



DEA TOX

DRUG ENFORCEMENT ADMINISTRATION
TOXICOLOGY TESTING PROGRAM

QUARTERLY REPORT

Third Quarter – 2022



**U.S. Department of Justice
Drug Enforcement Administration
Diversion Control Division
Drug and Chemical Evaluation Section**

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Introduction

The Drug Enforcement Administration’s Toxicology Testing Program (DEA TOX) began in May 2019 as a surveillance program aimed at detecting new psychoactive substances within the United States. In response to the ongoing synthetic drug epidemic, the Drug Enforcement Administration (DEA) awarded a contract with the University of California at San Francisco (UCSF) to analyze biological samples generated from overdose victims of synthetic drugs.

In many cases, it can be difficult to ascertain the specific substance responsible for the overdose. The goal of DEA TOX is to connect symptom causation to the abuse of newly emerging synthetic drugs (e.g. synthetic cannabinoids, synthetic cathinones, synthetic opioids, other hallucinogens, etc.).

DEA has reached out to local health departments, law enforcement partners, poison centers, drug court laboratories, hospitals, and other medical facilities to offer testing of leftover or previously collected samples for analysis of synthetic drugs. DEA TOX is interested in patients thought to have ingested a synthetic drug, where the traditional drug screen has produced little or no viable options to explain the symptoms exhibited by the patient (alcohol and THC are exempted). DEA TOX may approve leftover unused biological samples (or biological samples) or occasionally non-biological samples for testing from a medical facility or law enforcement partner only.

Once DEA TOX is contacted (DEATOX@DEA.GOV) and upon approval by DEA of the request for testing of specific samples, the originating laboratory is invited to send their samples to the Clinical Toxicology and Environmental Biomonitoring (CTEB) Laboratory at UCSF. DEA covers the full cost of analysis for each sample approved for testing. Using liquid chromatography quadrupole time-of-flight mass spectrometry, synthetic drugs identified within the samples are confirmed and quantified. Levels denoted in the tables below with a defined range represent the low and high concentrations reported when the frequency of detection is greater than one. The CTEB laboratory currently maintains a comprehensive drug library consisting of the following:

- 912 new psychoactive substances (**NPS**);
- 161 traditional illicit drugs (**TID**);
- 93 prescription or over-the-counter (**OTC**) drugs;
- 27 dietary supplement stimulants (**DSS**); and
- Multiple precursor chemicals, additives or impurities (**P/A/I**)

