



DEA TOX

DRUG ENFORCEMENT ADMINISTRATION
TOXICOLOGY TESTING PROGRAM

QUARTERLY REPORT

2nd Quarter – 2021



**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, fentanyl-related substances, 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 un-used biological samples (or 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. The CTEB laboratory currently maintains a comprehensive drug library consisting of 910 new psychoactive substances (NPS), 161 traditional illicit drugs (TID), and 92 prescription or over-the-counter (OTC) drugs. Six of the TIDs were moved to a new category consisting of 15 dietary supplement stimulants (DSS) and a fifth category consisting of precursor chemicals, additives or impurities (P/A/I) was also added to separate these substances from NPS.

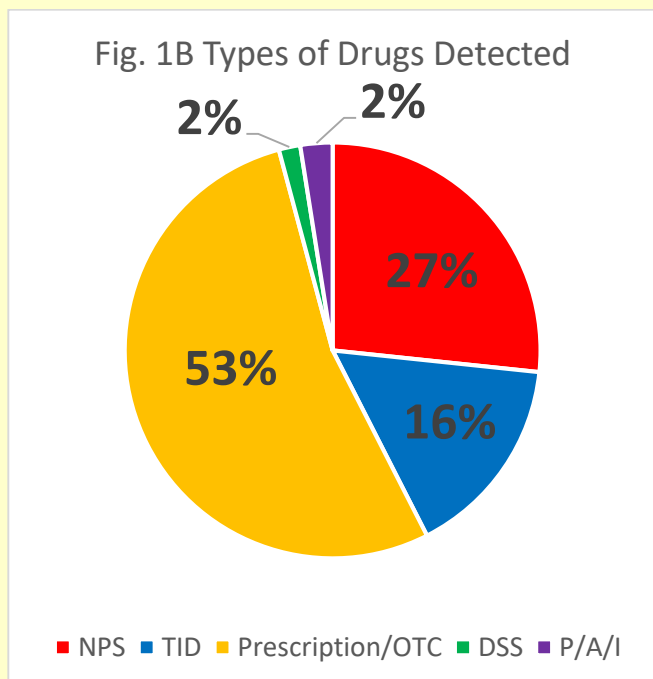
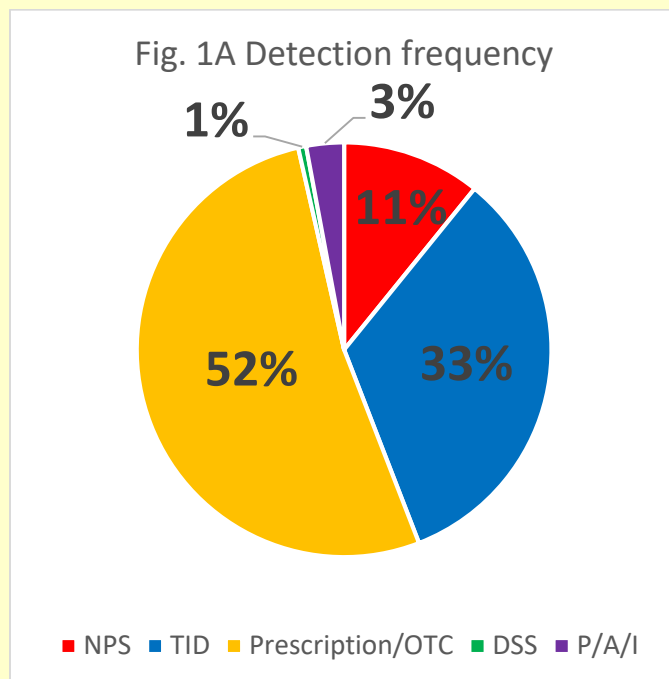
This publication presents the results of cases analyzed and completed by the CTEB laboratory from April 1, 2021 through June 30, 2021.

Summary

Between April 1, 2021 through June 30, 2021, biological samples from 130 cases originating from fifteen states namely Alabama (10), California (25), Colorado (1), Idaho (2), Illinois (2), Kansas (2), Kentucky (9), Minnesota (25), Nebraska (1), New York (3), North Carolina (1), Ohio (35), Oregon (9), Pennsylvania (3) and Texas (2) were submitted to DEA TOX. These samples were analyzed for NPS, TID, prescription or OTC drugs, DSS and (P/A/I).

