DRUG ENFORCEMENT ADMINISTRATION

CY 2023

Annual Methamphetamine Report

OFFICE OF FORENSIC SCIENCES

Special Testing and Research Laboratory

UNCLASSIFIED

PRB# 2024-35

This report was prepared by the DEA Special Testing and Research Laboratory (SFL1) of the Office of Forensic Sciences.
Requests for copies and feedback are welcome and may be directed to SFL1Administration@dea.gov.

CY 2023 | Annual Methamphetamine Report:

DEA Laboratory System Reporting

UNCLASSIFIED
PRB# 2024-35

SUMMARY

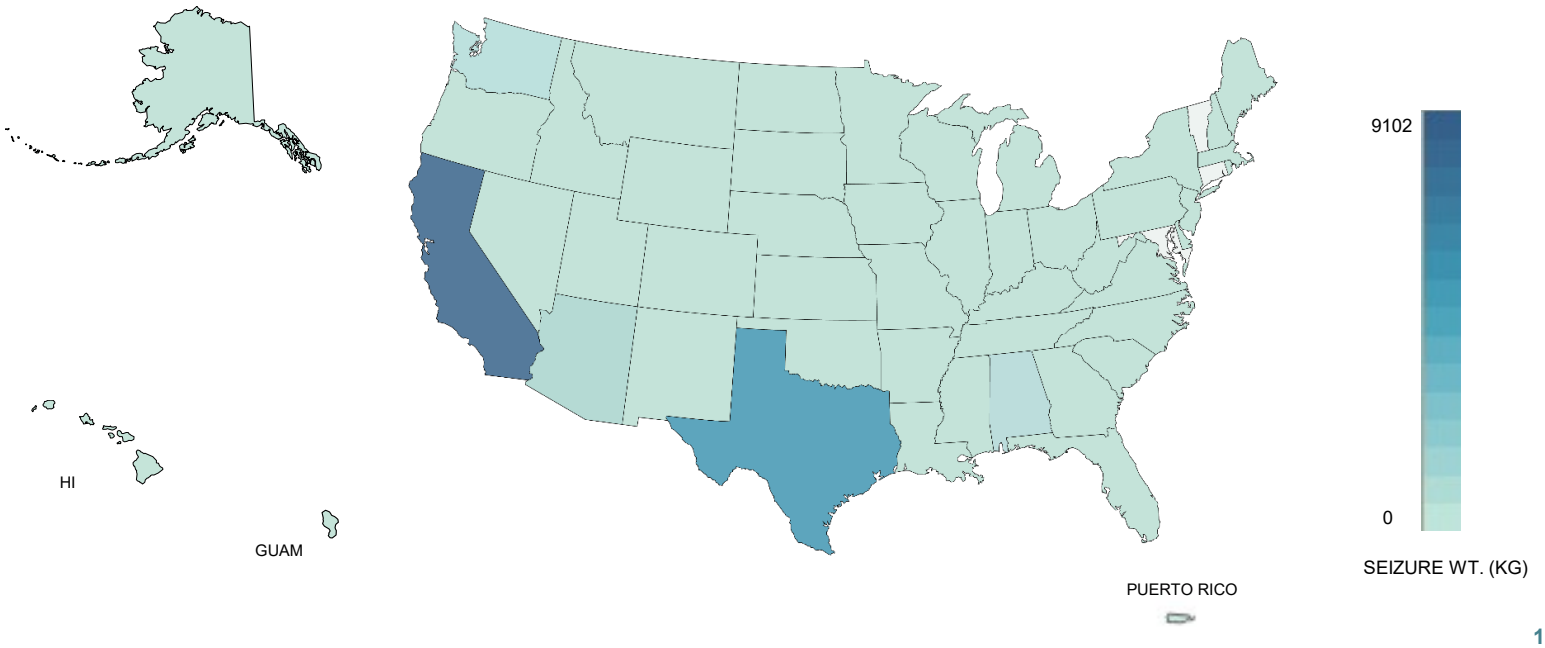
The United States Drug Enforcement Administration Office of Forensic Sciences laboratory system is comprised of eight regional laboratories distributed across the United States. Domestic methamphetamine seizures are identified and quantitated in the laboratory system's regional laboratories. The information provided on the following pages summarizes the collective results of methamphetamine samples analyzed in field laboratories for CY 2023. Results presented in this report are subject to change as they account for the information available at the time of publication.

Additionally, the Special Testing and Research Laboratory's Methamphetamine Profiling Program (MPP) provides scientific data and intelligence information on a select number of samples from illicit methamphetamine submitted to the program. Submissions to the MPP are analyzed for purity, cutting agents, precursors utilized, and synthetic route. MPP findings provide a snapshot of current methamphetamine quality and trafficking trends; it may not reflect the domestic or global illicit methamphetamine supply in its entirety, nor is it representative of total federal methamphetamine seizures.

This report also summarizes the collective results of methamphetamine profiling analyses performed on samples seized in CY 2023. This will conclude reporting on CY 2023 methamphetamine seizures. As such, a final year-end summary of methamphetamine trends observed by the MPP is provided in this report, to include comparison to methamphetamine seizures submitted to the laboratory system as a whole during CY 2023. In addition, this report will provide a summary of all foreign submissions analyzed by the MPP between July 2023 and March 2024.

INSIDE THIS ISSUE

Figure 1: DEA Laboratory System Reporting Regional Map



KEY FINDINGS

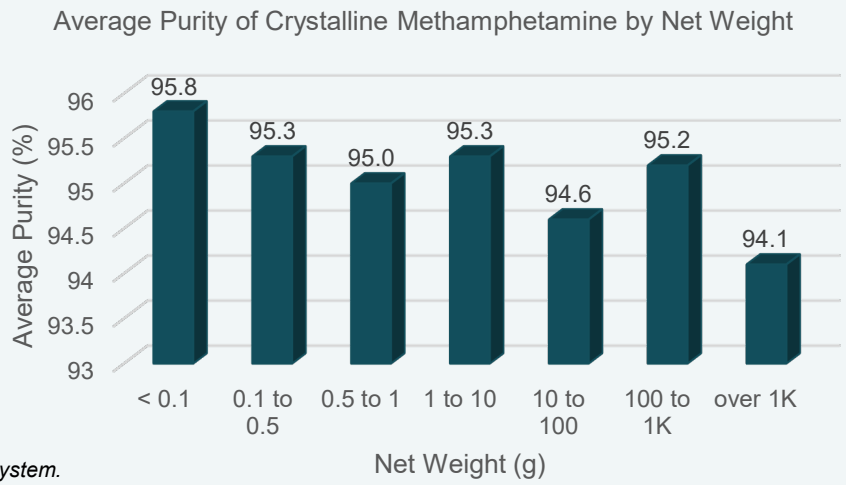
- In CY 2023, **16,463 methamphetamine exhibits** in various forms were submitted to regional laboratories and **14,622 were quantitated** as of this reporting period.
- The average purity of crystalline methamphetamine samples analyzed by regional laboratories was **94.9%.**
- Methamphetamine presented in crystalline, powder and/or rock-like form **accounted for approximately 94%** of all exhibits analyzed by the laboratory system.

- Of the exhibits listed above, samples of 706 domestically seized exhibits were submitted to the MPP for additional analysis. The samples that underwent additional profiling represent approximately 11,722 kilograms of seized methamphetamine throughout the United States.
- The average purity of domestically seized samples that underwent profiling by MPP was 95.5% (range: 22% - 100%) Potency continues to match purity indicating operators are isolating the desired d-isomer.
- Manufacturing Specific Observations of Profiled Samples:
  - **Primary Synthetic Route:** Reductive Amination
  - **Primary Precursor:** Phenyl-2-Propanone (P2P)
  - **Primary Precursor P2P:** Phenylacetic Acid (PAA)

DOMESTIC SUBMISSIONS

In CY 2023, 25,792 kilograms of methamphetamine in crystalline form were analyzed by regional laboratories. The table below summarizes methamphetamine exhibits analyzed by state.

Figure 2: Regional Laboratory Purity



This data was compiled from the Laboratory Information Management System. The data represents drug evidence seized and analyzed by the DEA regional laboratories in CY 2023.