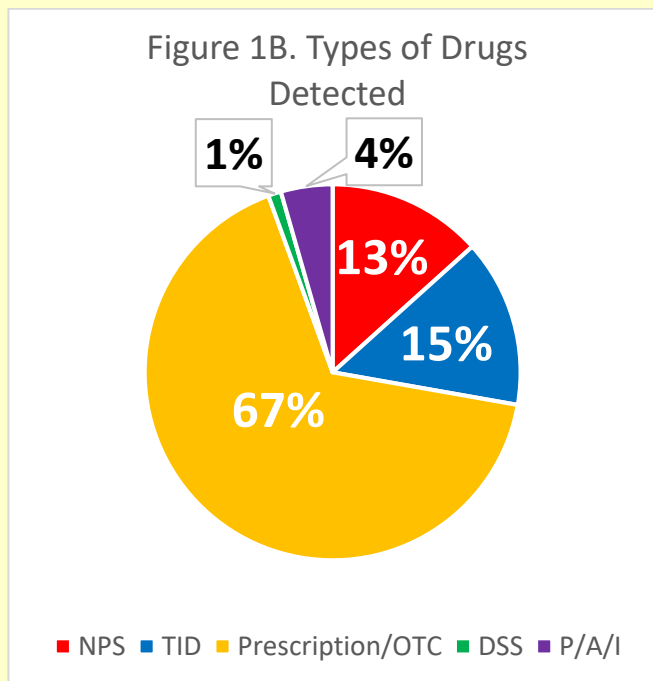
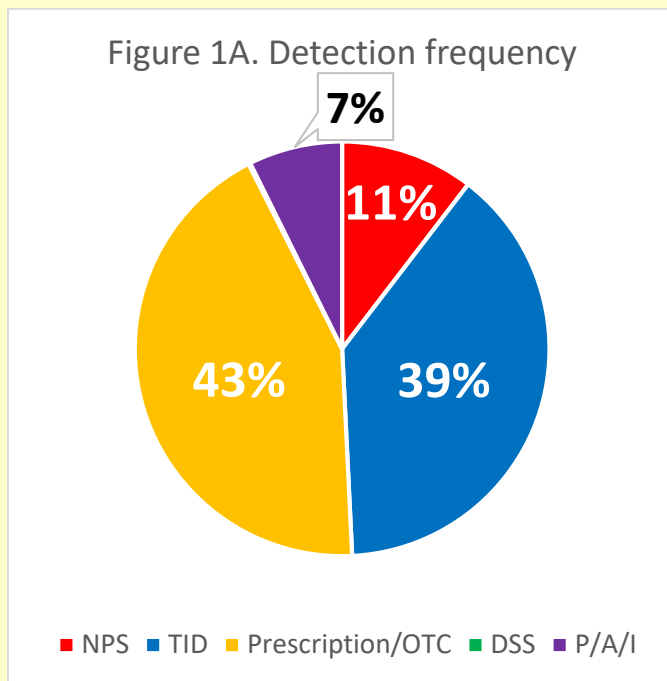
This publication presents the results of cases analyzed and completed by the CTEB laboratory from July 1, 2022 through September 30, 2022.

Summary

Between July 1, 2022 through September 30, 2022, 100 biological samples and 1 drug product from 97 cases originating from 10 states namely, Georgia (3), Kentucky (41), Louisiana (3), Nebraska (3), New York (2), Oregon (3), Tennessee (27), Texas (4), Utah (3), and Wisconsin (8) were submitted to DEA TOX. These samples were analyzed for NPS, TID, prescription or OTC drugs, DSS, and P/A/I. The biological samples submitted consisted of 14 serum, 3 plasma, 43 whole blood, and 40 urine samples. The drug product is further described on page 14.

DEA TOX identified and confirmed a total of 711 drugs and metabolites that consisted of 74 NPS detections, 276 TID detections, 308 prescription or OTC drug detections, 1 DSS¹, and 52 P/A/I detections during this reporting period (Figure 1A). While some drugs identified could be placed in more than one category, for purposes of this report and for consistency, DEA TOX placed such substances in a single category only. Many prescription drugs that are commonly abused and encountered are listed as TID. Substances that are not approved by the Food and Drug Administration for medical use within the U.S. are considered NPS.

