Hank George, INC.

Synthetic Cannabinoids

What are the Realities and Implications of "Fake Pot" Use?

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While they are hardly new, synthetic cannabinoid drugs have made a splash on the "use and abuse" scene in the last few years.

This paper aims to provide what underwriters and claims examiners need to know about this ever-expanding aggregation of synthetic drugs that are luring users with their enhanced *Cannabis*-like effects.

What are the 3 kinds of cannabinoids?

- Phytocannabinoids – derived from the hemp plant, such as *Cannabis sativa* (marijuana)
- Endocannabinoids – manufactured internally
- Synthetic cannabinoids – created in a laboratory and designed to interact with cannabinoids receptors in the brain to create psychoactive effects

There are 4 chemically distinct groups in the synthetic cannabinoids, but there is no practical value in knowing the chemical names from an underwriting perspective.

When were the first synthetic cannabinoids synthesized?

The first ones were fashioned over 40 years ago, as part of research to find pharmaceutical agents for pain management and other indications.

When did they initially appear as drugs of abuse?

They were first sold for this purpose over the Internet in 2004.

Toxicologists did not identify their presence in samples taken from users seen in emergency departments until 2008.

Are synthetic cannabinoids banned in some countries?

Yes…in most countries.

This started in Europe in 2008 and the two initial synthetics – JWH-122 and JWH-018 – were banned in the USA.

In July 2012 the US government officially banned 15 synthetic cannabinoids.

Have these bans fully criminalized the use of synthetic cannabinoids?

No…because new variants continue to be created by those who sell them for recreational purposes.

One tiny change in the formulation insulates a new version against illegality until such time as government bans are expanded to include that new version. This interval – usually measured in years – assures a sufficient window of sales opportunity free of legal challenge.

What "street" names have been bestowed upon synthetic cannabinoids?

The #1 name worldwide is Spice. It is essentially a synonym for most synthetic cannabinoids sold (mainly) over the Internet.

Whenever the word is capitalized in a medical report, they aren't referring to oregano!

*K*2 is probably the second most common name globally. In Australia the term *du jour* is Kronic.

Others include:

- Spice Gold, Spice Diamond, Arctic Spice
- Dream
- Fake pot (which it is, strictly speaking)
- Synthetic marijuana (which it isn't)

How is Spice* packaged?

*** We will use Spice as our term for synthetic cannabinoids in the rest of this paper.**

As an herbal aromatic incense or potpourri, containing any number of possible natural herbal ingredients.

These ingredients may be herbs typically taken by advocates of alternative and complementary medicine as well as psychoactive herbs dubbed "Wild Dagga" and "Indian Warrior." Nicotine and caffeine may be thrown in the mix as well.

The synthetic cannabinoid components are mixed as a solvent and sprayed on the plant-derived base ingredients.

Pure synthetic cannabinoids can also be acquired to spray on the concoction of one's choice.

Where is Spice purchased?

It used to be sold right out in the open in a wide range of retail venues, from "head shops" to gasoline stations. Now, it is primarily sold over the Internet.

It took us just 5 minutes to find a current site:

http://www.dieselspice.com/spicegold.html

We were led to that site from this one:

http://www.toketwo.com

Prices run around $30 (US) per package.

Keep in mind that these are newer formulations that are not, as yet, illegal. Sooner or later, they will be.

Is Spice retailing a profitable venture?

It was, given that the alleged revenue of the original UK vendor was said to increase 1300% between 2006 and 2007.

Whether it remains a robust source of earnings is unknown; however, the outlay for sufficient scientific expertise to create new formulations no doubt imposes consider overhead!

How is Spice consumed?

It is primarily smoked like marijuana, by rolling it in cigarette papers or using a pipe. It can be ingested as an infusion and use via inhalation is now rather common.

How does Spice differ from marijuana?

The main distinction is that Spice is synthetic and marijuana is a natural plant product.

In addition:

- Unlike marijuana with its characteristic smell, Spice is odorless
- The "high" is typically 30 minutes long, considerably shorter than with pot
- Spice is more far potent than *Cannabis*
- It is far more likely to induce psychotic symptoms
- Spice effectively alleviates symptoms of withdrawal in pot addicts

In terms of potency:

Spice Ingredient	Extent of Potency vs. Marijuana
JHW-018	4 x greater
CP47,497	10 x greater
HU-210	100 x greater

Is "bath salts" one type of synthetic cannabinoid?

No.

"Bath salts" is a potent hallucinogen based on a chemical called cathinone.

It is unrelated to Spice and fortunately – considering that it can induce users to attack and try to eat bystanders! – less widely used.

What motivates people to indulge in Spice?

The driver here is to experience robust Cannabis-like effects while avoiding a positive drug test (more on Spice testing later).

The desired effects are typically described as "energizing, euphoric and disinhibiting."

How widespread is Spice use?

While most users are adults, a National Institutes of Drug Abuse survey discovered that 11% of high school seniors were smoking the drug. It was also found in 4.5% of urine samples gathered from U.S. athletes (and was the most common recreational drug detected in that sample).

Some experts say its use is now second only to marijuana.

Have there been any surveys of Spice Users?

Yes, primarily via the Internet to assure their anonymity.