State	Number of Exhibits	Net Weight (kg)	Avg. Purity (%)
Alabama	413	123.77	93.5
Alaska	87	33.35	97.3
American Samoa	57	0.11	97.5
Arizona	396	2090.36	97.5
Arkansas	330	193.85	94.5
California	2,071	9102.70	96.2
Colorado	208	409.16	96.2
Connecticut	14	12.61	98.8
Delaware	26	14.34	97.8
D.C.	2	0.89	98.0
Florida	750	450.58	94.1
Georgia	443	1742.71	90.6
Guam	30	3.14	97.3
Hawaii	105	90.89	98.1
Idaho	54	24.30	96.5
Illinois	376	237.64	94.6
Indiana	364	240.96	94.7
Iowa	127	135.67	96.6
Kansas	102	183.81	97.0
Kentucky	457	281.72	92.4
Louisiana	184	199.32	91.4
Maine	19	2.70	98.6
Maryland	22	2.65	93.4
Massachusetts	69	57.69	95.7
Michigan	132	157.27	94.3
Minnesota	99	266.80	97.8
Mississippi	212	84.63	93.4
Missouri	413	289.94	96.1

State	Number of Exhibits	Net Weight (kg)	Avg Purity (%)
Montana	354	109.30	95.5
Nebraska	80	227.70	96.7
Nevada	163	145.52	96.6
New Hampshire	108	30.42	97.8
New Jersey	48	103.57	97.3
New Mexico	166	770.44	97.1
New York	234	240.13	97.1
North Carolina	596	279.08	94.4
North Dakota	19	26.24	97.2
N. Mariana Islands	9	6.09	99.2
Ohio	329	151.92	93.5
Oklahoma	290	901.80	95.4
Oregon	131	346.46	96.5
Pennsylvania	236	134.62	96.2
Puerto Rico	8	0.06	98.7
Rhode Island	15	7.28	99.8
South Carolina	144	74.08	93.0
South Dakota	70	34.49	96.0
Tennessee	388	349.56	93.2
Texas	1,889	4678.57	94.9
Utah	58	80.62	97.0
Vermont	2	0.02	96.5
Virginia	126	54.21	93.2
Washington	307	369.03	96.5

DOMESTIC SUBMISSIONS

Crystalline, powder and rock-like exhibits accounted for approximately 88% of all exhibits analyzed in 2023. The average purity for these forms was 94.9%. Tablet exhibits were approximately 8% of all analyzed exhibits with an average purity of 4.1%. Approximately 1% of exhibits were liquid samples with an average purity of 36.7%.

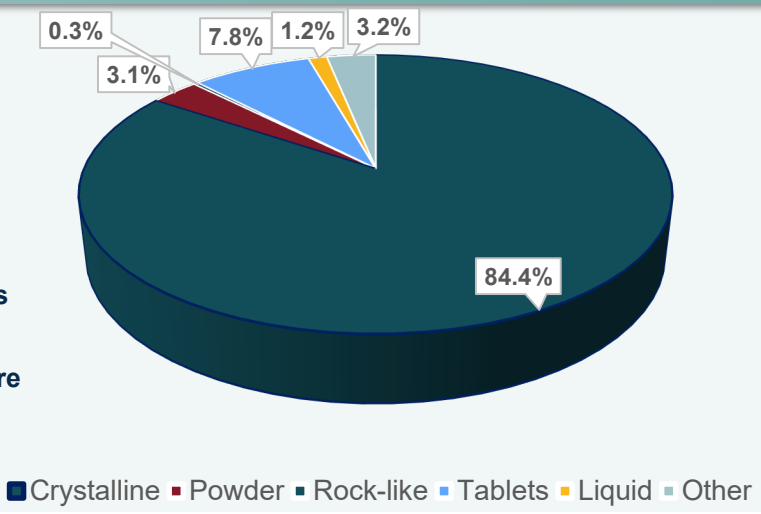


Figure 3: Substances Commonly Reported in Crystalline Exhibits

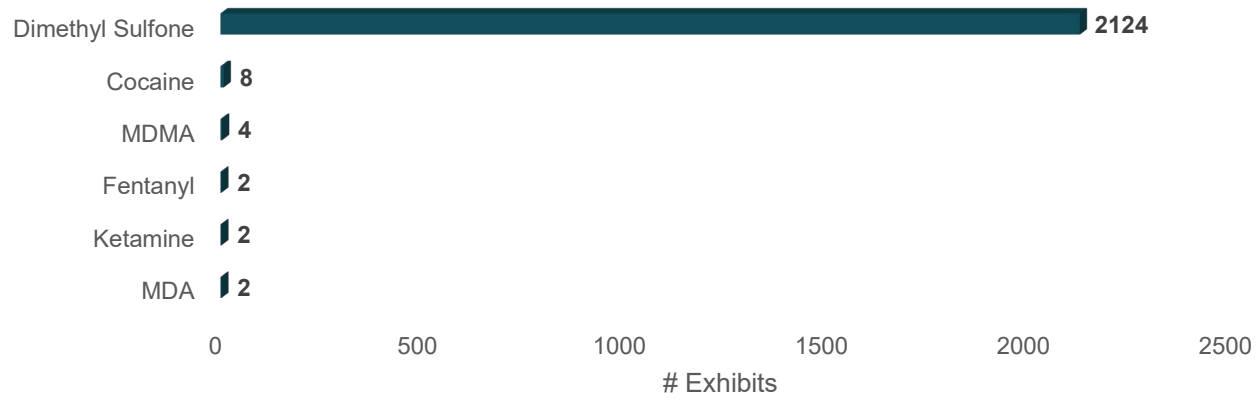
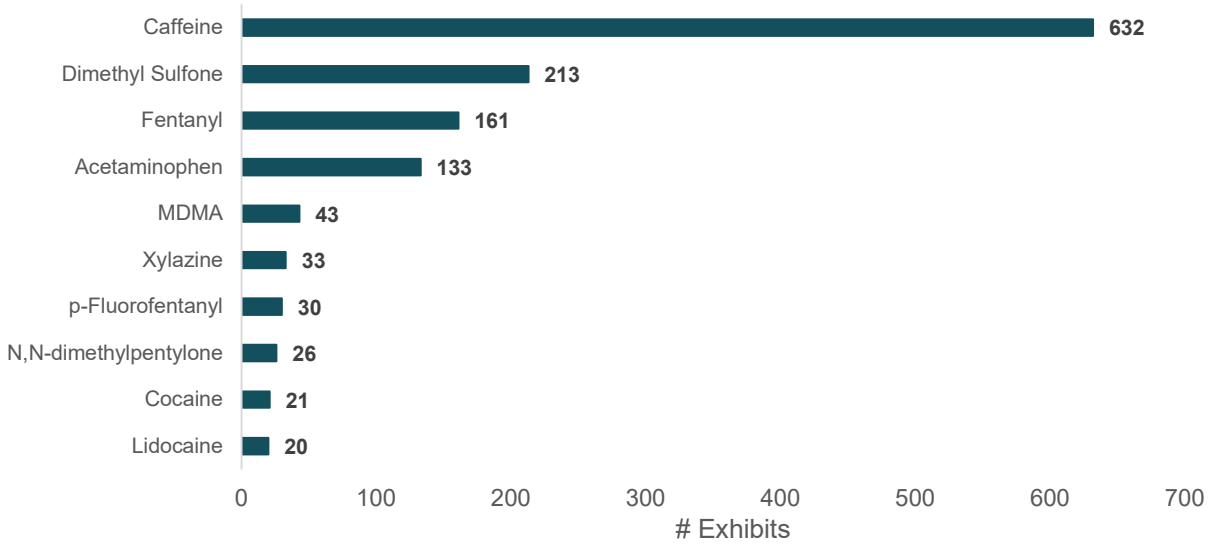


Figure 4: Substances Commonly Reported in Tablet Exhibits



This data was compiled from the Laboratory Information Management System.
The data represents drug evidence seized and analyzed by the DEA regional laboratories in CY 2023.

CHEMICAL ANALYSIS TRENDS

Figure 5: Regional Lab Purity and Seizure Trends (Crystalline)