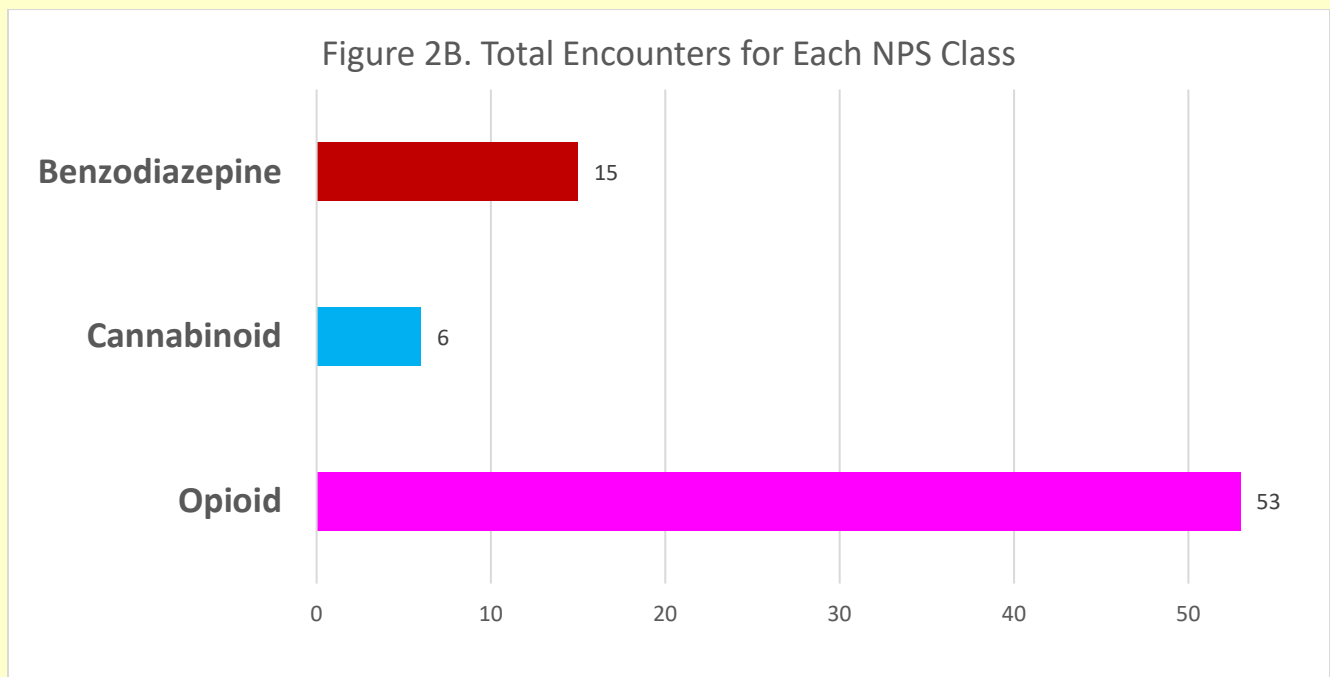
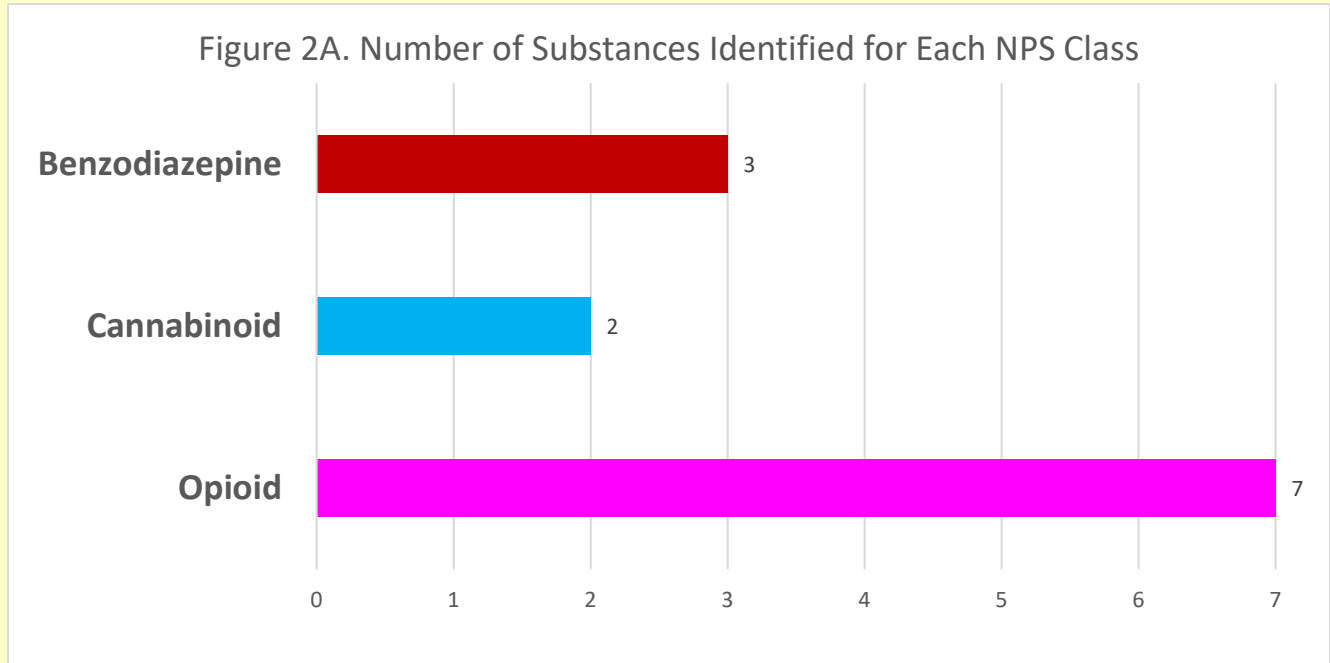
A breakdown of the 711 total drug and metabolite confirmations demonstrated 90 different drugs, which consisted of 12 NPS, 13 TID, 60 prescription and OTC drugs, 1 DSS and 4 P/A/I (Figure 1B). **Of the cases submitted this quarter, 41 out of the 97 cases (42%) detected at least one NPS.**