Let's look at some disclosures in a few of these surveys:

An Australian survey found that:

- 35% of users indulged weekly and 7% did so daily
- The main motivators were curiosity, legality, availability and recreational effects
- 68% reported at least one side effect, the main ones being decreased motor coordination, tachycardia, dissociation and dizziness.
- Marijuana smoking and alcohol use were common among Spice users

Another survey revealed that:

- The typical Spice user was a male Caucasian with 12+ years of education
- Mean age was 26
- Smoking predominated as a mode of consumption
- Mean annual frequency of use was 67 days
- Drivers were curiosity, desired drug effects akin to pot, relaxation and "getting high without having a positive drug test"

A third survey was done in the UK. There were nearly 15,000 participants and 17% acknowledged use of synthetic cannabinoids.

- 41% of Spice users said they did so in the last 12 months
- 99% were also *Cannabis* aficionados
- 93% actually preferred conventional pot because it had fewer unwelcome effects and was less likely to induce a hangover or paranoia

Take-home message: most insurers, including all of them selling heavily in the young adult market, have been and still are issuing coverage to Spice users…they just don't know it.

Are Spice users apt to be polydrug users?

Yes.

In addition to what was noted above, other investigators found that Spice users were also markedly disposed to both tobacco cigarette and hookah (water pipe, narghile) smoking.

Are synthetic cannabinoids addicting?

There have been a handful of confirmed cases but little is known as yet about how often regular/heavy use will culminate in a dependency state.

What do we know of the side effects of Spice?

Most of the evidence of significant adverse effects comes from emergency department case reports or small series of patients. There haven not been any randomized or placebo-controlled studies as yet.

This said, what has been reported to date is shown in Table One.

What does Table One tell us?

The acute side effects of Spice are, for the most part, those also associated with other drugs, especially stimulants and hallucinogens. It will be extremely difficult to distinguish Spice use from use of other commonly ingested drugs on the basis of side effects.

Table 1: Reported Adverse Effects of Synthetic Cannabinoids

Cardiac:

- Marked tachycardia – in nearly every case
- Chest pain
- High blood pressure
- Myocardial ischemia on ECGs
- ST-segment elevation MI in at least 3 cases

Psychiatric:

- Negative mood – quite distinct from positive affect typical of marijuana
- Inappropriate laughter
- Psychomotor agitation
- Typical psychosis features such as hallucinations; in some cases persisting for weeks after acute intoxication
- Transient cognitive dysfunction

Other:

- Ataxia
- Slurred speech
- Xerostomia (dry mouth)
- Vertical nystagmus
- Acute dyspnea
- Thoracic pain
- Nausea and vomiting
- Seizure induction
- Transient acute renal injury
- Amelioration of tremor in persons with essential tremor disorder

Are these adverse effects dose-dependent?

Yes, and to a greater degree than with pot.

What do we need to know about testing for synthetic cannabinoids?

"Laboratorians and clinicians should keep in mind that only very limited pharmacokinetic data exist for just a few synthetic cannabinoids. Furthermore, time windows for detecting their drugs and their concentrations may vary depending on the frequency of use and particular flavor of synthetic cannabinoid consumed."

Bridget O. Chews, PhD
Washington University School of Medicine, St. Louis
Clinical Laboratory News
February 2013:8

The most important fact is that commercially available marijuana tests do not cross-react with synthetic cannabinoids and thus their use will escape detection by insurers engaging in (what we consider the dubious practice of) marijuana use screening.

How many synthetic cannabinoid compounds are detectable with tests available at this time?

A recent review noted that metabolites from 11 compounds are now detectable in blood and just 5 in urine.

The detection range cited in that review was up to 72 hours from single use. However, it appears that regular users will be pinpointed for several weeks after last indulgence.

How have Spice manufacturers undermined testing?

They may add a number of masking agents including eugenol (from clove cigarettes), vitamin E, fatty acids as well as other psychoactive substances such as benzodiazepines.

How is acute Spice toxicity treated?

Benzodiazepines in most cases and antipsychotics in those with psychotic features present.

Clinical doctors are advised to suspect Spice use when their patient has:

- Typical signs and symptoms of *Cannabis* use
- Negative routine urine toxicology screens
- An occupation where routine drug screening is mandated
- Otherwise unexplained sudden onset psychosis

How should we underwrite Spice use?

Doubtlessly there are (and will continue to be) more than a few three-martini-lunch career politicians demanding double-digit prison sentences for Spice possession.

Nevertheless, the fact remains that we underwriters aren't likely to see many cases where Spice use is confirmed, at least not until more comprehensive tests are available and testing is done more consistently in emergency departments.

One way we could enhance our odds in this regard is to do a better job of tracking down suspicious emergency visit records when details cited by the applicant raise an eyebrow.

We have maintained for years that many insurers make insufficient use of ED records in what would likely be high-yield scenarios, particularly at ages 18 to 30.

Underwriting screening is off the table for a variety of reasons.

As far as underwriting action is concerned, an approach akin to marijuana probably makes the most sense.

While some Spice side effects are disconcerting, it is likely that the vast majority of users do not experience anything all that significant, given the frequency of overall – and especially repeated – use cited in the aforementioned Internet surveys.

In addition, there have been almost no deaths attributed to Spice use.

Therefore, at the end of the proverbial day, the main risks in occasional users will likely be their affinities for polydrug use/abuse as well as other risk-taking behaviors.

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