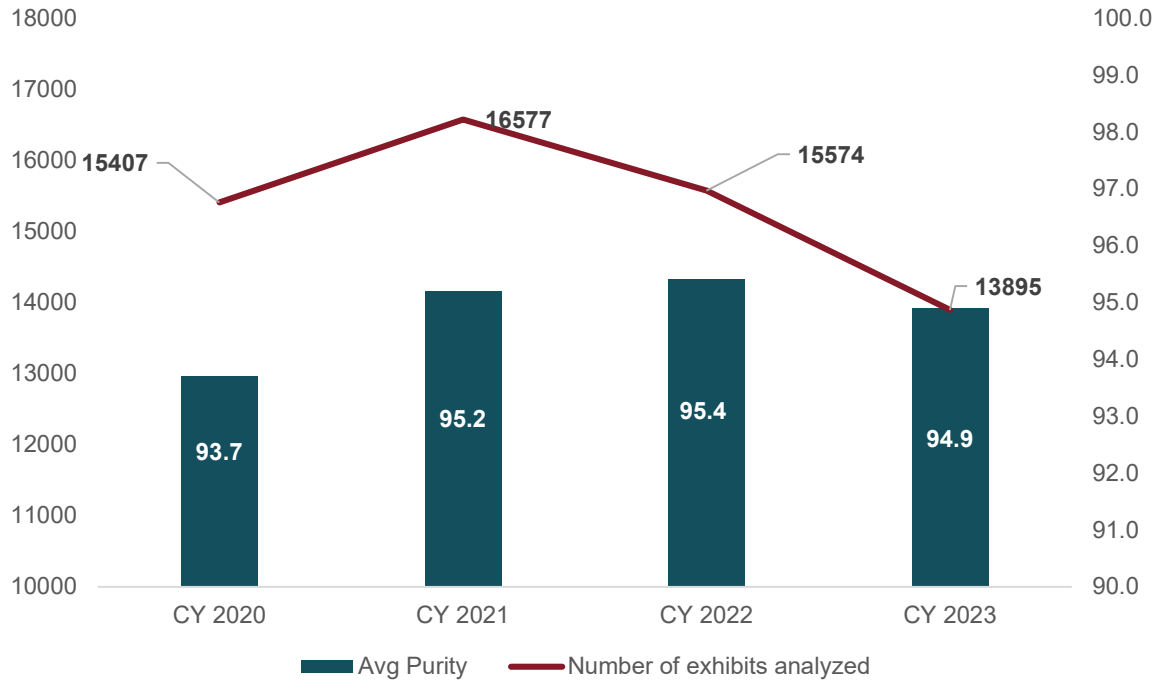
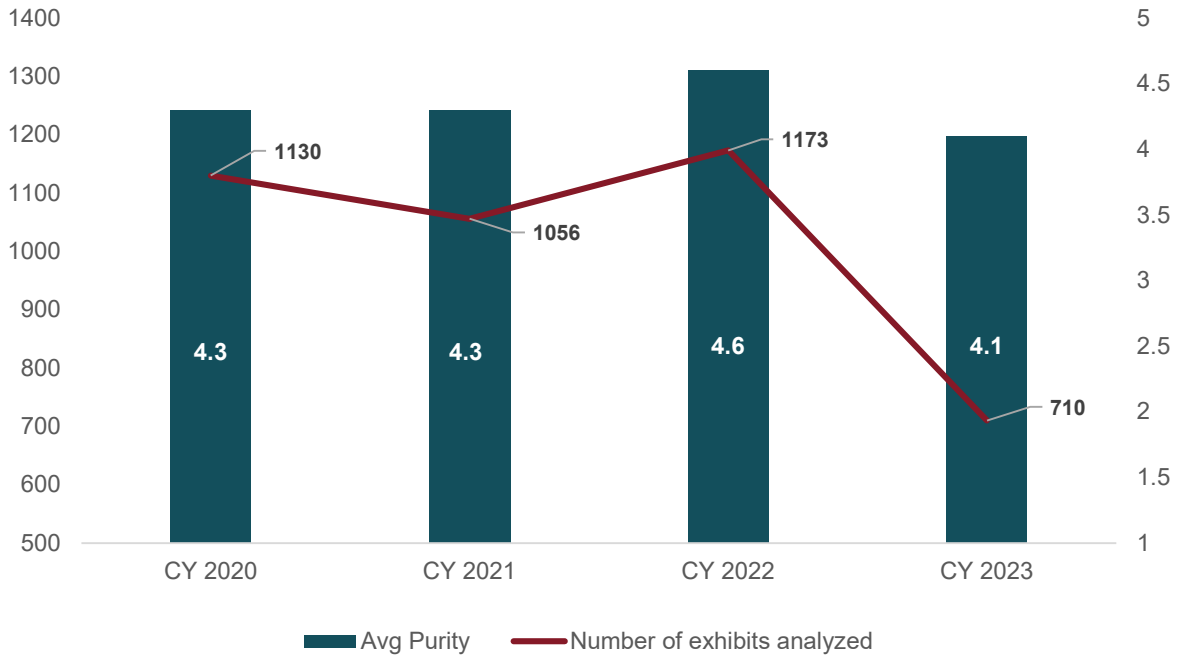


Figure 6: Regional Lab Purity and Seizure Trends (Tablet forms)



This data was compiled from AIDD. The data represents drug evidence seized and analyzed by the DEA regional laboratories in CY 2023.

DOMESTIC SUBMISSIONS

The MPP conducts an in-depth chemical analysis of selected methamphetamine samples seized throughout the United States in an effort to establish trends associated with its manufacture. A selected domestic methamphetamine sample will be powdered or crystalline material with a purity of at least 10% as determined by the DEA Regional Laboratory analysis. The established sampling plan seeks to obtain portions of seizures representing varying seizure sizes from each of the regions depicted in Figure 1. As areas of responsibility of DEA Division Offices and Regional Laboratories routinely shift, for consistency in reporting, the MPP has used these regional designations depicted since the inception of the program.

Figure 1: MPP Regional Map

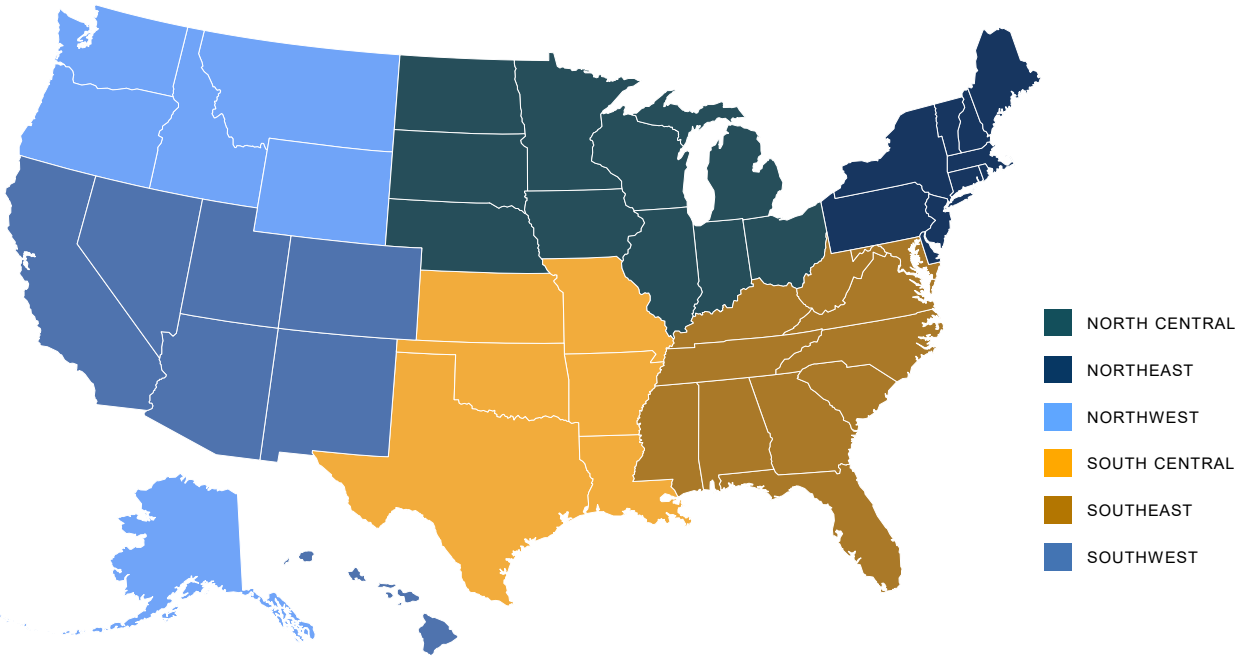
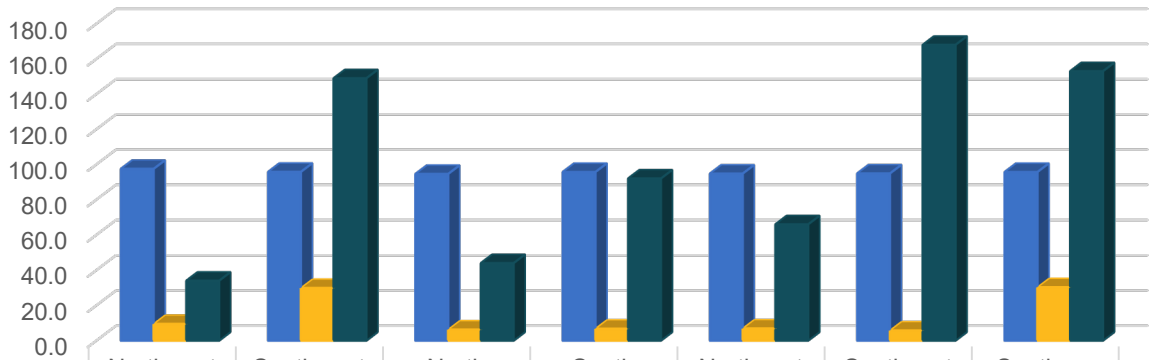


Figure 2: Regional Overview for CY2023 MPP Exhibits Analyzed



	Northwest	Southwest	North Central	South Central	Northeast	Southeast	Southern Border
Avg Purity	97.5	95.8	94.6	95.7	94.8	94.9	95.7
Avg Seizure (kg)	9.5	29.9	6.3	6.8	6.9	5.8	30.3
# Ex Analyzed	34	149	44	92	66	168	153

DOMESTIC SUBMISSIONS

DOMESTIC RESULTS AND TRENDS

Overall average methamphetamine purity continues to be at high levels with the average being 95.5%. This is a slight decrease from the 96.6% reported at the same time last year. Overall methamphetamine purity results ranged from 22%-100% with approximately 86% of the samples analyzed having a purity >95%. In addition, the potency of methamphetamine continues to match purity results. Potency calculations monitor the amount of the unwanted l-methamphetamine isomer present in analyzed samples. Purity and potency levels being calculated as the same value suggests that virtually all the unwanted l-isomer has been eliminated from the final product during clandestine production.