¹ The single detection for the DSS category generated a value of 0.14% thus is not shown in Figure 1A

New Psychoactive Substances

DEA TOX confirmed 74 detections comprising of 12 NPS^s (Table 1) from three different classes of drugs (Figure 2A) in the third quarter of 2022. Two of these detections are further demonstrated in Table 6. The total encounters for each NPS class are summarized in Figure 2B.



Drug Enforcement Administration – Toxicology Testing Program

Table 1. NPS detected – Third Quarter 2022

Drug Class	Drug	Freq.	States Found*	Confirmed Levels (ng/mL)**			
				S	P	WB	U
Benzodiazepine	8-Amino clonazolam	9	GA, KY, LA, TN(6)			0.4-47.2	471
	Bromazolam	5	TN(5)			1.1-55.6	
	Flubromazepam	1	TN			1.1	
Cannabinoid	Delta-8-THC	2 [‡]	KY(2)				128
	Delta-10-THC	1 [‡]	KY				
	11-nor-9-carboxy-delta-8-THC	3	KY(2), TX		178		107-3230
Opioids	5-Amino isotonitazene	1	TN			1.2	
	7-OH Mitragynine	1	KY				1370
	Despropionyl <i>para</i> -fluorofentanyl	10	GA(2), NE, TN(7)			0.2-3.2	
	Isotonitazene	1	TN			0.9	
	Metonitazene	7	TN(7)			1.1-10.1	
	Mitragynine	6	KY(2), LA, TN(2), UT	44.4		0.7-66.3	261
	N-Piperidinyl etonitazene	3	TN(3)			1.6-12	
	N-Pyrrolidino etonitazene	1	LA			1.1	
	<i>para</i> -Fluoro acetylfentanyl	1	TN			0.4	
	<i>para</i> -Fluorofentanyl	22	GA(3), KY(2), NE(2), TN(15)	1.9		0.4-35.1	3-17.9

* GA – Georgia; KY – Kentucky; LA- Louisiana; NE– Nebraska; TN – Tennessee; TX- Texas; UT – Utah

**S – Serum; P – Plasma; WB – Whole Blood; U – Urine

‡ - Identified in drug paraphernalia (see Table 6)

§ - Parent drugs or metabolites are only counted once for the number of drugs detected in Tables 1-5. If only a metabolite is encountered in the absence of a parent drug, it will still be counted as a unique drug. Both parent drugs and metabolites are counted as detections.

Traditional Illicit Drugs

DEA TOX confirmed 276 detections comprising of 13 TIDs[§] (Table 2) in the third quarter of 2022.

