BUSINESS INSIDER

A handful of dangerous new legal drugs has public health experts worried

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Over the past 20 years, the drug world has seen the rise of new psychoactive substances, mind-altering drugs that have been synthesized in a lab and sold as legal alternatives to illegal drugs like marijuana and cocaine.

DEA

Because these drugs are new and have not been rigorously tested, their effects may be erratic and unpredictable.

Some forms of these drugs, including flakka, have already been linked with several episodes of violent, dangerous, and even life-threatening behavior.

Since these drugs are not monitored, they may also combine other unknown and potentially dangerous ingredients.

Plus, according to the Erowid Center, a non-profit that operates several psychoactive drug information projects and recently held a press call with Washington State House of Representatives Roger Goodman and New York University Langone Medical Center Assistant Professor of Population Health Joseph Palamar, the drugs flow through the market so quickly that researchers don't have the time to understand their effects and lawmakers don't have time to enact legislation before a new, altered batch reaches the market.

Here are six of the most common types of new synthetic drugs currently being produced:

Replacement cannabis

Synthetic marijuana, otherwise known as "replacement" cannabis, is a lab produced mind-altering drug that aims to mimic the effects of marijuana. The Erowid Center notes that these drugs can be manufactured into pure powders, waxy solids, or deposited onto herbal blends so that they can be smoked.

Many experts say "synthetic marijuana" is a huge misnomer for these drugs, which have also have taken on street names like "K2" and "Spice," since they produce far different effects and can be up to 100 times more potent than traditional marijuana.

Just like with the main psychoactive ingredient in traditional marijuana, THC, the psychoactive ingredients in synthetic marijuana bind to the brain's CB1 receptors. Because spice is so much stronger, however, it is much more likely to cause everything from seizures to psychosis.

A report suggests that replacement cannabinoids have been linked with some 1,000 deaths since 2009.

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Replacement euphoric stimulants and empathogens

These are psychoactive drugs that are meant to mimic the effects of both amphetamines and hallucinogens; their effects can be somehwhat similar to the effects of MDMA, methamphetamine, and cocaine. Some of the most popular forms of these drugs include mephedrone, methylone, "bath salts," and "flakka," all of which have been associated with serious medical issues.

Flakka, for example, is made from a compound called alpha-PVP, a chemical cousin of cathinone, the amphetamine-like drug found in bath salts.

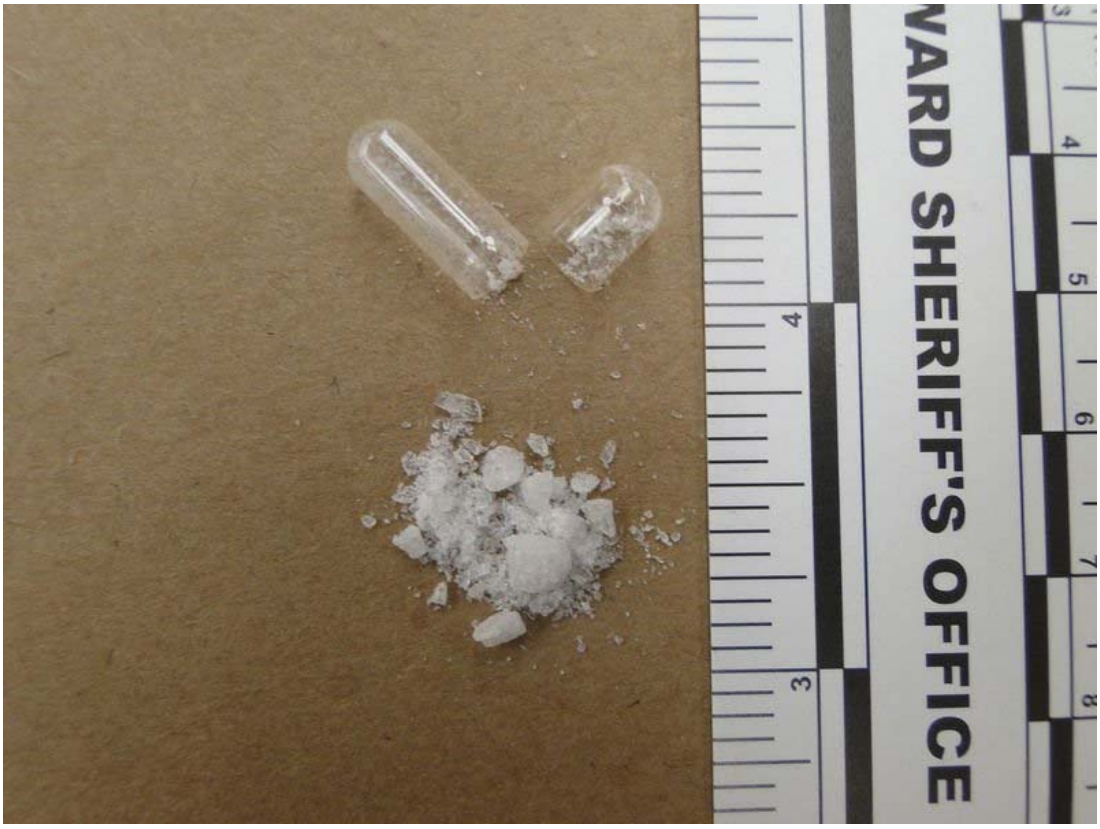
Here's the worst part: while the active ingredient in bath salts was officially banned in 2011, its newer relative, alpha-PVP, was not. That means it is legal in any state without its own ban.

