

### What are novel synthetic substances (NPS) and why do we care?

Novel psychoactive substances are analogues of existing controlled drugs or newly synthesized chemicals designed to mimic the psychoactive effects of controlled drugs.

The substances are not easily regulated under the state, federal, or international regulations.

### Impact on our patients

Novel Psychoactive Substances (NPS), like the substances they were created to mimic, have a variety of effects on the human body. There are the effects that those utilizing these substances recreationally are seeking, such as euphoria or a "high," but this cannot be separated from the dangerous and potentially life-altering effects that can come with these substances.

Substance-induced psychosis is a potentially life-altering effect of the use of these substances. Nearly impossible to differentiate from primary psychosis

### Case Study

- A 15 year old male presented to the psychiatric crisis department. Was escorted by police officers after being removed from school due to getting up during an assembly and announcing that he was God. Patient's mother noticed symptoms of erratic behavior, delusions of grandeur, limited sleep, not eating, or attending to other ADLs.
- Patient had no previous psychiatric history, medical concerns, or behavioral problems. Admitted to inpatient unit and continued to struggle with hallucinations, paranoia, and delusions.
- Patient was treated aggressively with antipsychotic medication for a period of two weeks. Once more lucid, patient admitted to frequent use of cannabis and identified using a "new formulation" that they got from a new source. Via a blood drug test, patient was found to have high levels of THC even after a week of inpatient hospitalization.

<https://oasas.ny.gov/synthetic-cannabinoids>



[https://www.health.ny.gov/professionals/narcotics/synthetic\\_cannabinoids/](https://www.health.ny.gov/professionals/narcotics/synthetic_cannabinoids/)

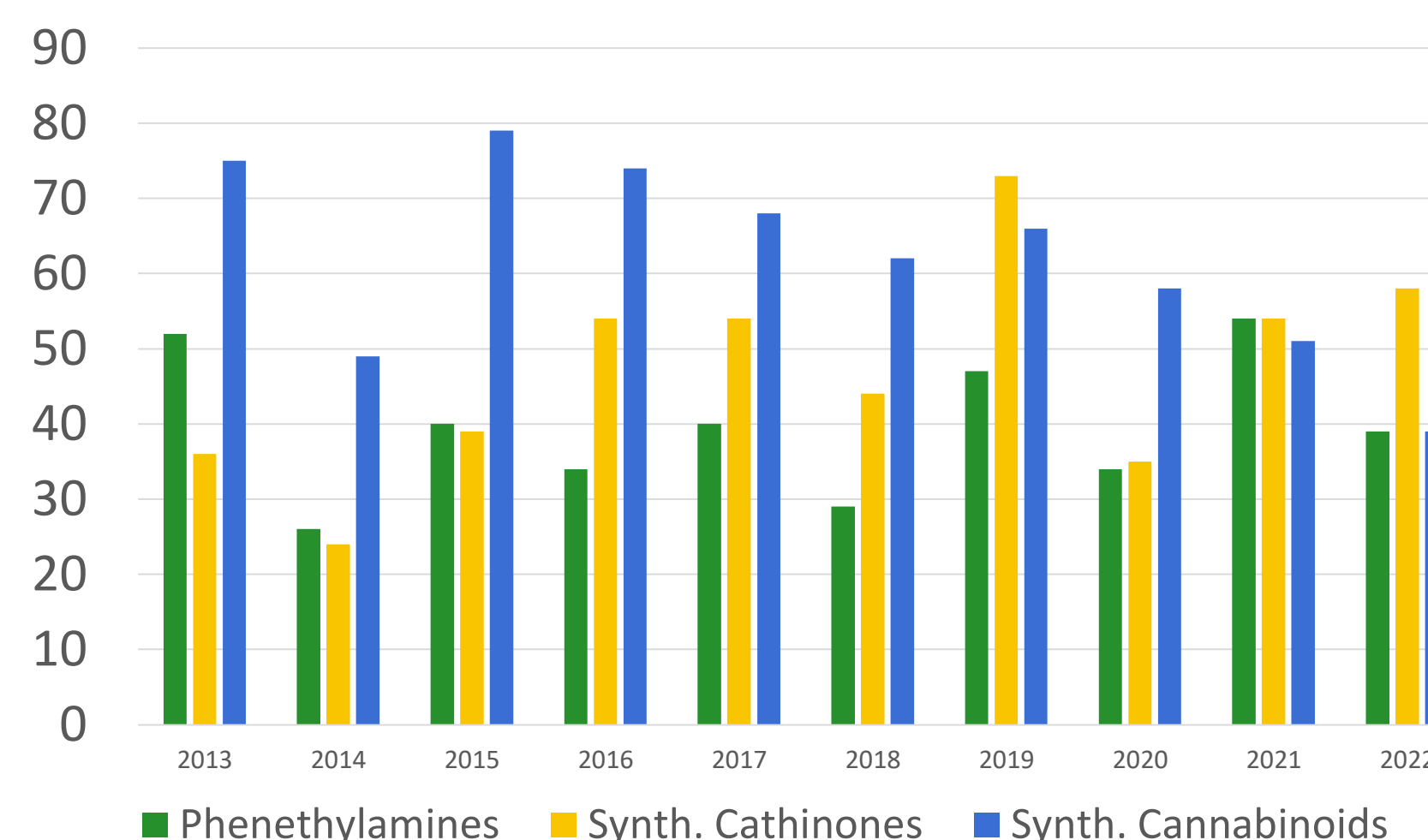
### Summary of Known NPS(s)