Table 2. TID detected – Third Quarter 2022

Drug Class	Drug	Freq.	States Found*	Confirmed Levels (ng/mL)**			
				S	P	WB	U
Amphetamine	4-OH Methamphetamine	6	KY(6)				28.0-637
	Amphetamine	18	KY(6), TN(7), TX, OR, UT(2), WI	23.0-104	45.6	8.1-271	722-3130
	Methamphetamine	37	KY(17), NE(2), OR, TN(12), TX, UT(2), WI(2)	158	20.5-1430	1.1-4510	1.5-90100
Arylcyclohexylamine	Ketamine	6	KY(6)	9.1-120.3			
Cannabinoid	11-nor-9-carboxy-delta-9-THC	13	KY(7), OR, UT, TN(2), TX, WI	84.3-232		37.6-55.4	66.5-38800
	11-OH-delta-9-THC	1	KY				685
	Cannabidiol	1	KY	NQ	NQ	NQ	NQ
	Delta-9-THC	1	UT				99.5
Cocaine	Benzoyllecgonine	27	GA(4), KY(13), NE(2), OR, UT, TN(3), WI(3)	12.3-319		11.3-1060	4.7-291000
	Cocaethylene	9	GA(3), KY(3), NE, TN(2)	NQ	NQ	NQ	NQ
	Cocaine	16	GA(3), KY(6), NE, TN(3), WI(3)	17.4		6.0-66.9	43.3-6850
	Ecgonine methyl ester	17	GA(2), KY(9), OR, TN(2), WI(3)	NQ	NQ	NQ	NQ
Opioids	6-Acetylmorphine	1	WI				261
	Beta-hydroxy fentanyl	9	KY(3), TN(5), NE			0.5-2.2	4.3-14.5
	Codeine	5	UT, TN(4)			0.2-2.3	
	Desmethyl-cis-tramadol	2	KY(2)				5.2-15.8
	Fentanyl	46	GA(2), KY(13), NE(2), OR, TN(21), TX(3), UT, WI(3)	0.8-1.9		1.1-106	7.5-212
	Hydrocodone	4	KY(2), TN(2)			0.2-5.6	51.2-143

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Drug Class	Drug	Freq.	States Found*	Confirmed Levels (ng/mL)**			
				S	P	WB	U
	Hydromorphone	4	KY, TN(3)			11.0-16.4	51.3
	Morphine	13	KY, TN(10), UT, WI			0.6-113	1520-8160
	Norfentanyl	30	KY(14), NE(2), OR, TN(9), TX, WI(3)	0.1-0.6		0.2-11.4	3.6-42800
	Oxycodone	9	KY, LA, TN(5), WI(2)		20.2	0.6-52.5	151-157000
	Tramadol	1	KY				16.4

* GA – Georgia; KY – Kentucky; LA – Louisiana; NE– Nebraska; OR – Oregon; TN – Tennessee; TX – Texas; UT – Utah; WI – Wisconsin

**S – Serum; P – Plasma; WB – Whole Blood; U – Urine; NQ – Not Quantified

§ - Parent drugs or metabolites are only counted once for the number of drugs detected in Tables 1-5. If only a metabolite is encountered in the absence of a parent drug, it will still be counted as a unique drug. Both parent drugs and metabolites are counted as detections.

Prescription and Over the Counter Drugs

DEA TOX confirmed 308 detections comprising of 60 prescription or OTC drugs[§] (Table 3) in the third quarter of 2022. Drugs for the prescription/OTC drugs panel are not typically quantitated unless specifically requested thus “Confirmed Levels” are not provided.

