

**DrugFacts**

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# Synthetic Cathinones ("Bath Salts") DrugFacts

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## What are synthetic cathinones?

Synthetic cathinones, more commonly known as bath salts, are human-made stimulants chemically related to cathinone, a substance found in the khat plant. Khat is a shrub grown in East Africa and southern Arabia, where some people chew its leaves for their mild stimulant effects. Human-made versions of cathinone can be much stronger than the natural product and, in some cases, very dangerous.<sup>1</sup>

### In Name Only

Synthetic cathinone products marketed as bath salts should not be confused with products such as Epsom salt that people use during bathing. These bathing products have no mind-altering ingredients.

Synthetic cathinones usually take the form of a white or brown crystal-like powder and are sold in small plastic or foil packages labeled "not for human consumption." They can be labeled as bath salts, plant food, jewelry cleaner, or phone screen cleaner.

Synthetic cathinones are part of a group of drugs that concern public health officials called new psychoactive substances (NPS). NPS are unregulated psychoactive mind-altering substances with no legitimate medical use and are made to copy the effects of controlled substances. They are introduced and reintroduced

into the market in quick succession to dodge or hinder law enforcement efforts to address their manufacture and sale.

Synthetic cathinones are marketed as cheap substitutes for other stimulants such as amphetamines and cocaine. Products sold as Molly often contain synthetic cathinones instead of MDMA (see [Synthetic Cathinones and Molly \(Ecstasy\)](#)).

## How do people use synthetic cathinones?

People typically swallow, snort, smoke, or inject synthetic cathinones.

## How do synthetic cathinones affect the brain?

Much is still unknown about how synthetic cathinones affect the human brain. Researchers do know that synthetic cathinones are chemically similar to drugs like amphetamines, cocaine, and MDMA.

A study found that *3,4-methylenedioxypyrovalerone* (MDPV), a common synthetic cathinone, affects the brain in a manner similar to cocaine, but is at least 10 times more powerful. MDPV is the most common synthetic cathinone found in the blood and urine of patients admitted to emergency departments after taking bath salts.<sup>2</sup>

Synthetic cathinones can produce effects that include:

- paranoia—extreme and unreasonable distrust of others
- hallucinations—experiencing sensations and images that seem real but are not
- increased friendliness
- increased sex drive
- panic attacks
- excited delirium—extreme agitation and violent behavior

## Synthetic Cathinones and Molly (Ecstasy)

Molly—slang for molecular—refers to drugs that are supposed to be the pure crystal powder form of MDMA.

Usually purchased in capsules, Molly has become more popular in the past few years. Some people use Molly to avoid additives such as caffeine, methamphetamine, and other harmful drugs commonly found in MDMA pills sold as Ecstasy. But those who take what they think is pure Molly may be exposing themselves to the same risks.

Law enforcement sources have reported that Molly capsules contain harmful substances including synthetic cathinones. For example, hundreds of Molly capsules tested in two South Florida crime labs in 2012 contained methyldone, a dangerous synthetic cathinone.

## What are other health effects of synthetic cathinones?

Raised heart rate, blood pressure, and chest pain are some other health effects of synthetic cathinones. People who experience delirium often suffer from dehydration, breakdown of skeletal muscle tissue, and kidney failure.

The worst outcomes are associated with snorting or needle injection. Intoxication from synthetic cathinones has resulted in death.



## Are synthetic cathinones addictive?

Photo by © DEA

Yes, synthetic cathinones can be addictive. Animal studies show that rats will compulsively self-administer synthetic cathinones. Human users have reported that the drugs trigger intense, uncontrollable urges to use the drug again. Taking synthetic cathinones can cause strong withdrawal symptoms that include:

- depression
- anxiety
- tremors
- problems sleeping
- paranoia

## How can people get treatment for addiction to synthetic cathinones?

Behavioral therapy can be used to treat addiction to synthetic cathinones. Examples include:

- cognitive-behavioral therapy
- contingency management, or motivational incentives—providing rewards to patients who remain substance free
- motivational enhancement therapy
- behavioral treatments geared to teens

As with all addictions, health care providers should screen for co-occurring mental health conditions. While there are no FDA-approved medicines for synthetic cathinone addiction, there are medicines available for common co-occurring conditions.

### Points to Remember

- Synthetic cathinones, more commonly known as bath salts, are drugs that contain one or more human-made chemicals related to cathinone, a stimulant found in the khat plant.
- Synthetic cathinones are marketed as cheap substitutes for other stimulants such as methamphetamine and cocaine. Products sold as Molly (MDMA) can contain synthetic cathinones instead.
- People typically swallow, snort, smoke, or inject synthetic cathinones.
- Much is still unknown about how the chemicals in synthetic cathinones affect the human brain.
- Synthetic cathinones can cause:
  - paranoia
  - increased sociability
  - increased sex drive
  - hallucinations
  - panic attacks
- Intoxication from synthetic cathinones has resulted in death.
- Synthetic cathinones can be addictive.
- Behavioral therapy may be used to treat addiction to synthetic cathinones.
- No medications are currently available to treat addiction to synthetic cathinones.

## References

1. Baumann MH. Awash in a sea of "bath salts": implications for biomedical research and public health. *Addict Abingdon Engl*. 2014;109(10):1577-1579. doi:10.1111/add.12601.
2. Baumann MH, Partilla JS, Lehner KR, et al. Powerful Cocaine-Like Actions of 3,4-Methylenedioxypyrovalerone (MDPV), a Principal Constituent of Psychoactive "Bath Salts" Products. *Neuropsychopharmacology*. 2013;38(4):552-562. doi:10.1038/npp.2012.204.

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