DEA TOX identified and confirmed a total of 646 drugs and metabolites that consisted of 70 NPS detections, 215 TID detections, 338 prescription or OTC drug detections, 4 DSS detections, and 19 P/A/I detections during this reporting period (Fig. 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. 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 646 total drug and metabolite confirmations demonstrated 120 different drugs, which consisted of 32 NPS, 19 TID, 64 prescription and OTC drugs, 2 DSS, and 3 P/A/I (Fig. 1B).

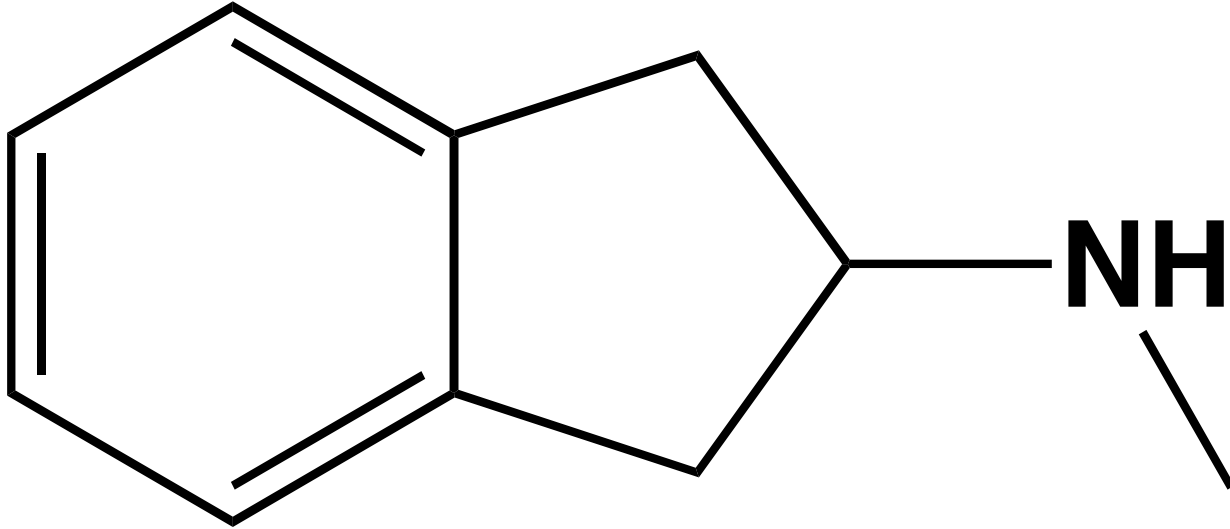


DEA TOX ALERTS

For more information, please visit:

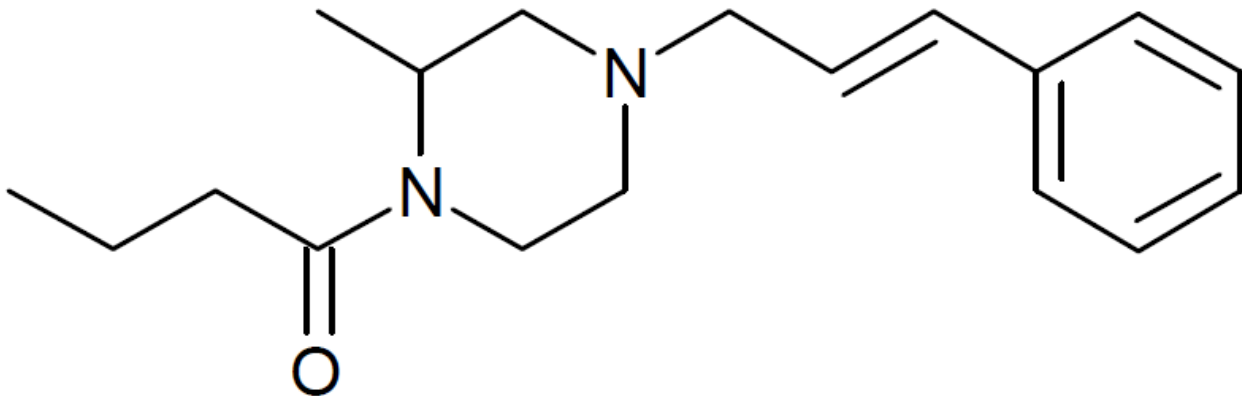
https://www.deadiversion.usdoj.gov/dea_tox/index.html

N-Methyl-2-Aminoindane (NM-2-AI) – May 13, 2021



https://www.deadiversion.usdoj.gov/dea_tox/announcements/NM-2-AI.pdf

2-Methyl AP-237– June 11, 2021



https://www.deadiversion.usdoj.gov/dea_tox/announcements/2-Methyl AP-237.pdf

New Psychoactive Substances

DEA TOX confirmed 70 detections comprising of 32 NPS^s (Table 1) from eight different classes of drugs (Figure 2A) in the 2nd quarter of 2021. The total encounters for each NPS class are summarized in Figure 2B.

