

COMPACT *Research*

Synthetic Drug Addiction

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Addictions

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Synthetic Drugs at a Glance

Synthetic Versus Natural Drugs

Unlike drugs that are extracted or derived from plants or fungi, such as marijuana and cocaine, synthetic drugs are created in chemical laboratories.

Sales of Synthetic Drugs

In recent years synthetic drugs have been created for sale and use as legal substitutes for illicit recreational drugs such as marijuana and MDMA (ecstasy).

Proliferation

As many as three hundred varieties of synthetic drugs are on the market, with more being developed all the time.

Most Common Types

The two types of synthetic drugs that have drawn the most attention are synthetic marijuana (spice) and synthetic stimulants (bath salts).

Health Dangers

Users of synthetic drugs have been hospitalized with various symptoms, including tremors, psychotic breaks, and heart and kidney failure.

Availability

Synthetic drugs are known for being available on the Internet or from convenience stores, tobacco shops, gas stations, and other retail outlets.

What Are Synthetic Drugs?

“My son experimented with drugs of all kinds. But these synthetic drugs were the scariest of all.”

—Maureen Barrett, who became an antidrug activist after her seventeen-year-old son was found dead with synthetic marijuana in his system.

“What exactly are these myriad substances? Thanks in part to the media’s habit of lumping them together into one scary whole—with regular outbreaks of frenzy . . . they often remain shrouded in mystery and rumor.”

—Tony O’Neill, who writes about drugs and culture in *Salon*.

Drugs are chemical substances that affect a person’s brain and body when ingested. Synthetic drugs are artificial—they are created in chemical laboratories rather than derived from nature, such as from plants or mushrooms. Taken at face value, the term *synthetic drug* can refer to any drug created artificially. Many prescription medications are synthetic drugs. However, by the early 2000s the term acquired a narrower and more ominous meaning. It came to refer to a class of manufactured drugs that mimic the effects of illicit recreational drugs such as marijuana and cocaine but are often sold legally in retail outlets and via the Internet. Other phrases used to describe this class of drugs include *new psychoactive substances* and *synthetic legal intoxicating drugs*.

This narrower definition encompasses many different substances. From 2009 to 2014 the DEA identified between two hundred and three hundred chemicals in synthetic drugs, and new chemicals are constantly

being created and introduced. However, most discussions of synthetic drugs have focused on two main categories: synthetic marijuana and synthetic stimulants.

Spice Emerges in Europe

Sometime around 2004 a new type of smokeable herbal product emerged in Europe under the brand name of Spice. It consisted of dried and shredded leaves or other plant material and bore a superficial resemblance to marijuana. It could be smoked like marijuana to get high, and users often reported similar psychoactive effects such as elevated mood, relaxation, and mild sensory distortions. Unlike marijuana, it was legal to possess and did not show up on standard drug tests. Distributed via the Internet and in small retail outlets, by 2008 Spice and competing brands had spread from Europe to other countries, including the United States.

This alternative to marijuana was (and still is) touted as a natural herbal high. However, in late 2007 and 2008, European scientists determined that the marijuana-like properties did not come from the plant materials but from synthetic chemicals that were sprayed on them. These chemicals bind (like a lock and key) to the cannabinoid receptors—the same parts of the brain affected by tetrahydrocannabinol (THC), the main active ingredient in natural marijuana. The THC in marijuana is derived from the cannabis plant; the sprayed-on chemicals in spice are called synthetic cannabinoids.

“

From 2009 to 2014 the DEA identified between two hundred and three hundred chemicals in synthetic drugs, and new chemicals are constantly being created and introduced.

”

The Inventors of Synthetic Cannabinoids

Synthetic cannabinoids were actually discovered and developed years and decades before they became popular as spice. Many can be traced to the work of one man—a chemistry professor named John W. Huffman. From 1984 to 2010 Huffman and his team at Clemson University synthesized 450 cannabinoid compounds. The purpose of these compounds was to

“There are seven different structural categories of synthetic cannabinoids and many variants within groups.”