Like cathinone, alpha-PVP is a type of stimulant, colloquially called an “upper.” Uppers are linked with feelings of euphoria, enhanced alertness and wakefulness, and increased movement — all symptoms that are similar to those experienced by people on other drugs like amphetamines or cocaine.

Since flakka is so new, researchers aren't sure exactly how it affects the brain, or how addictive it is.

For now, they can only guess by looking at how its chemical cousins, like cocaine and amphetamines, work. These drugs cause a surge in two chemicals: the feel-good chemical dopamine (responsible for the euphoric sensations) and norepineprhine (which raises heart rate and blood pressure and can make us more alert).

Excessive use has been linked with feelings of extreme anxiety, paranoia, hallucinations, and violent behavior.



Thomson Reuters

Alpha-PVP, a powerful stimulant nicknamed Flakka, seen in undated handout picture from Broward County Sheriff's Office in Florida

Replacement psychedelics

These are synthetic psychoactive substances that are meant to mimic the effects of traditional psychedelics by inducing an altered state of perception and thought. These types of drugs, called NBOMes and 1P-LSD, are identified by the Erowid Center as having effects similar to classic psychedelics like LSD and magic mushrooms.

Several recent studies suggest that psilocybin, the main psychoactive ingredient in the traditional (and illegal) psychedelic magic mushrooms, work by essentially sprouting new links across previously disconnected brain regions, temporarily altering the brain's entire organizational framework.

These new connections are likely what allow users to experience things like seeing sounds or hearing colors. And they could also be responsible for giving magic mushrooms some of their antidepressant qualities.

Erowid Center representatives expressed that the potential effects of these newer synthetic psychedlics could be far more severe and unpredictable. Many of these drugs are sold on blotting

paper, leading people who take them to believe they are using other drugs that are commonly distributed using this method.