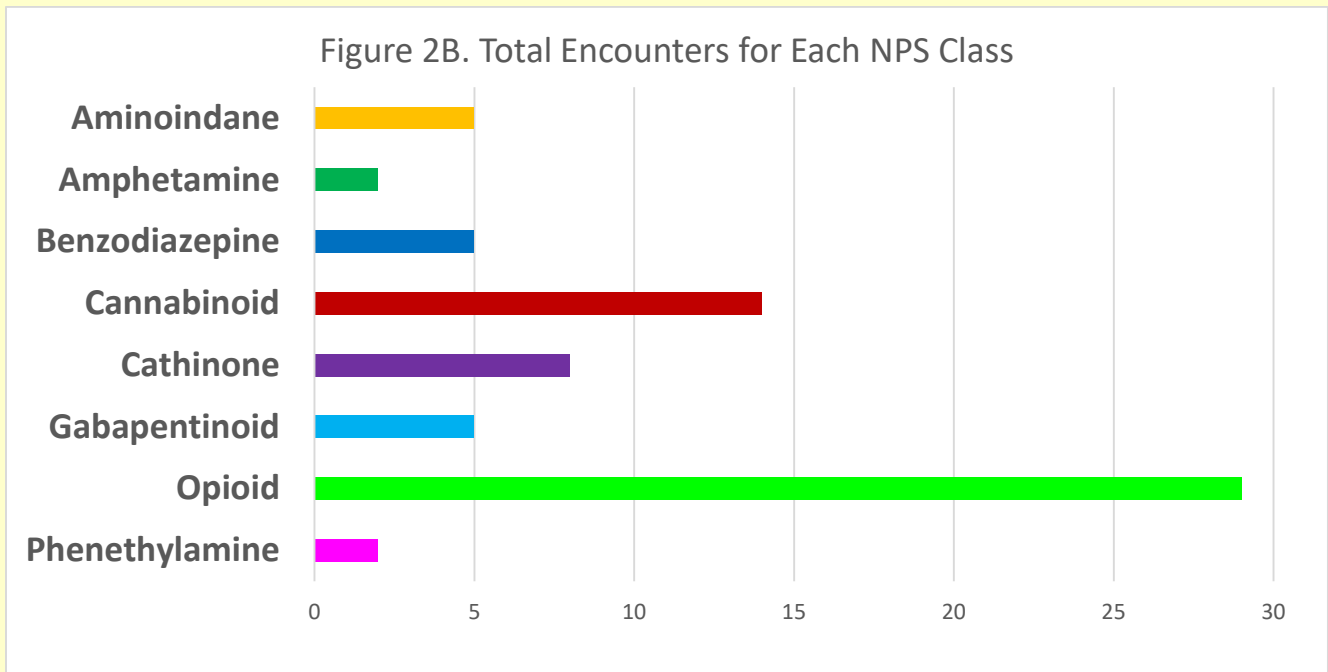
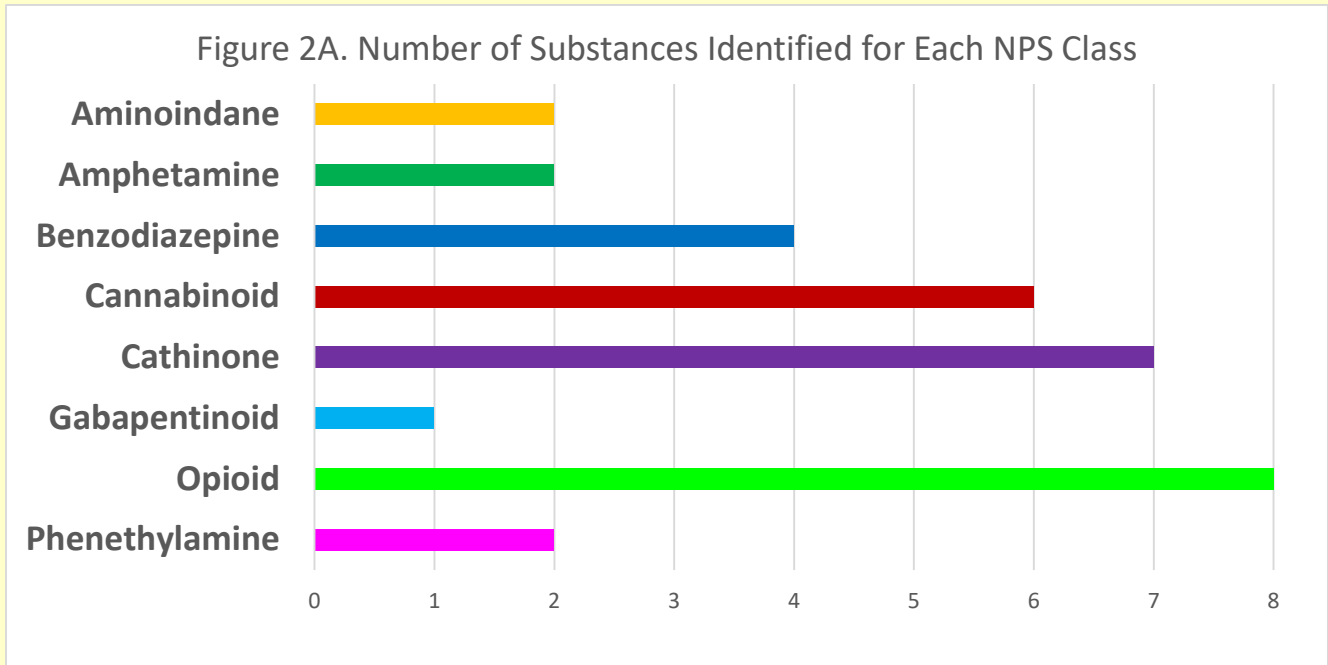


