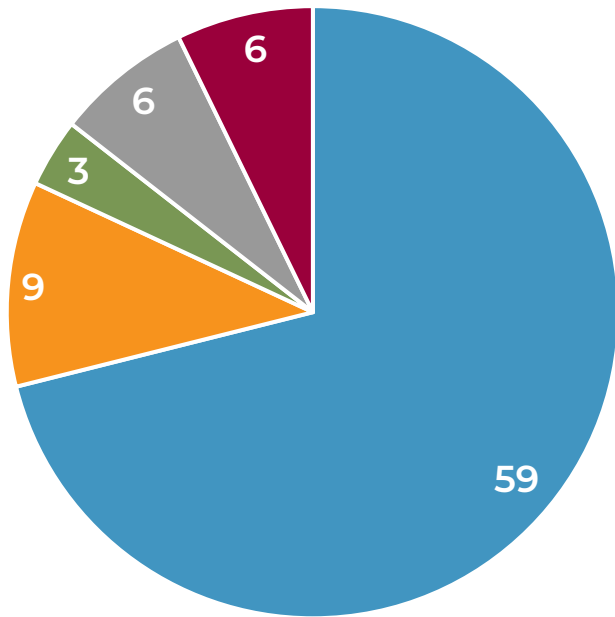


COUNTRY	#
← United States	64
Canada	3
United Kingdom	2
Australia	1
Brazil	1
France	1
Denmark	1
Philippines	1
Paraguay	1
Pakistan	1
Algeria	1
Sweden	1
Singapore	1
Serbia	1
Mauritius	1
Other	2

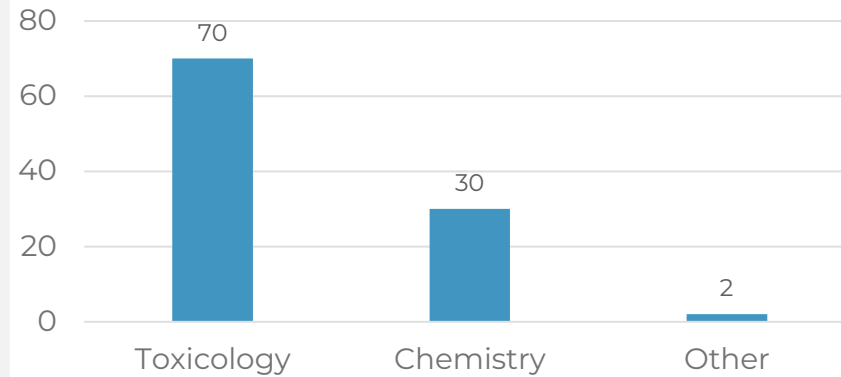
LAB DEMOGRAPHICS

Lab Type

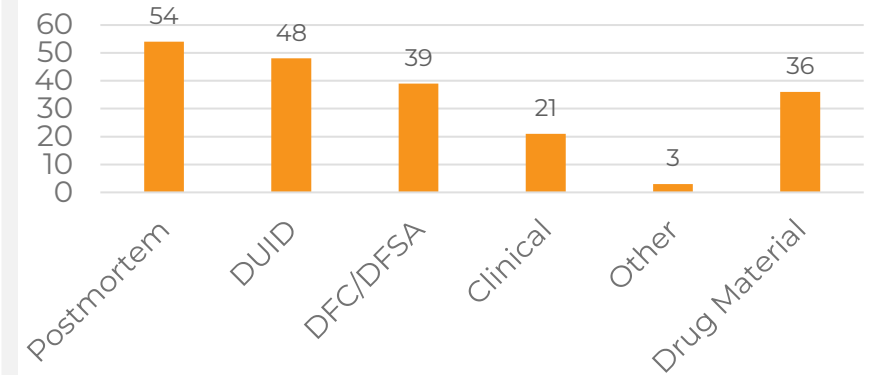
- Public
- Private
- Non-Profit
- University
- Other