Table 3. Prescription or OTC drugs detected – Third Quarter 2022

Drug Class	Drug	Freq.	States Found*
Anesthetic	Lidocaine	18	KY (8), NE, TN (6), UT (2), WI
Antibiotic	Sulfomethoxazole	2	KY, TN
Anticonvulsant	Carbamazepine	2	KY
	Gabapentin	17	KY(5), NE, TN(11)
	Lamotrigine	2	KY (2)
	Levetiracetam	2	GA, TN
	Oxcarbazepine	3	KY (3)
Antidepressant	Amitriptyline	3	KY (3)
	Citalopram	6	KY, NE, OR, TX, UT(2)
	Fluoxetine	2	KY, LA
	mCPP**	6	KY, LA, TN(2), UT, WI
	Nordoxepin	1	KY
	Norfluoxetine	2	KY, LA
	Nortriptyline	3	KY (3)
	Sertraline	3	GA, KY, NE
	Trazodone	7	KY, LA, TN(3), UT, WI
	Venlafaxine	2	KY (2)
Antidiarrheal	Loperamide	3	KY, TN, WI
Antihistamine	Chlorpheniramine	2	KY, TN
	Diphenhydramine	23	KY(8), TN(13), TX, UT
	Hydroxyzine	6	KY(3), UT, WI(2)
	Promethazine	3	KY, TN, WI
Antipsychotic	Aripiprazole	2	GA, TN
	Clozapine	1	KY
	Haloperidol	1	UT
	Olanzapine	3	KY(2), UT
Antiretroviral	Emtricitabine	1	WI
	Tenofovir	1	WI
Anxiolytic	Buspirone	2	TN (2)

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Drug Class	Drug	Freq.	States Found*
Benzodiazepine	7-amino Clonazepam	6	GA, KY(2), LA, TN, UT
	7-amino Nitrazepam	1	GA
	Alpha-hydroxy Alprazolam	5	KY, TN(2), UT, WI
	Alprazolam	8	KY, TN(5), UT, WI
	Chlordiazepate	2	KY, WI
	Clobazam	2	KY (2)
	Clonazepam	1	LA
	Diazepam	8	KY(3), TN(3), TX, UT
	Lorazepam	9	GA, KY(7), UT
	Midazolam	16	KY(11), LA, OR, TN, UT, WI
	Nordiazepam	9	KY(4), TN(3), TX, UT
	Oxazepam	4	KY(3), TN
	Temazepam	3	TN(2), TX
Cardiovascular	Amiodarone	3	LA, TN(2)
	Atenolol	1	GA
	Atorvastatin	2	KY, TN
	Atropine	2	KY (2)
	Diltiazem	1	WI
	Lisinopril	1	KY
	Metoprolol	1	WI
	Warfarin	1	WI
Cough Suppressant	Dextromethorphan	4	GA, KY(2), NE
	Dextrophan	2	KY (2)
Diuretic	Furosemide	3	KY(2), WI
Muscle Relaxant	Baclofen	3	KY(2), UT
	Cyclobenzaprine	2	KY, WI
	Methocarbamol	1	TN
Opioid	Buprenorphine	5	KY(3), TN, UT
	EDDP	3	GA, KY, NE
	Methadone	4	GA, KY, NE, TN
	Naloxone	32	KY(14), LA, NE(2), TN(11), TX(3), WI
	Norbuprenorphine	2	KY (2)
	Remifentanilic acid	1	LA
Pain Reliever	Acetaminophen	23	KY(16), LA, TN(3),TX, UT, WI
	Naproxen	2	KY, NE
Respiratory	Albuterol	1	KY
Stimulant	Methylphenidate	1	TN
Tuberculostatic	Levofloxacin	3	GA, TN(2)
	Linezolid	1	GA

* GA – Georgia; KY – Kentucky; LA – Louisiana; NE– Nebraska; OR – Oregon; TN – Tennessee;

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TX – Texas; UT – Utah; WI – Wisconsin

**mCPP is an expected metabolite of trazadone

§ - Parent drugs or metabolites are only counted once for the number of drugs detected in Tables 1-5. If only a metabolite is encountered in the absence of a parent drug, it will still be counted as a unique drug. Both parent drugs and metabolites are counted as detections.

Dietary Supplement Stimulants

DEA TOX confirmed one detection of one DSS (Table 4) in the third quarter of 2022.