Table 1. NPS detected – Second Quarter 2021

| Class | Drug | Detection | Sites |
|----------------|------------------------------|-----------|----------------------|
| Aminoindane | 2AI | 1 | MN |
| | NM-2AI | 4 | CA(2), MN(2) |
| Amphetamine | Ethylamphetamine | 1 | CA |
| | PMA | 1 | MN |
| Benzodiazepine | Bromazolam | 1 | KY |
| | Clonazolam | 1 | OR |
| | Etizolam | 1 | KS |
| | Flualprazolam | 2 | CA, OH |
| Cannabinoid | 4CN-AMB-BUTINACA | 2 | MN |
| | 4F-BUTINACA-acid | 1 | KY |
| | 11-nor-9-carboxy-delta-8-THC | 1 | TX |
| | ADB-BUTINACA | 7 | CO, KY (5), NY |
| | ADB-BUTINACA acid metabolite | 1 | KY |
| | Mepirapim | 1 | MN |
| | MDMB-4en-PINACA acid | 1 | KS |
| Cathinone | 4-fluoro-3-methyl-alpha-PVP | 1 | NC |
| | Buphedrone | 1 | CA |
| | Butylone | 1 | KY |
| | Diethylpropion | 1 | IL |
| | Ethylone | 1 | IL |
| | N-ethyl Hexylone | 1 | MN |
| | NRG-3 | 2 | MN |
| Gabapentinoid | Phenibut | 5 | AL(4), KY |
| Opioid | 2-methyl-AP-237 | 2 | KS, NE |
| | 7-OH Mitragynine | 2 | OH |
| | Acetylfentanyl | 3 | CA, OH(2) |
| | Beta-hydroxy Fentanyl | 11 | CO, IL, KY, OH(8) |
| | Butonitazene | 1 | NC |
| | Meta-fluoro Fentanyl | 1 | OH |
| | Methoxyacetylfentanyl | 2 | OH |
| | Mitragynine | 6 | CA, KY, OH(2), OR(2) |
| | U-48800 | 1 | MN |
| Phenethylamine | 2C-H | 1 | MN |
| | 2C-P | 1 | NC |

AL – Alabama; CA – California; CO – Colorado; IL – Illinois; KS – Kansas; KY – Kentucky;
 MN – Minnesota; NE – Nebraska; NY – New York; NC – North Carolina; OH – Ohio;
 OR – Oregon; TX – Texas

Traditional Illicit Drugs

DEA TOX confirmed 215 detections comprising of 19 TIDs[§] (Table 2) in the second quarter of 2021.