During this reporting period, approximately 19% (n=134) of samples received were cut with dimethylsulfone (DMS). The DMS purities for these samples ranged from trace amounts to 78%. The average purity of DMS for exhibits containing more than trace amounts was approximately 11%.

Reductive amination remains the preferred synthetic manufacturing route for methamphetamine with 98.4% of the MPP samples analyzed profiled as originating from a P2P precursor. Approximately 9% (n=62) of these P2P-based samples showed evidence of being synthesized to methamphetamine under Leuckart conditions. This process uses methylamine and formic acid or N-methylformamide as supporting chemicals. This percentage is a slight increase compared to CY 2022 seizures (~6%). In addition, the MPP has been monitoring the Mercury Amalgam sub-classification with approximately 2% of seizures (n=14) observed to have been synthesized under these conditions and an additional 1% (n=7) of sample profiles showing markers for both Leuckart and Mercury Amalgam reactions, indicating the mixing of finished products at some point during the postproduction process.

SUMMARY OF CY 2023 MPP SAMPLES ANALYZED

REGION	TOTAL #	# SMALL (<499 G)	# MEDIUM (500G – 9.9KG)	# LARGE (>10 KG)	AVERAGE PURITY
NORTHWEST	34	16	6	12	97.5%
SOUTHWEST	149	34	64	51	95.8%
NORTH CENTRAL	44	20	15	9	94.6%
SOUTH CENTRAL	92	34	40	18	95.7%
NORTHEAST	66	32	27	7	94.8%
SOUTHEAST	168	97	50	21	94.9%
SOUTHERN BORDER POE	153	9	46	98	95.7%
TOTALS	**706**	**242**	**248**	**216**	**95.5%**

DOMESTIC SUBMISSIONS

CHEMICAL ANALYSIS TRENDS* (CONTINUED)

**Note: Prior to CY 2023, trends were reported bi-annually based on seizure date.*

Figure 6: Average Seizure Size Submitted to MPP (kg)

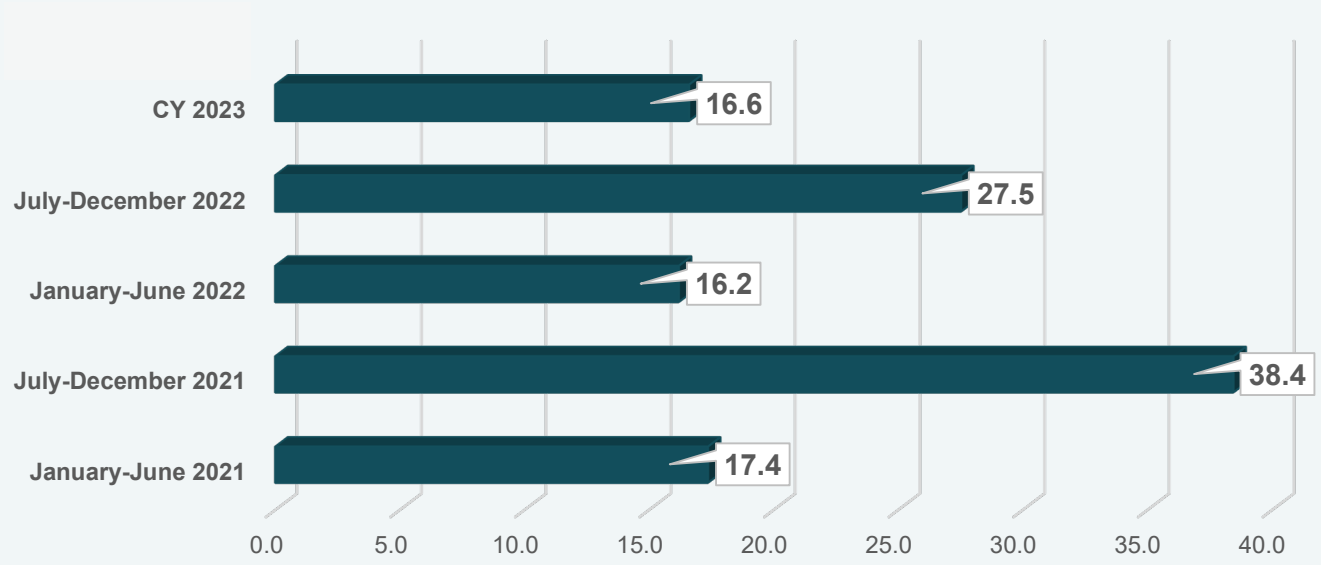
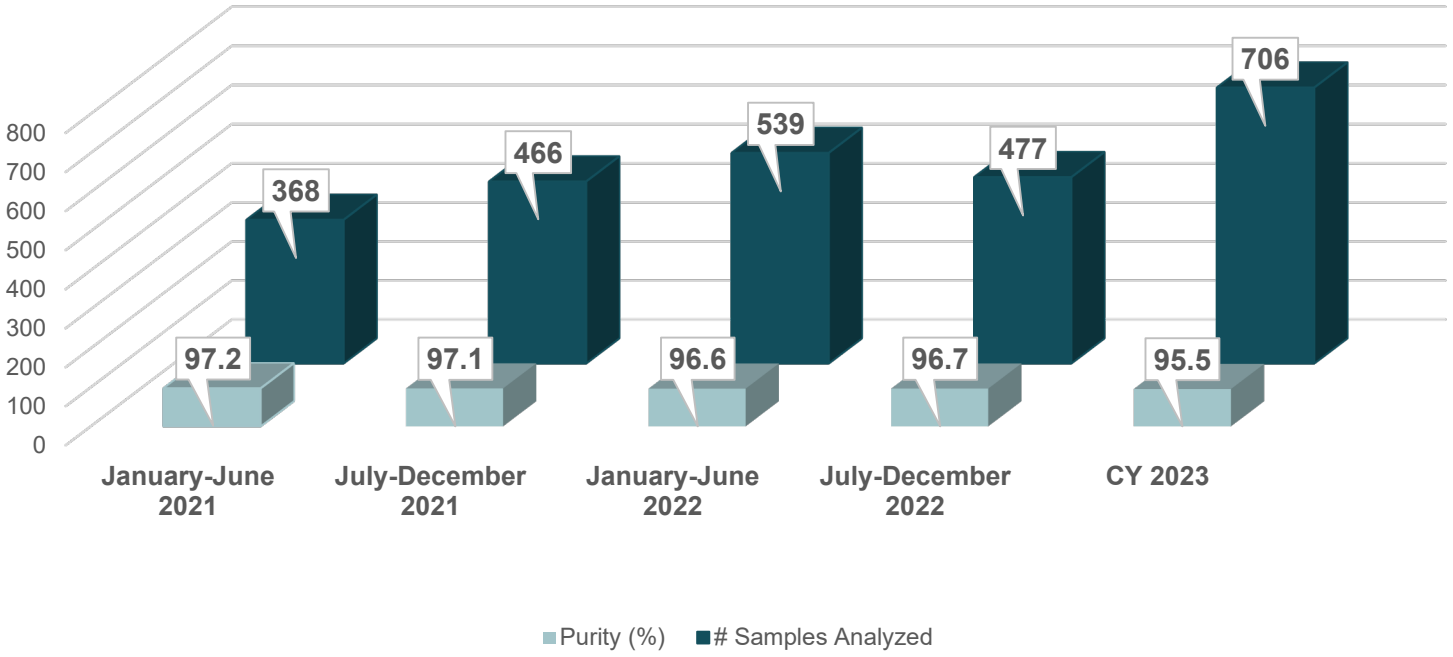