**\*\*Not an exhaustive list\*\***

Name	Classification	Route	Cost/ availability	Desired effects	Psychological Consequences
K2/Spice	Synth. Cannabinoid	IP, IV, P, V, S, In.	\$10/Gram**	Relaxation Analgesia Sedation Euphoria Anxiolysis	Delirium Hallucinations Agitation Paranoia Mood disorder exacerbation; <b>Psychosis</b>
JWH-018 (-073, -398)	Synth. Cannabinoid	IP, IV, P, V, S, In.			
Bonzai	Synth. Cannabinoid	IP, IV, P, V, S, In.			
Spike	Synth. Cannabinoid	IP, IV, P, V, S, In.			
Meow-Meow	Synth. Cathinone (Mephedrone)	Sn, IV, P	\$25-\$50/50mg packet**	Euphoria Hypervigilance Increased libido Appetite suppression	Serotonergic syndrome <b>Psychosis</b> Paranoia Mania Agitation hyperthermia
Bath Salts	Synth. Cathinone (MDPV)	Sn, IV, P			
Plant Fertilizer	Synth. Cathinone (MDPV)	Sn, IV, P			
Plant Food	Synth. Cathinone (Ethylpentylone)	Sn, IV, P			
Flakka (Gravel)	Synth. Cathinone (Alpha PVP)	Sn, IV, P	\$3-\$5/"Hit" Street Drug		
Blue Mystic	Synth. Phenethylamines	In, Sn	Unable to identify	Perceptual restructuration; Visual hallucinations; Alterations in sensory perceptions; Euphoria; Depersonalization	Headache <b>Psychosis</b> Reference ideation Flashbacks Anxiety Paranoia
T7	Synth. Phenethylamines	In, Sn			
Tripstay	Synth. Phenethylamines	In, Sn			

IP: Intraperitoneal IV: Intravenous P: Parenteral V: Vaporized S: Smoked IN: Ingested (ORAL) Sn: Snorted

### Number of Novel Synthetic Substances Identified in N. America



Per the United Nations Office of Drugs and Crime:

- After a large burst between 2009-2018, NPS now seem to have stabilized to approx. 550 newly identified substances per year
- Cannabinoids and synthetic stimulants make up about 50%

### Testing and Barriers

- Testing includes urine and blood samples, which are utilized for cases with suspected recreational drug or NPS toxicity however, these screening tests typically cannot identify NPSs.
- Additional testing, such as mass spectrometric methods, are needed for identification of distinct substances but require specialized laboratories.

"Mass-Spectrometry for NPS Detection: uses a variety of separation methods, provides the necessary flexibility, sensitivity, and selectivity for robust and reliable NPS detection, However, these expensive and time-consuming methods are often no accessible to healthcare facilities" (Grafinger et al., 2020)

### Treatment

- Acute treatment is symptom-focused (antipsychotics, benzodiazepines, supportive care, admission for observation/safety precautions).
- NPS-induced symptoms typically resolve, but clinicians should be attentive to the potential for persistence of psychosis after initial recovery.
- Long term follow-up may be required with a focus on comorbid substance use disorders and emergence of primary psychotic disorders.

### References and Resources

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<http://www.talkingdrugs.org/issues/other-drugs/?page=2>