Erowid Center

2C-C-NBOMe salt

Replacement dissociatives

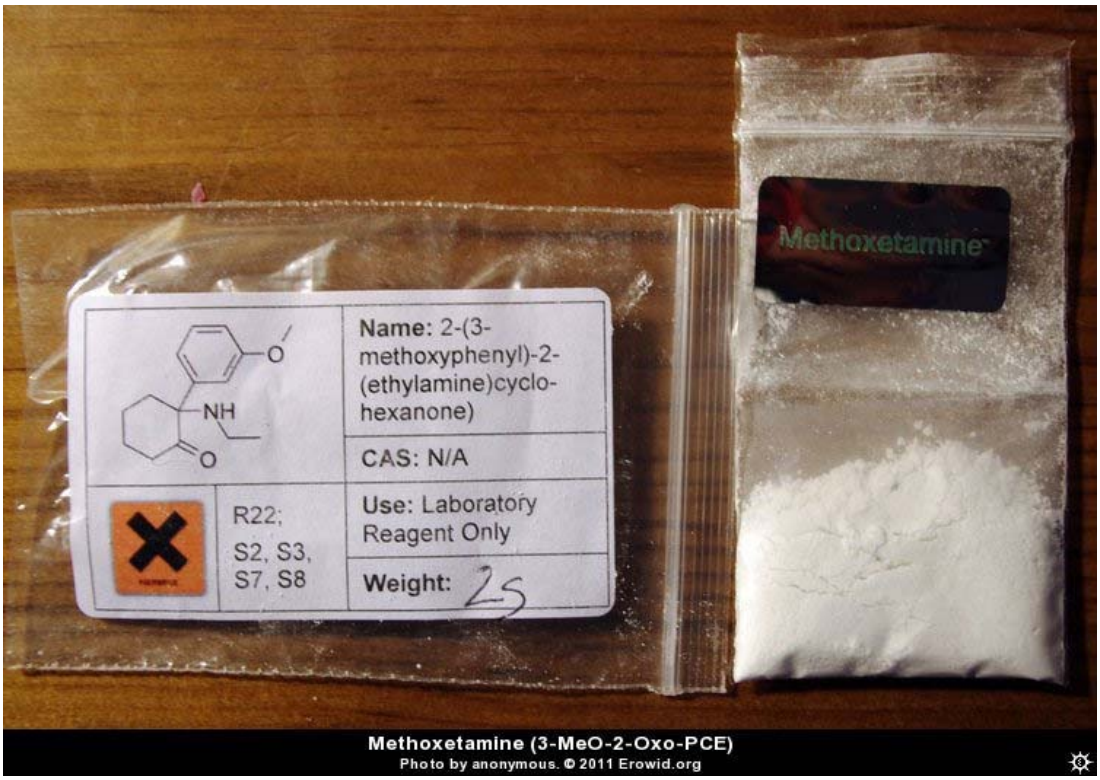
Replacement dissociatives are psychoactive synthetic drugs that mimic the effect of hallucinogens by distorting perceptions of sight and sound to produce a feeling of detachment from the environment and one's self. These are similar effects as those that are induced from drugs like Ketamine and PCP.

According to the National Institute on Drug Abuse, dissociatives disrupt the actions of the brain chemical glutamate at certain types of receptors — called N-methyl-D-aspartate (NMDA) receptors — on nerve cells throughout the brain.

Glutamate is an important brain chemical that controls cognition, emotions, and the perception of pain. Dissociates can impair vision and hearing, cause anxiety, memory loss, impaired motor skills, numbness, and many other unpredictable symptoms that can last for hours and sometimes days. Long term use of dissociatives can lead to persistent speech difficulties, memory loss, depression, suicidal thoughts, anxiety, and long term social withdrawal.

However, the Erowid Center claims these new drugs, which are sold under the names Methoxetamine, MXE, MXP, and Diphenidine, can have even more severe erratic effects.

For that reason, the organization claims the drugs should be called "newly available dissociatives," rather than "replacement dissociatives."



Erowid Center

Methoxetamine (3-MeO-2-Oxo-PCE) - a research chemical analog of ketamine.

Replacement sedatives

These drugs are synthetic psychoactive substances that mimic the effects of traditional benzodiazepine sedatives like Valium and Xanax, by slowing down brain activity.

Benzodiazepines are safe medications to treat insomnia and anxiety disorders, but, as the US National Library of Medicine notes, long term use can result in daytime drowsiness and a "hungover" feeling, respiratory issues, and can be dangerous when used in combination with alcohol or with woman who are pregnant.

Withdrawal symptoms include insomnia, anxiety, and in extreme cases, death.

The Erowid Center calls these synthetic drugs "newly available sedatives." Recent examples include etizolam and flubromazolam.

Erowid Center

Etizolam tablets

Replacement Opioids

Replacement opioids are meant to mimic the effects of drugs like heroin, oxycodone, opium, or fentanyl. Dozens of these drugs exist, with names like AH-7921, U-4-7-7-0-0 as well as fentanyl analogs like acetyl-fentanyl and butyl-fentanyl, but these versions may have unpredictable and more severe effects than traditional opioids, the Erowid Center notes.

Heroin affects how we perceive pain and rewards. In the brain, it is converted into morphine, which binds to molecules on cells located throughout the brain and body called opioid receptors. This explains the surging sense of euphoria that many people feel when they inject the drug straight into the bloodstream. After the initial "rush," the skin gets flushed and warm, the arms and legs begin to feel heavy, and thinking slows.

Overdosing on heroin can slow and even stop breathing, leading to brain damage or coma.

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A fentanyl ampule

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