Figure 7: Overall Purity Trends



DOMESTIC SUBMISSIONS

CHEMICAL ANALYSIS TRENDS* (CONTINUED)

Figure 8: Primary Precursor to P2P Trends

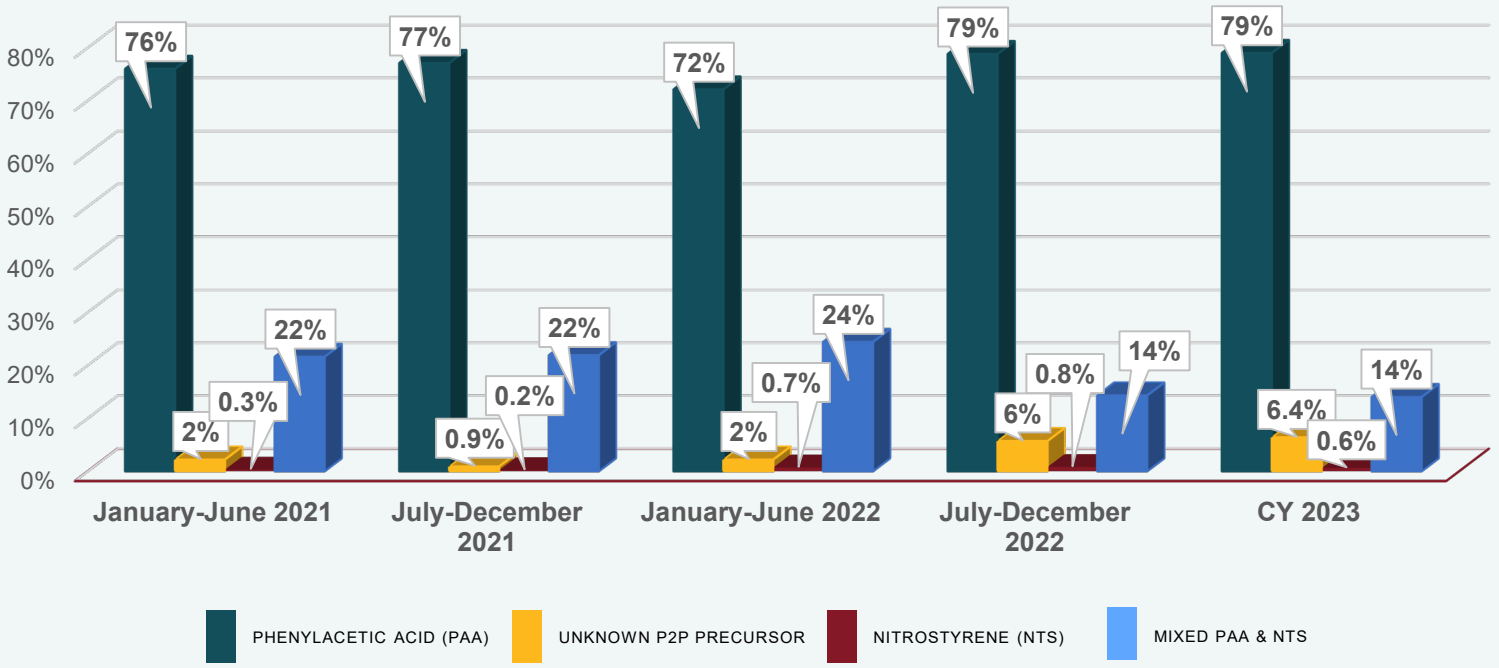
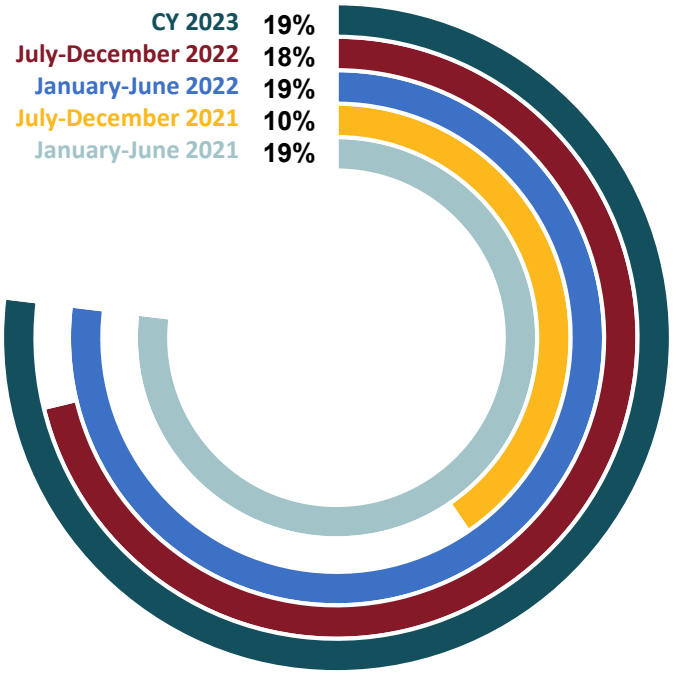


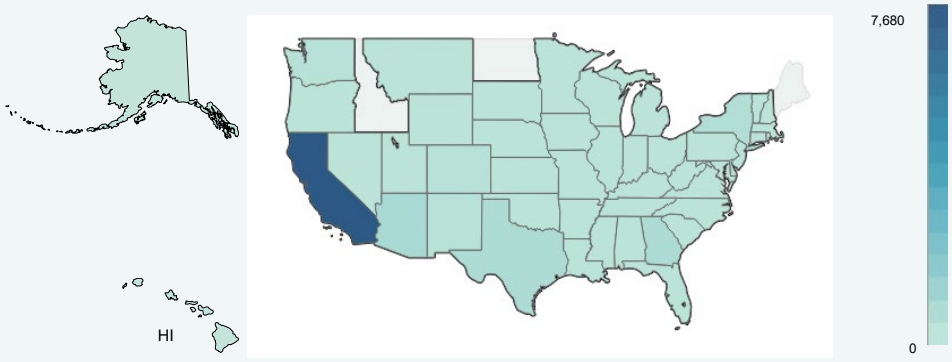
Figure 9: Percentage of MPP Submissions Cut with DMS



DOMESTIC SUBMISSIONS

DOMESTIC RESULTS AND TRENDS

The table below and maps depicted in the following pages summarize the MPP findings of CY 2023 seizures at a state and regional level.



State	Total MPP Seizure Wt. Represented (kg)	Min. Purity (%)	Max. Purity (%)
AK	0.5	98.5	98.9
AL	23.7	72.2	99.1
AR	7.7	60.4	99.2
AZ	669.9	91.7	99.2
CA	7680.4	21.5	100
CO	245.5	96.5	99.7
CT	11.5	95.7	98.3
DE	0.1	---	45.5
FL	139.6	59.2	99.4
GA	549.7	69.4	99.6
HI	28.6	95.1	99.4
IA	68.3	96.7	99.1
IL	25.9	77.2	99.2
IN	18.9	97.6	99.6
KS	47.3	88.0	99.5
KY	74.5	67.8	99.4
LA	73.0	87.3	99.7
MA	14.9	97.3	98.9
MD	0.03	97.4	97.9
MI	8.9	36.3	98.7
MN	75.5	97.6	99.0
MO	22.7	96.8	98.9
MS	7.5	67.2	99.2

State	Total MPP Seizure Wt. Represented (kg)	Min. Purity (%)	Max. Purity (%)
MT	2.9	98.1	99.1
NC	19.5	96.5	99.7
NE	32.7	98	98.4
NH	2.5	97.9	98.5
NJ	56.8	97.8	99.5
NM	245.4	95.5	99.0
NV	23.9	93.0	99.2
NY	311.5	36.1	99.5
OH	44.8	61.7	99.2
OK	136.7	97.2	98.9
OR	148.7	87.0	99.4
PA	53.1	66.0	99.8
RI	0.2	97.2	98.9
SC	11.3	96.1	99.3
SD	0.1	---	99.7
TN	59.0	71.3	99.3
TX	492.5	9.5	99.0
UT	28.7	93.7	98.6
VA	31.9	83.8	99.3
VT	1.8	---	98.5
WA	170.5	88.7	99.3
WI	0.9	96.4	96.5
WV	51.4	92.2	98.5
WY	0.9	---	97.9

DOMESTIC SUBMISSIONS

REGIONAL CHEMICAL ANALYSIS RESULTS

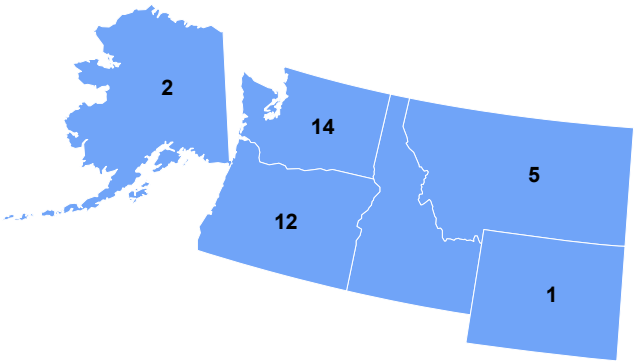


Figure 10: # samples per state

NORTHWEST REGION

The MPP analyzed 34 samples from the Northwest Region with seizure sizes ranging from 20 g to 65 kg. All but one sample were manufactured via reductive amination with P2P as the primary precursor (one sample from unknown route). PAA was identified as the primary precursor to P2P in 74% of the samples, with an additional 9% showing the precursor to P2P was a mixed source of PAA and nitrostyrene, and 15% of an unknown source. Dimethylsulfone was identified as an adulterant in 26% of the samples analyzed.