Table 2. TID detected – Second Quarter 2021

| Class | Drug | Detection | Location |
|---------------------|------------------------------|-----------|---|
| Amphetamine | 4-Hydroxymethamphetamine | 16 | CA(5), CO, ID(2), MN(5), OH(3) |
| | Amphetamine | 23 | CA(7), CO, ID(2), MN(8), OH(4), OR |
| | MDA | 7 | AL, MN(6) |
| | MDEA | 1 | OR |
| | MDMA | 2 | AL, OH |
| | Methamphetamine | 33 | AL, CA(11), CO(2), ID(2), KY, MN(9), OH(4), OR(3) |
| Arylcyclohexylamine | Ketamine | 1 | CA |
| Cannabinoid | 11-nor-9-carboxy-delta-9-THC | 15 | CA(9), ID, MN(3), NE, OR |
| | Cannabidiol | 1 | CA |
| Cocaine | Benzoyllecgonine | 21 | CA(4), CO, KY(3), MN(2), NC, NE, OH(5), OR(4) |
| | Cocaethylene | 1 | OH |
| | Cocaine | 8 | CA(2), KY(2), NE, OH(3) |
| | Ecgonine Methyl Ester | 10 | IL, KY(3), MN, NE, OH(4) |
| Opioid | 6-acetyl morphine | 3 | OH |
| | Acetyl codeine | 1 | OR |
| | Codeine | 1 | CA |
| | Fentanyl | 24 | CO(2), ID(2), IL(2), KY, MN, OH(10), OR(5), PA |
| | Heroin | 1 | CA |
| | Hydrocodone | 4 | CA, KY, OH(2) |
| | Morphine | 9 | CA(4), KY, OH(4) |
| | Norfentanyl | 23 | CO(2), ID, IL, KY(4), MN, OH(11), OR(2), PA |
| | Oxycodone | 6 | CA, KY, OH(4) |
| | Oxymorphone | 2 | CA |
| Thebaine | 1 | KY | |
| Phenethylamine | Mescaline | 1 | CA |

AL – Alabama, CA – California; CO – Colorado; ID – Idaho; IL – Illinois; KY – Kentucky; MN – Minnesota; NE – Nebraska; NC – North Carolina; OH – Ohio; OR – Oregon; PA – Pennsylvania

Prescription and Over the Counter Drugs

DEA TOX confirmed 338 detections comprising of 64 prescription or OTC drugs⁵ (Table 3) in the second quarter of 2021.

Table 3. Prescription or OTC drugs detected – Second Quarter 2021

| Class | Drug | Detection | Location |
|-----------------------|-------------------------|-----------|---|
| Anesthetic | Lidocaine | 9 | CA, ID(2), IL, KS, MN(2), TX(2) |
| Antidiarrheal | Loperamide | 2 | CA, OH |
| Antibiotic | Sulfomethoxazole | 3 | CA(2), OH |
| Anticonvulsant | Carbamazepine | 1 | OH |
| | Lamotrigine | 4 | KY(3), OH |
| | Levetiracetam | 1 | NY |
| | Oxcarbazepine | 5 | CA(2), MN(3) |
| | Topiramate | 1 | MN |
| Antidepressant | Citalopram | 11 | AL, CA, KY(2), MN(2), OH(4), PA |
| | Doxepin | 1 | OH |
| | Fluoxetine | 1 | MN |
| | mCPP* | 13 | CA, MN(2), OH(10) |
| | Nordoxepin | 1 | OH |
| | Paroxetine | 1 | MN |
| | Sertraline | 11 | AL, CA(2), NY, OH(7) |
| | Trazodone | 13 | CA, MN(2), OH(10) |
| | Venlafaxine | 1 | CA |
| Antidiabetic | Metformin | 1 | KY |
| Antihistamine | Chlorpheniramine | 2 | KS, MN |
| | Diphenhydramine | 21 | AL, CA(2), IL(2), KY, MN(2), OH(12), PA |
| | Doxylamine | 2 | CA, OR |
| | Hydroxyzine | 7 | MN(5), OH(2) |
| | Promethazine | 1 | OH |
| Antipsychotic | Aripiprazole | 2 | KY |
| | Haloperidol | 6 | CA(3), MN(2), PA |
| | Olanzapine | 11 | CA(2), KY, MN(8) |
| | Risperidone | 1 | OH |
| | Ziprasidone | 1 | MN |
| Anxiolytic | Buspirone | 2 | MN, NY |
| Benzodiazepine | 7-Aminoclonazepam | 2 | OH |
| | Alpha-Hydroxyalprazolam | 3 | CA, KS, OH |
| | Alprazolam | 6 | CA, KS, NE, OH(3) |
| | Chlordiazepate | 1 | CA |