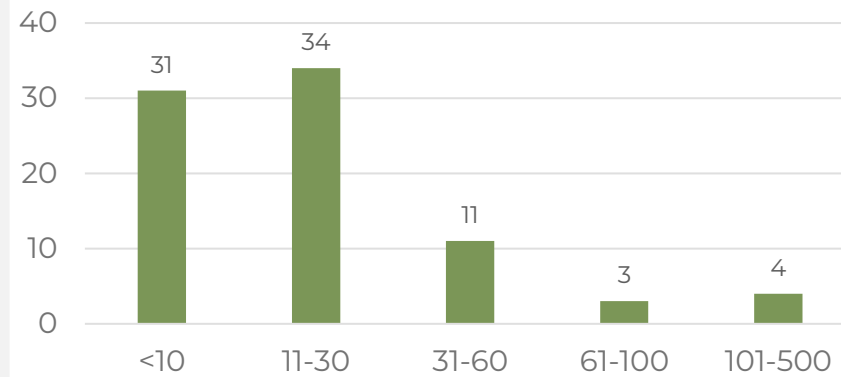
Subject Area



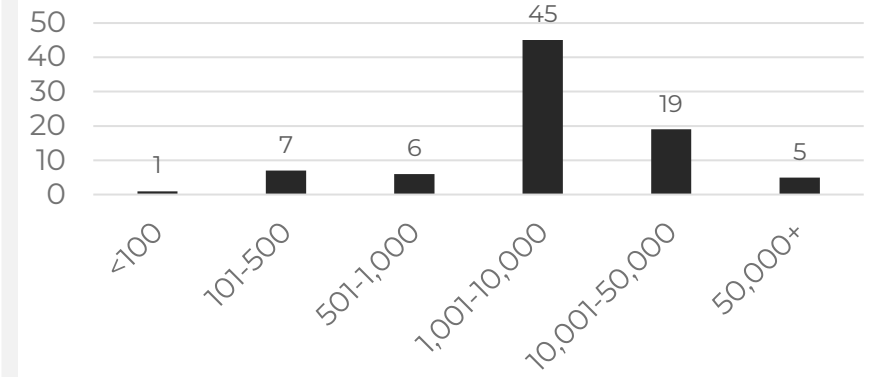
Type of Work



Number of Employees

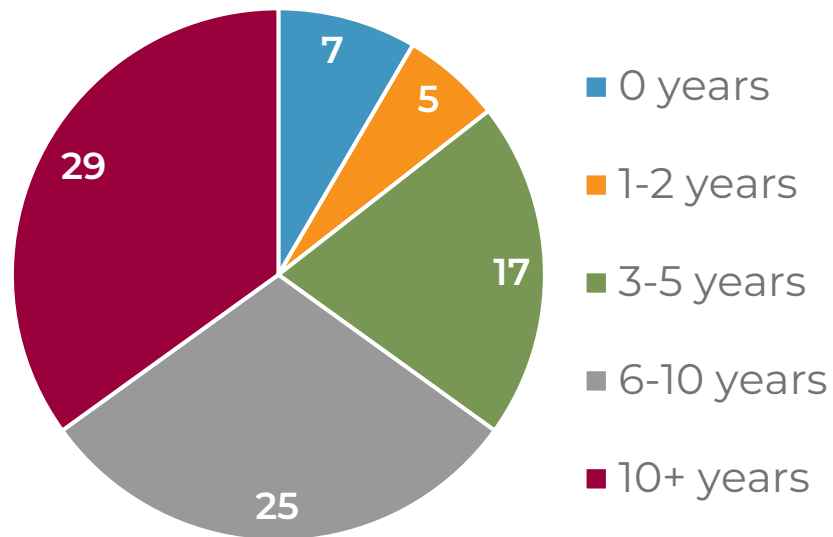


Case Load

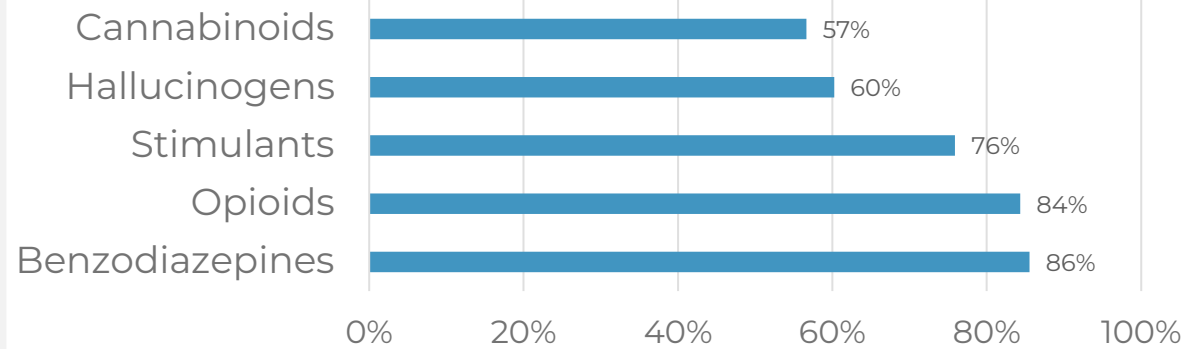


EXPERIENCE WITH NPS

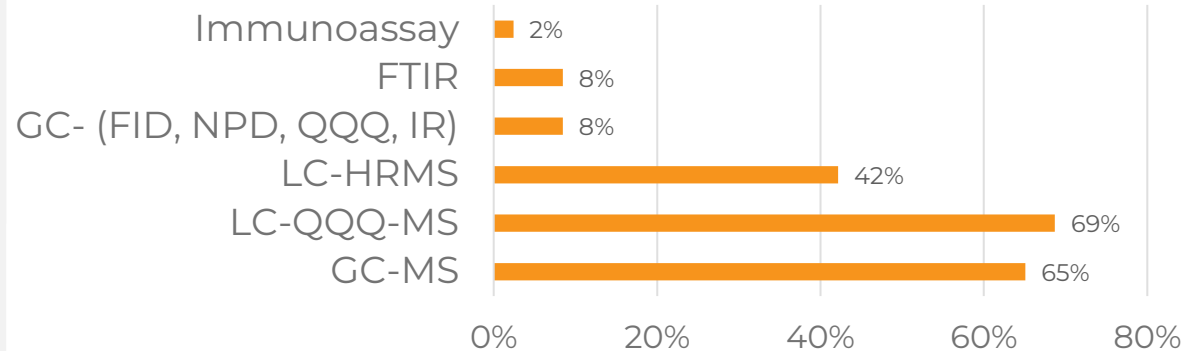
Years of Experience



NPS Classes Tested For



Instrumentation Used



SURVEY RESULTS

Are you using the NPS scope recommendations currently?	%
I download/print/utilize the recommendations and use them as a primary resource for method enhancements or scope development	40%
I open and read the recommendations but nothing further	30%
I forward the recommendations to scientists in the lab/R&D	16%
I did not know these recommendations existed	15%

SURVEY RESULTS

How do you use the scope recommendations? <i>(Select All)</i>	%
To find information about new NPS I hadn't previously heard of	70%
To expand my lab's scope of testing	64%
To add new analytes to our screening method	54%
To develop new confirmation methods	30%
To develop new research projects	26%
To make sure the reference lab that we send to is testing for the most recent NPS	15%

SURVEY RESULTS

What types of testing do you add NPS to from the scope recommendations? <i>(Select All)</i>	%
Screening Scope	66%
Confirmation Tests	55%
Surveillance Libraries	32%
None of the above	14%

How useful are the recommended cutoffs? <i>(i.e., <1, 1-10, >10 ng/mL)</i>	%
Highly Useful	38%
Somewhat Useful	36%
Neutral	19%
Not Useful	7%

SURVEY RESULTS

What is the appropriate regularity with which scope recommendations should be produced, updated, and disseminated?	%
Quarterly	64%
Biannually (2x per year)	19%
Annually	11%
Monthly	4%
Other	3%