Table 4. DSS detected – Third Quarter 2022

Drug Class	Drug	Freq.	States Found*
Stimulant	Yohimbine	1	LA

* LA – Louisiana

§ - Parent drugs or metabolites are only counted once for the number of drugs detected in Tables 1-5. If only a metabolite is encountered in the absence of a parent drug, it will still be counted as a unique drug. Both parent drugs and metabolites are counted as detections.

Precursors/Additives/Impurities

DEA TOX confirmed 52 detections comprising of four P/A/I[§] (Table 5) in the third quarter of 2022.

Table 5. P/A/I detected – Third Quarter 2022

Drug Class	Drug	Freq.	States Found*	Confirmed Levels (ng/mL)**			
				S	P	WB	U
Additive	Quinine	1	KY	NQ	NQ	NQ	NQ
	Xylazine	15	KY(3), TN(12)			0.6-35.4	60.9-139
Impurity	N,N-Dimethylamphetamine	10	KY(5), NE, TN(3), TX	NQ	NQ	NQ	NQ
Precursor	4-ANPP	26	GA, KY(3), NE, TN(21)			0.2-6.1	4.8-26.6

* GA – Georgia; KY – Kentucky; NE – Nebraska; TN – Tennessee; TX – Texas

**S – Serum; P – Plasma; WB – Whole Blood; U – Urine; NQ – Not Quantified

§ - Parent drugs or metabolites are only counted once for the number of drugs detected in Tables 1-5. If only a metabolite is encountered in the absence of a parent drug, it will still be counted as a unique drug. Both parent drugs and metabolites are counted as detections.

Drug Paraphernalia

DEA TOX received one exhibit (Figure 3) and confirmed two detections⁵ (Table 6) in this product in the third quarter of 2022.

Table 6. Drug Product exhibit #1– Third Quarter 2022

Drug Class	Drug	State Found	Confirmed Levels: mg of drug/gram of drug product (%)	Actual Amount within Drug Product
Cannabinoid	Delta-8 THC ¹	Kentucky	600 (60.0)	155 mg
Cannabinoid	Delta-10 THC ¹		212 (21.2)	55 mg
Exhibit 1: Total Weight of Vape Liquid – 259.1 mg				

¹ – Substance included in NPS category for Figures 1A, 1B, 2A, and 2B

Figure 3: Drug Product exhibit #1



Contact Information

We invite medical and law enforcement facilities to contact our program if you encounter an overdose of a suspected synthetic drug and desire to have any leftover biological samples (blood preferred) analyzed further for such synthetic substances.

- **Sample Qualifications:**

- Patients thought to have ingested a synthetic drug, where the traditional drug screen has produced little or no viable options to explain the symptoms exhibited by the patient (alcohol and THC are exempted).

- **How to Contact Us and Send Your Samples:**

- Once the above qualifications are satisfied:
 - Email DEATOX@DEA.GOV with a brief description of the case (including initial toxicology screen and history) and a request for testing.
 - DEA will respond to each inquiry, and if approved, will send the instructions for packing and shipping of sample(s) to UCSF.
 - The main reason for disapproval of a case would be the identification of substances including methamphetamine, heroin, fentanyl, cocaine, LSD, PCP etc. in a routine toxicology screening at your facility.
 - This program's goal is to connect symptom causation to abuse of newly emerging synthetic drugs (e.g. synthetic cannabinoids, synthetic cathinones, fentanyl-related substances, other hallucinogens etc.).
- Ensure that you de-identify and label the sample with a numerical value, sex, date of birth or age, and the date and time the sample was collected in accordance with the labeling instructions (sent with shipping instructions).
- Keep a master list of the patients and the numerical values you allocated to each sample at your institution.

- **Cost of Sample Analysis:**

- DEA will cover the full cost of testing the patient samples.
 - The sender will only be responsible for paying for packing and shipping samples to UCSF.

- **Turn-around Time:**

- Results are expected within three to four weeks of receipt of the sample at UCSF except in rare occurrences when a novel substance is identified.

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**Clinical Toxicology
and Environmental Biomonitoring Laboratory**