Table 3 continued

| Class | Drug | Detection | Location |
|-------------------------------------|------------------------|-----------|------------------------------------|
| Benzodiazepine continued | Clobazam | 1 | MN |
| | Diazepam | 1 | MN |
| | Lorazepam | 18 | CA(5), IL(2), MN(6), OH(3), PA(2) |
| | Midazolam | 9 | CA(2), CO, NY OR(2), TX(3) |
| | Mirtazapine | 9 | CA(2), KY(2), MN(3), NY, OH |
| | Nordiazepam | 2 | CA, MN |
| | Oxazepam | 3 | CA, MN(2) |
| | Temazepam | 2 | CA, MN |
| Cardiovascular | Amiodarone | 1 | TX |
| | Atorvastatin | 5 | KY, OH(4) |
| | Carvedilol | 4 | CA, KY, MN, OH |
| | Diltiazem | 1 | MN |
| | Furosemide | 5 | CA |
| | Hydrochlorothiazide | 1 | OH |
| | Metoprolol | 7 | CA(2), OH(5) |
| | Pindolol | 1 | KY |
| | Verapamil | 1 | OH |
| Cough Suppressant | Dextromethorphan | 2 | CA |
| | Dextrorphan | 4 | AL, CA (2), MN |
| Decongestant | Phenylephrine | 1 | OR |
| | Pseudoephedrine | 1 | KY |
| Muscle Relaxant | Baclofen | 3 | CA, OH(2) |
| | Cyclobenzaprine | 4 | CA, OH(3) |
| Opioid | Buprenorphine | 10 | AL(5), KY, NY, OH(3) |
| | Desmethyl-cis-tramadol | 4 | CO, OH(3) |
| | EDDP | 2 | CA, NE |
| | Methadone | 3 | CA, NE, OH |
| | Naloxone | 12 | CO, KY(4), NC, OH(2), PA(2), TX(2) |
| | Norbuprenorphine | 11 | AL(5), KY, NY, OH(4) |
| | Tramadol | 5 | ID(2), OH(3) |
| Pain Reliever | Acetaminophen | 22 | CA(11), IL, MN(3), NY, OH(4), OR |
| | Indomethacin | 1 | OH |
| | Naproxen | 3 | AL, CA, MN |
| Respiratory | Lisinopril | 9 | CA(2), KY(3), NY, OH(3) |
| Stimulant | Methylphenidate | 2 | KY, OH |
| | Norpseudoephedrine | 17 | CA(3), KY, MN(5), NY, OH(7) |

Table 3 continued

| Class | Drug | Detection | Location |
|------------------------|--------------|-----------|----------|
| Tuberculostatic | Levofloxacin | 2 | CA |
| | Pyrazinamide | 1 | CO |

AL – Alabama; CA – California; CO – Colorado; ID – Idaho; IL – Illinois; KS – Kansas; KY – Kentucky; MN – Minnesota; NE – Nebraska; NY – New York; NC – North Carolina; OH – Ohio; OR – Oregon; PA – Pennsylvania; TX – Texas; * mCPP is an expected metabolite of trazadone

Dietary Supplement Stimulants

DEA TOX confirmed four detections comprising of two DSSs (Table 4) in the second quarter of 2021.

Table 4. DSS detected – Second Quarter 2021

| Class | Drug | Detection | Location |
|------------|------------------|-----------|------------|
| Stimulants | Beta-methyl PEA | 1 | OH |
| | N-methyltyramine | 3 | ID, MN, NY |

ID – Idaho; MN – Minnesota; OH – Ohio; NY – New York

Precursors/Additives/Impurities

DEA TOX confirmed 19 detections comprising of three P/A/I (Table 5) in the second quarter of 2021.

Table 5. P/A/I detected – 2nd Quarter 2021

| Class | Drug | Detection | Location |
|-----------|-------------------------|-----------|----------------------|
| Precursor | 4-ANPP | 7 | CA, ID(2), IL, OH(3) |
| Additive | Phenacetin | 9 | CA(5), ID, KY, MN(2) |
| Impurity | N,N-dimethylamphetamine | 3 | ID(2), OH |

CA – California; ID – Idaho; IL – Illinois; KY – Kentucky; MN – Minnesota; OH – Ohio

§ - 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.

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 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**

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