AVG PURITY

97.1% SMALL SEIZURES

97.1% MEDIUM SEIZURES

98.0% LARGE SEIZURES

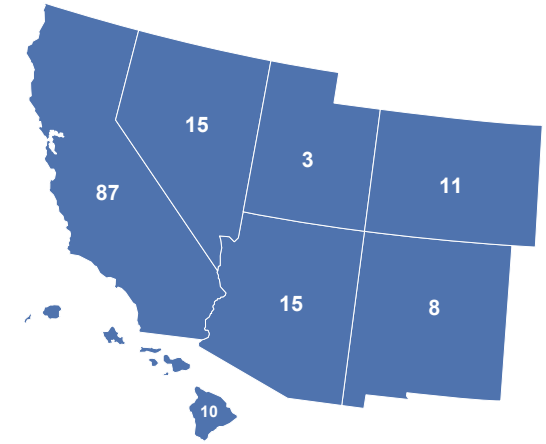


Figure 11: # samples per state

SOUTHWEST REGION

The MPP analyzed 149 samples from the Southwest Region with seizure sizes ranging from 10 g to 1802 kg. 147 samples were manufactured via reductive amination with P2P as the primary precursor. PAA was identified as the primary precursor to P2P in 77% of the samples, with an additional 13% showing the precursor to P2P was a mixed source of PAA and nitrostyrene, and 8% of an unknown source. Dimethylsulfone was identified as an adulterant in 19% of the samples analyzed. A Leuckart sub-classification was identified in 6% of samples.

AVG PURITY

95.6% SMALL SEIZURES

94.8% MEDIUM SEIZURES

97.2% LARGE SEIZURES

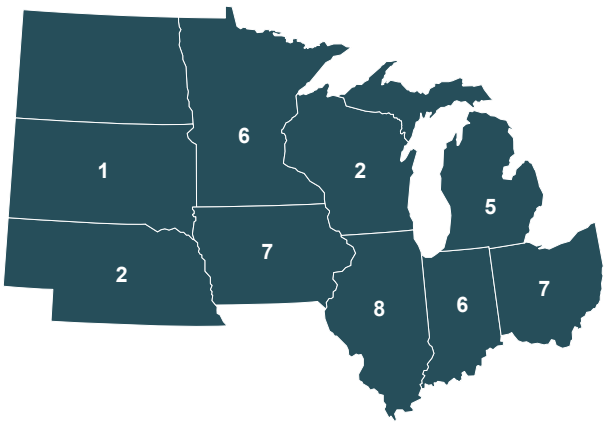


Figure 12: # samples per state

NORTH CENTRAL REGION

The MPP analyzed 44 samples from the North Central Region with seizure sizes ranging from 10 g to 50 kg. All samples were manufactured via reductive amination with P2P as the primary precursor. PAA was identified as the primary precursor to P2P in 80% of the samples, with an additional 18% showing the precursor to P2P was a mixed source of PAA and nitrostyrene. Dimethylsulfone was identified as an adulterant in 16% of the samples analyzed. A Leuckart sub-classification was identified in 14% of samples.

AVG PURITY

91.7% SMALL SEIZURES

96.5% MEDIUM SEIZURES

97.9% LARGE SEIZURES

DOMESTIC SUBMISSIONS

REGIONAL CHEMICAL ANALYSIS RESULTS (CONTINUED)

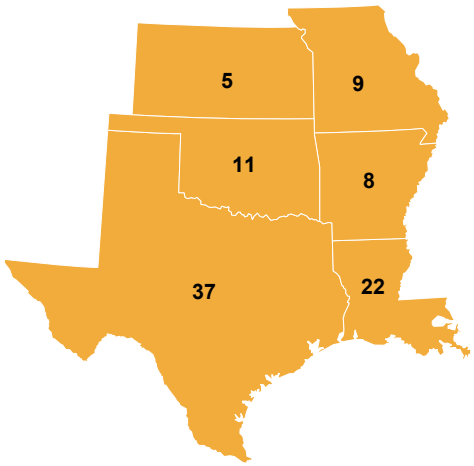


Figure 13: # samples per state

SOUTH CENTRAL REGION

The MPP analyzed 92 samples from the South Central Region with seizure sizes ranging from 10 g to 121 kg. All but three samples were manufactured via reductive amination with P2P as the primary precursor. The remaining samples could not be conclusively profiled and were classified as "unknown." PAA was identified as the primary precursor to P2P in 79% of the samples, with an additional 9% showing the precursor to P2P was a mixed source of PAA and nitrostyrene, and 7% of an unknown source. Dimethylsulfone was identified as an adulterant in 14% of the samples analyzed. A Leuckart sub-classification was identified in 10% of samples.

AVG PURITY

96.8% SMALL SEIZURES

96.2% MEDIUM SEIZURES

97.0% LARGE SEIZURES

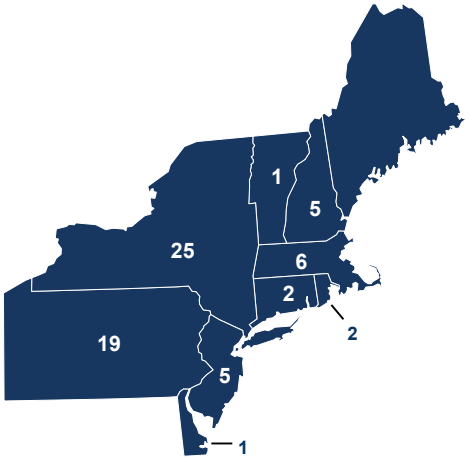


Figure 14: # samples per state

NORTHEAST REGION

The MPP analyzed 66 samples from the Northeast Region with seizure sizes ranging from 10 g to 209 kg. All but one sample were manufactured via reductive amination with P2P as the primary precursor. One sample could not be profiled due to an unusual sample matrix. PAA was identified as the primary precursor to P2P in 76% of the samples, with an additional 15% showing the precursor to P2P was a mixed source of PAA and nitrostyrene, and 8% of an unknown source. Dimethylsulfone was identified as an adulterant in 11% of the samples analyzed. A Leuckart sub-classification was identified in 5% of samples.

AVG PURITY

95.0% SMALL SEIZURES

93.8% MEDIUM SEIZURES

97.4% LARGE SEIZURES

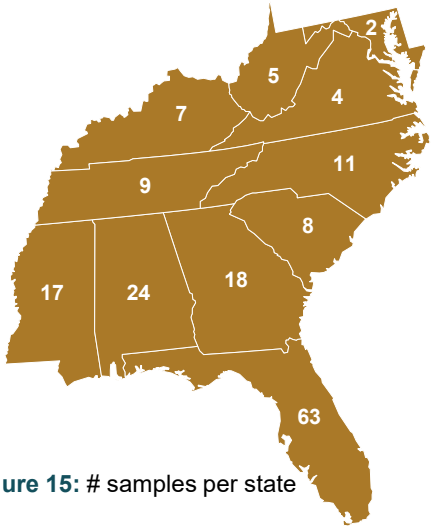


Figure 15: # samples per state

SOUTHEAST REGION

The MPP analyzed 168 samples from the Southeast Region with seizure sizes ranging from 10 g to 155 kg. All but two samples were manufactured via reductive amination with P2P as the primary precursor. Two samples could not be conclusively profiled and were classified as "unknown." PAA was identified as the primary precursor to P2P in 82% of the samples, with an additional 14% showing the precursor to P2P was a mixed source of PAA and nitrostyrene, and 3% of an unknown source. Dimethylsulfone was identified as an adulterant in 27% of the samples analyzed. A Leuckart sub-classification was identified in 10% of samples.