—Bryan Wilson, Hamid Tavakoli, Daniel DeCecchis, and Vimutka Mahadev, “Synthetic Cannabinoids, Synthetic Cathinones, and Other Emerging Drugs of Abuse,” *Psychiatric Annals*, December 2013, p. 559.

Tavakoli is a psychiatrist at the Naval Medical Center Portsmouth and a professor at Eastern Virginia Medical School. DeCecchis is a psychiatric resident at Naval Medical Center Portsmouth. Wilson and Mahadev are medical students at Eastern Virginia Medical School.

“Teens and twenty-somethings already fond of pot turn to Spice because it’s easy to get, they perceive it as legal, and because schools and sports teams don’t test for it.”

—Melanie Haiken, “Spice and K2 vs. Bath Salts: The Other Designer Drug Scare,” *Forbes*, June 13, 2012. www.forbes.com.

Haiken is a health journalist and senior editor for Caring.com.

“Synthetic marijuana products can be repackaged and sold under many names.”

—Dr. Tishita Ghosh, quoted in Colorado Department of Public Health and Environment, “Several Synthetic Marijuana Products Identified as Possible Sources of Disease,” news release, September 12, 2013. www.colorado.gov.

Ghosh is a public health official who was named interim chief medical officer for the state of Colorado in 2013.

“Because they are often legal, synthetic drugs may not be perceived as dangerous.”

—Jennifer Van Pelt, “Synthetic Drugs—Fake Substances, Real Dangers,” *Social Work Today*, July/August 2012.

Van Pelt is a health journalist and fitness instructor.

Facts and Illustrations

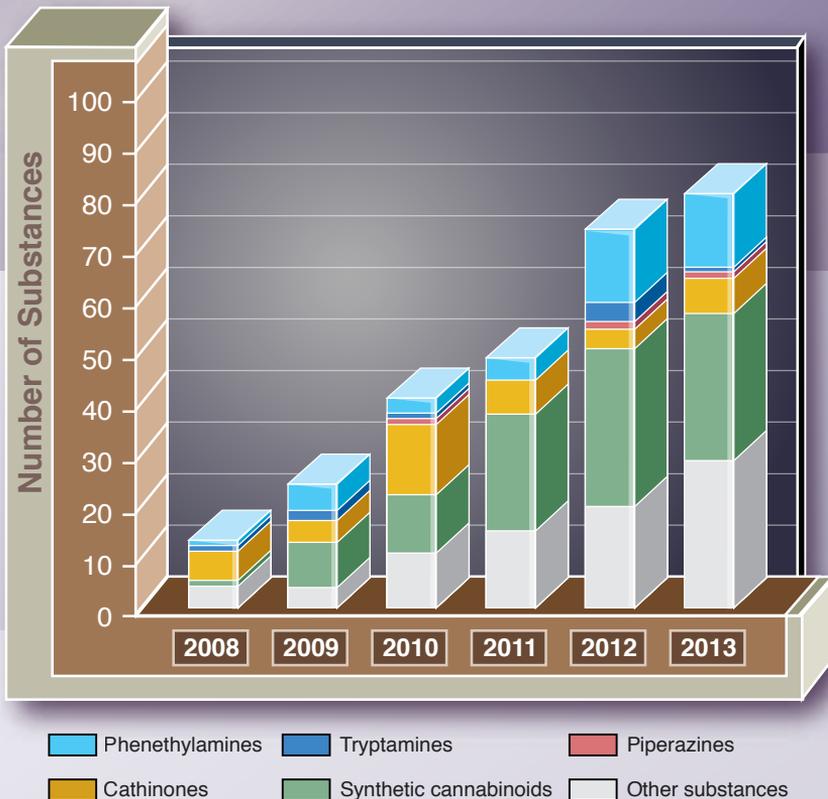
What Are Synthetic Drugs?

- Synthetic drugs are generally sold under misleading names and labels to avoid regulation.
- Synthetic marijuana is frequently labeled “incense” or “potpourri.”
- Besides bath salts, synthetic stimulants have been sold as plant food, plant fertilizer, or research chemicals.
- Bath salts sell in small packages of **200 to 500 milligrams** for around twenty dollars a package.
- Synthetic cannabinoids interact with the CB1 receptors of the brain, the same brain receptors affected by marijuana.
- Bath salts are usually snorted through the nose; they can also be smoked, injected, or ingested orally or rectally.
- Synthetic marijuana is usually smoked; it can also be baked into foods such as brownies or made into tea.
- Synthetic drugs, including spice and bath salts, have not been clinically tested on humans, and their consumption has not been approved by the Food and Drug Administration.
- A typical dose of synthetic marijuana can be less than **1 milligram**.