Do you think quarterly scope recommendations are attainable?	%
No	41%
Neutral	39%
Yes	20%

SURVEY RESULTS

What PRIMARY resources do you rely on to determine your scope of testing for NPS? <i>(Select All)</i>	%
SOFT/CFSRE NPS Scope Recommendations	66%
CFSRE's NPS Discovery Reports and Resources	57%
Cayman Chemical Resources	46%
DEA/NFLIS Reports and Resources	40%
UNODC Reports and Resources	39%
SOFT NPS Committee Resources	33%
EMCDDA Reports and Resources	30%
Other (please specify)	30%
TIAFT NPS Committee Resources	17%

SUGGESTIONS FOR FUTURE IMPROVEMENTS

- Inclusion of metabolites
- Isomers – need to be resolved vs. most common
- Concentrations:
 - Range of expected blood concentrations
 - More context for suggested cutoff (how # is determined)
- Inclusion of semi-synthetic cannabinoids
- Geographic specificity
- Wider broadcast of its existence
- More analytical toolkits





CONCLUSIONS



CONCLUSIONS

- NPS scope recommendations remain a **highly valued resource** and the primary resource for forensic scientists (and others)
 - National and international consumption
- Forensic toxicologists **appreciate scope recommendations**
 - However, adequate resources and funding are necessary
- There are opportunities for **improvements and build out**
- **We gathered insightful information:**
 - NPS opioids and benzodiazepines are most tested for
 - LC-QQQ-MS most common followed by GC-MS; IA least common



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- **CFSRE Colleagues**
 - Barry Logan and Sara Walton
- **National Institute of Justice (NIJ)**



NIJ | *National Institute
of Justice*

STRENGTHEN SCIENCE. ADVANCE JUSTICE.



THANK YOU! **QUESTIONS?**



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