AVG PURITY

95.8% SMALL SEIZURES

93.0% MEDIUM SEIZURES

94.8% LARGE SEIZURES

DOMESTIC SUBMISSIONS

REGIONAL CHEMICAL ANALYSIS RESULTS (CONTINUED)

SOUTHERN BORDER PORTS OF ENTRY

One hundred fifty-three samples seized at Ports of Entry (POE) along the United States/Mexico border were analyzed during this reporting period, representing approximately 22% of all samples analyzed. A drug quality breakdown by POE state and further individual locations are summarized as follows:

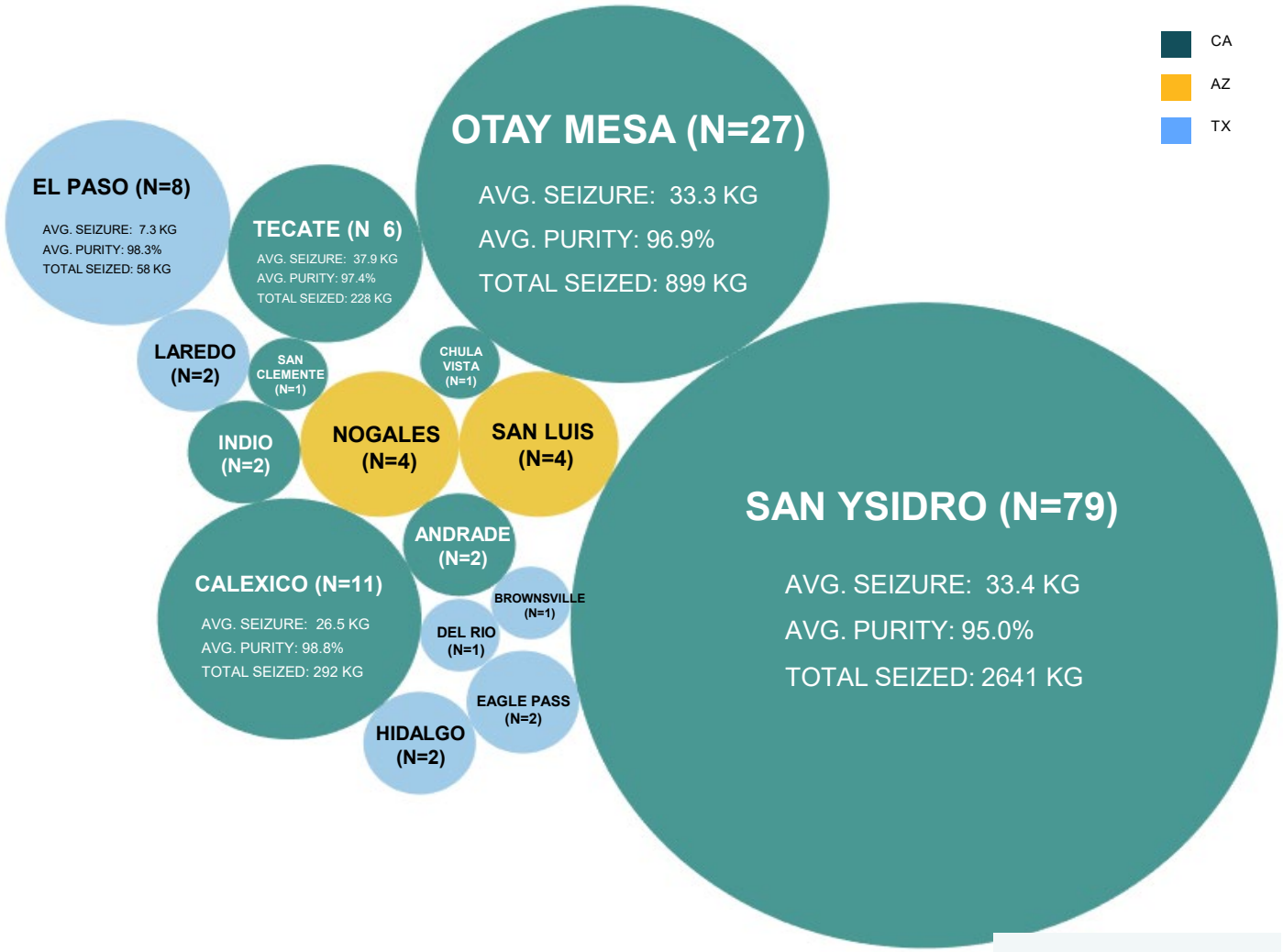
With the exception of one sample, all samples analyzed from POEs were determined to be manufactured via reductive amination with phenyl-2-propanone as the precursor. Additionally, it was determined that the primary precursor to P2P in approximately 76% of the samples was PAA, with an additional 16% showing the precursor to P2P was a mixed source of PAA and nitrostyrene, and 8% were found to be of an unknown source. Approximately 12% (n=18) of these P2P-based samples showed evidence of a Leuckart route being employed. One sample could not be conclusively profiled and was classified as “unknown.”

The majority of samples (~84%) analyzed by MPP that were seized at the U.S./Mexico border were found to be uncut. Of those samples that were adulterated, dimethylsulfone was the primary cutting agent identified (n=24). Purities of DMS ranged from trace amounts to 43% with an average of approximately 12%.

POE	# SAMPLES ANALYZED	AVERAGE PURITY (CY 2023)	AVERAGE PURITY (JULY DECEMBER 2022 REPORTING)	AVERAGE SEIZURE WT. IN KG (CY 2023)	AVERAGE SEIZURE WT. IN KG (JULY DECEMBER 2022 REPORTING)
AZ	8	97.1%	98.6%	11.1	32.3
CA	129	95.6%	97.7%	33.9	37.8
TX	16	95.4%	97.6%	9.9	6.2
TOTALS	153	96.0%	97.8%	18.3	34.9

DOMESTIC SUBMISSIONS

SOUTHERN BORDER PORTS OF ENTRY (CONTINUED)



PORT OF ENTRY	AVERAGE SEIZURE (KG)	AVERAGE PURITY (%)	TOTAL SEIZED (KG)
NOGALES	8.3	97.0	33
SAN LUIS	14.0	97.4	56
ANDRADE	36.1	98.1	72
CHULA VISTA	----	54.6	0.5
INDIO	121.6	96.6	243
SAN CLEMENTE	----	98.6	7
BROWNSVILLE	----	98.2	46
DEL RIO	----	99.5	6
EAGLE PASS	7.3	98.3	58
HIDALGO	6.7	84.9	13
LAREDO	3.8	87.6	8

FOREIGN SUBMISSIONS

During this reporting period, the MPP analyzed 26 samples seized outside the United States and submitted by various foreign offices. A summary of the results are detailed by submitting office below.

CANADA

Six d-methamphetamine HCl samples from multiple seizures were analyzed. The submissions obtained by the Ottawa Country Office had seizure dates listed as occurring between October 2022 and March 2023. The average purity of the samples was calculated to be 95.6%. No adulterants or diluents were identified in the samples. All samples received were determined to be manufactured via reductive amination with phenyl-2-propanone as the precursor. In four of the samples, the primary precursor to phenyl-2-propanone was determined to be phenylacetic acid (PAA). The remaining two samples showed the primary precursor to phenyl-2-propanone to have originated from a mixed source of PAA and nitrostyrene.

PHILIPPINES

Six d-methamphetamine HCl samples were submitted by the Manila Country Office. The submission had a seizure date of October 2023. The average purity of the samples was calculated to be 98.9%. No adulterants or diluents were identified in the samples. Five samples received were determined to be manufactured via reductive amination with phenyl-2-propanone as the precursor. In two of the samples, the primary precursor to phenyl-2-propanone was determined to be phenylacetic acid (PAA). The primary precursor to phenyl-2-propanone was unable to be conclusively determined in the other three samples. The remaining sample submitted lacked characteristic impurities needed for profiling and was therefore characterized as “Unknown.”

NIGERIA

Three samples seized in August 2023 were submitted by the Lagos Country Office. One sample was determined to be 99% dimethylsulfone. The second sample was determined to be 48% d-methamphetamine HCl and 46% dimethylsulfone. Unfortunately, insufficient sample was available to conduct profiling analysis. The third sample was determined to be 75.6% d-methamphetamine HCl and 22.3% dimethylsulfone. MPP analysis determined one sample was manufactured via a phosphorous-iodine synthetic route with ephedrine/pseudoephedrine as the precursor. The lack of over-the-counter impurities traditionally found in pharmaceutical grade ephedrine/pseudoephedrine along with additional supporting analytical data indicates the ephedrine was likely derived from a natural ephedra plant.

GHANA

Two samples were submitted to the program by the Accra Country Office with a seizure date July 2023. One sample of pink compressed powder was found to contain 15.2% 3,4-methylenedioxyamphetamine hydrochloride (MDMA). One sample of crystalline material was found to contain 96.6% d-methamphetamine HCl and 1.4% dimethylsulfone. Unfortunately, insufficient material was submitted to complete profiling analysis.