Synthetic Drugs Found by the European Union Early Warning System

The EU Early Warning System is a multinational Europe-based initiative to monitor the introduction of new psychoactive drugs. Most, if not all, of the drugs that have been identified are synthetic drugs. The first synthetic cathinones and synthetic cannabinoids were identified in 2008; since then numerous varieties have been found. In addition, many different kinds of phenethylamines, tryptamines, piperazines, and other unnamed synthetic drugs have been uncovered. Phenethylamines and tryptamines are hallucinogenic drugs that can occur naturally in plants or animals; most emerging drugs of these types are synthesized. Piperazines are synthetic drugs that can create effects similar to amphetamines and MDMA (ecstasy).

Number and Main Groups of New Psychoactive Substances Notified to the EU Early Warning System, 2008–13



Related Organizations

American Association of Poison Control Centers (AAPCC)

515 King St., Suite 510

Alexandria, VA 22314

phone: (703) 894-1858

e-mail: info@aapcc.org • website: www.aapcc.org

The AAPCC is the parent organization for fifty-seven poison control centers throughout the United States and maintains the country's only comprehensive poisoning surveillance database. Its website offers a large collection of data and statistics about synthetic drugs.

Council on Chemical Abuse

601 Penn St., Suite 600

Reading, PA 19601

phone: (610) 376-8669 • fax: (610) 376-8423

website: www.councilonchemicalabuse.org

The Council on Chemical Abuse serves as the coordinating agency for publicly supported programming on drug and alcohol abuse throughout Berks County, Pennsylvania. A number of articles and fact sheets about synthetic drugs are available through its website.

Drug Enforcement Administration (DEA)

2401 Jefferson Davis Hwy.

Alexandria, VA 22301

phone: (202) 307-1000; toll-free: (800) 332-4288

website: www.justice.gov/dea

The DEA enforces federal laws against the trafficking of illegal drugs and assists state and local law enforcement officers. Its website offers numerous publications about bath salts and other synthetic drugs.

Drug Free America Foundation

5999 Central Ave., Suite 301

Saint Petersburg, FL 33710

phone: (727) 828-0211 • fax: (727) 828-0212

e-mail: webmaster@dfaf.org • website: www.dfaf.org

For Further Research

Books

- Paul I. Dargon and David M. Wood, *Novel Psychoactive Substances*. Waltham, MA: Academic Press, 2013.
- Raymond Goldberg, *Drugs Across the Spectrum*. Belmont, CA: Wadsworth, 2012.
- Terrence L. Gray and Sage F. Evans, eds., *Synthetic Drugs: Scope and Trends in Synthetic Cannabinoids and Stimulants*. Hauppauge, NY: Nova Science Publishers, 2012.
- Mark J. Minelli, *Drugs of Abuse: A Quick Information Guide*. Champaign, IL: Stipes, 2013.
- Peggy J. Parks, *Bath Salts and Other Synthetic Drugs*. San Diego, CA: ReferencePoint, 2013.
- Mike Power, *Drugs 2.0: The Web Revolution That's Changing How the World Gets High*. London, UK: Portobello, 2013.
- Howard Samuels with Jane O'Boyle, *Alive Again: Recovering from Alcoholism and Drug Addiction*. Hoboken, NJ: Wiley, 2013.

Periodicals

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- Emily K. Dye, "The Synthetic Drug Craze: What Chiefs Need to Know," *Police Chief*, September 2013.
- Economist*, "Bath Salts: The Synthetic Scare," August 4, 2012.
- Eliza Gray, "The Rise of Fake Pot," *Time*, April 21, 2014.
- Vanessa Grigoriadis, "Travels in the New Psychedelic Bazaar," *New York*, April 7, 2013.
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