FOREIGN SUBMISSIONS

FOREIGN SUBMISSIONS (CONTINUED)

SOUTH AFRICA

One sample of crystalline material seized in April 2023 was submitted by the Pretoria Country Office. The sample was found to contain 48% d-methamphetamine HCl and 50% dimethylsulfone. The sample submitted lacked characteristic impurities needed for profiling and was therefore characterized as "Unknown." However, while a synthetic route could not be determined with certainty, supporting analytical data indicates that natural ephedra was used during the manufacture of the methamphetamine.

THAILAND

One sample of crystalline material seized in December 2023 was submitted by the Bangkok Country Office. The sample was found to contain 98% d-methamphetamine HCl and was determined to be manufactured via reductive amination with phenyl-2-propanone as the precursor. The primary precursor to phenyl-2-propanone was unable to be conclusively determined.

TURKEY

Two samples of crystalline material seized in the Arabian Sea in February 2023 were submitted by the Ankara Country Office. Both samples were found to contain 98% d-methamphetamine HCl. The samples submitted lacked characteristic impurities needed for profiling and was therefore characterized as "Unknown." However, while a synthetic route could not be determined with certainty, supporting analytical data indicates that natural ephedra was used during the manufacture of the methamphetamine.

In addition, the program also received five samples each consisting of a various number of suspected captagon tablets seized in the Arabian Sea in February 2023. The results were as follows:

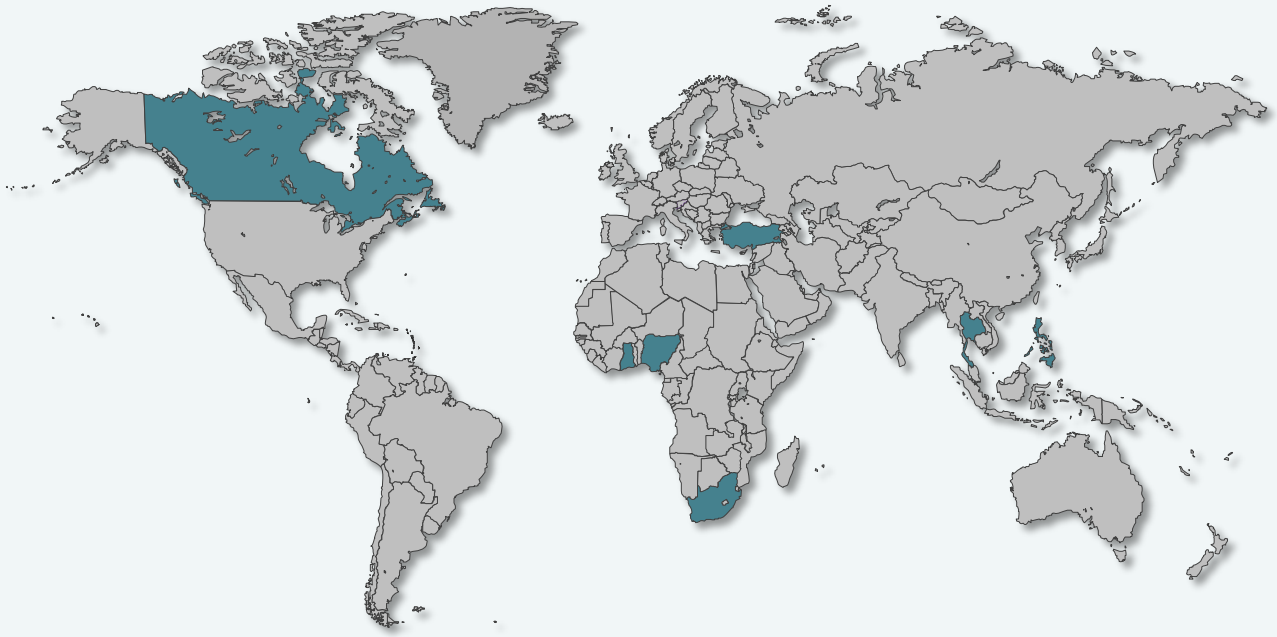
- A sample consisting of 6 beige tablets were found to contain 20.1% (34 mg/tab) amphetamine and caffeine.
- A sample consisting of 10 brown tablets were found to contain 22.9% (45 mg/tab) amphetamine, caffeine, and methorphan.
- A sample consisting of 13 brown tablets were found to contain 22.8% (38 mg/tab) amphetamine, caffeine, methorphan, and theophylline.
- A sample consisting of 10 brown tablets were found to contain 24.1% (37 mg/tab) amphetamine, caffeine, diphenhydramine, lidocaine, methorphan, and theophylline.
- A sample consisting of 10 beige tablets were found to contain 19.5% (32 mg/tab) amphetamine and caffeine.

FOREIGN SUBMISSIONS

FOREIGN SUBMISSION SUMMARY

Samples Eligible for Methamphetamine Profiling

COUNTRY	# OF SAMPLES	AVERAGE PURITY (%)	PURITY RANGE (%)	MANUFACTURING ROUTE/PRECURSOR
CANADA	6	95.6	88.7 to 98.7	Reductive Amination/P2P (n=6)
PHILIPPINES	6	98.9	98.5 to 99.1	Reductive Amination/P2P (n=5) Unknown (n=1)
NIGERIA	3	41.0	0 to 75.6	Phosphorous-Iodine/Natural ephedra (n=1) Insufficient Sample (n=1) No Controlled Substances (n=1)
GHANA	2	---	96.6	Insufficient Sample (n=1) N/A (MDMA sample)
SOUTH AFRICA	1	---	48.0	Unknown/Natural Ephedra (n=1)
THAILAND	1	---	98.0	Reductive Amination/P2P (n=1)
TURKEY	2	98.0	98.0-98.1	Unknown/Natural Ephedra (n=2)



BACKGROUND INFORMATION

SAMPLING PLAN

To limit sample submissions while still providing a comprehensive picture for the entire United States, the MPP established guidelines for sample submissions from the DEA regional laboratories. All port-of-entry (POE) exhibits are MPP eligible; however, submissions are limited to a specified number of exhibits based on POE seizure location. For non-POE exhibits, regional laboratories will limit MPP submissions to the first "n" seizures received each month (the number "n" varies by laboratory) that meet the established criteria for MPP analysis. The exhibit must contain methamphetamine in solid form as the primary drug (tablets are excluded), with a purity greater than or equal to 10%. For exhibits meeting the criteria, a 3 gram exemplar of non-composite material is removed for MPP analysis. In addition, all laboratories submit one exemplar of finished product from each domestic clandestine laboratory seizure.

METHAMPHETAMINE SYNTHETIC ROUTE CLASSIFICATIONS

Based on the data collected from various analytical techniques, samples are classified by route of synthesis as follows:

REDUCTIVE AMINATION (RA): samples containing impurities and markers related to the use of P2P as a precursor in a reductive amination reaction

PHOSPHORUS-IODINE: samples indicating pseudoephedrine or ephedrine as the precursor, containing organic and inorganic impurities related to a reaction utilizing various forms of iodine and phosphorus (elemental iodine and phosphorus, hydroiodic acid, hypophosphorus acid)

METAL HYDROGENTATION: samples indicating pseudoephedrine or ephedrine as the precursor, containing organic and inorganic impurities related to a reaction utilizing a chlorinating agent such as thionyl chloride, hydrogen gas, and a catalyzing agent such as platinum or palladium.

MIXED ROUTE: samples containing synthetic markers from two or more different manufacturing routes are determined to have a mixed route

UNKNOWN: samples void of the impurity information needed to establish a manufacturing route, usually high-purity methamphetamine samples

BACKGROUND INFORMATION

ESSENTIAL CHEMICALS FOR METHAMPHETAMINE PRODUCTION VIA REDUCTIVE AMINATION

Synthesis of methamphetamine via a reductive amination synthetic route remains the dominant observation of domestically seized exemplars undergoing analysis in the Methamphetamine Profiling Program. As such, the Special Testing and Research Laboratory has compiled a listing of what are considered essential chemicals needed to manufacture methamphetamine in this manner. While not all-inclusive of every chemical needed in the manufacturing process, the following list offers guidance as to which essential chemicals are likely to be found at a clandestine site.

Phenyl Acetone (P2P, BMK)	**Methylamine**	**Phenylacetic Acid**
Formic Acid	**Tartaric Acid**	**N-methyl formamide**
Sodium (or Potassium) **Cyanide**	**Benzyl Chloride** (or Bromide)	**Benzyl Alcohol**
Lead Acetate	**Ammonium Chloride**	**Benzyl Cyanide**
Formaldehyde (formylin 37% solution)	**Methyl Thioglycolate** (MTG)	**Azobisisobutyronitrile** (AIBN)