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Closing the Loophole on Hemp-Derived Cannabis Products:

A Public Health Priority

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A federal policy loophole allows psychotropic (ie, mind-altering or intoxicating) cannabis products to be commercially marketed and sold across the US—including in states where recreational cannabis is not legal. The Agriculture Improvement Act of 2018, commonly known as the 2018 Farm Bill,[1] legalized the growth and sale of hemp. Hemp is defined as a botanical class of the *cannabis sativa* plant that contains low concentrations of (Δ^9-tetrahydrocannabinol (Δ^9-THC, which is the most well-studied psychotropic cannabis-specific compound [ie, cannabinoid]) and high concentrations of non-psychotropic cannabidiol (CBD).[1] However, hemp also contains low concentrations of hundreds of other cannabinoids besides CBD and THC,[2] which, until recently, were believed to be present in amounts too small to produce psychotropic effects.

Under the protection of the Farm Bill,[1] manufacturers can synthesize and sell hemp-derived cannabis products with psychotropic doses of cannabinoids, such as Δ^8-THC, Δ^O-THC, Δ^{10}-THC, and hexahydrocannabinol (and others). These hemp-derived cannabis products produce similar psychotropic effects as Δ^9-THC and are being sold across the US as vape cartridges, edibles, concentrates (eg, potent extracts), and tinctures (eg, infused liquids). Clinicians and policy makers should be aware of public health concerns of widely available, psychotropic, hemp-derived cannabis products that are being manufactured and sold with little regulation, leading to potential health and safety risks.

First, unlike traditional state-regulated Δ^9-THC cannabis that is sold in medical or recreational dispensaries for adult use, psychotropic, hemp-derived cannabis products are sold online and by brick-and-mortar retailers (eg, vape and smoke shops, convenience stores, and gas stations). Retailers selling these products do not have the same safeguards

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in place that state-run cannabis control bureaus have developed to reduce potential harm to consumers.[3] For example, there is no established minimum purchasing age for hemp-derived cannabis products. In addition, there are no requirements for hemp-derived products to include warning labels for the presence of THC, or instructions on their packaging regarding appropriate doses. States with cannabis legalization for recreational use, medical use, or both uses generally prohibit cannabis retailers from also selling tobacco and alcohol. However, retailers that sell psychotropic, hemp-derived cannabis products may also sell alcohol and tobacco products like e-cigarettes and cigarettes; this increases the potential for co-use of multiple substances, which can lead to excessive impairment and greater risk of drug dependence.

Second, due to limited regulation, psychotropic, hemp-derived cannabis products have marketing features that may appeal to youth. For example, such products are available as chocolates, gummies, cookies, and brownies and the packaging and advertisements often use bright and colorful designs. In addition, hemp-derived cannabis vape cartridges come in a wide range of sweet and fruity flavors, which increase appeal among youth and young adults. Because of their similarity to candy and food products, accidental exposure by children, adults, and animals is a concern. Between January 1, 2021, and February 28, 2022, national poison control centers received reports of 2362 cases of Δ^8-THC exposures, of which 40% involved accidental exposure to Δ^8-THC (82% among youth), 70% required evaluation at a health care facility, 8% were admitted to a critical care unit, and 1 pediatric death was reported.[2] Animal poison control centers have also seen an increase in reports of accidental pet exposure to Δ^8-THC.[2]

Third, there is no standardized approach to synthesizing psychotropic, hemp-derived cannabinoids, and such products could contain dangerous and toxic byproducts. Hemp plants naturally contain low concentrations of psychotropic cannabinoids; manufacturers must first extract CBD from hemp, which they then convert to psychotropic cannabinoids through a series of chemical reactions. There is no required certification process to test hemp-derived cannabis products for potential contaminants. Independent laboratory tests of legally purchased hemp-derived cannabis products have revealed the presence of toxic heavy metals (eg, lead), residual solvents (eg, acetone), and multiple unidentified compounds with unknown toxicological harms.[4] Inhalation of contaminated cannabis vaping products can lead to serious lung injury, as evidenced by the 2019 EVALI (e-cigarette, or vaping, product use–associated lung injury) outbreak.[5] In addition, the minor cannabinoids themselves naturally occur in very small amounts in the *cannabis sativa* plant, and there has been little research on the effects of human in gestion of such cannabinoids at the high doses currently in products available on the market.

Fourth, the psychotropic properties of some hemp-derived cannabis products may be less potent than Δ^9THC. For example, both manufacturers and consumers have colloquially called Δ^8-THC products “diet weed.” Because of lower potency, individuals may consume higher volumes of hemp-derived cannabis products than traditional Δ^9-THC products, leading to adverse effects such as hallucinations, vomiting, tremor, anxiety, dizziness, confusion, and loss of consciousness.[2] It is not uncommon to see gummies with 50 mg of Δ^8-THC per serving (compared with 5-10 mg of Δ^9-THC in a standard product sold

in a dispensary). In addition, other synthesized THC isomers may be more potent than Δ^9-THC. For example, at the same dose, Δ^O-THC is considered 3 times stronger[6] than traditional Δ^9-THC, and products often contain a blend of different hemp-derived THC isomers. Consumers may not be aware of such differences and may be at risk for adverse effects from receiving a dose of a hemp-derived cannabinoid with higher potency than anticipated.

The 2018 Farm Bill[1] specified both the US Department of Agriculture and the US Food and Drug Administration (FDA) as regulatory authorities over hemp and hemp-derived products. Under the Federal Food, Drug, and Cosmetic Act,[7] hemp-derived cannabis products cannot be sold as dietary supplements, food products, or marketed with medical claims. However, beyond issuing a health alert and several warning letters to a small number of companies, there has been little action by the FDA to regulate hemp-derived cannabis products. In the absence of federal regulatory action, 21 states have enacted legislation to restrict or ban the sale of psychotropic, hemp-derived cannabis products.[8]

However, the sale of psychotropic, hemp-derived cannabis products remains legal in 29 states and in Washington, DC, and online sales may render state regulations ineffective. Notably, 23 of the 29 states in which products are permitted have not legalized recreational cannabis, suggesting availability of hemp-derived cannabis products is more common in places where legal cannabis is unavailable. There is also substantial state-level variation in regulatory approaches. For example, Minnesota legalized the sale in 2022 of ingestible products containing no more than 5 mg of hemp-derived THC per serving. In Colorado and Oregon, Δ^8-THC and other isomers are included in their overall definition of THC and thus all psychotropic, hemp-derived products fall under cannabis control regulatory authority, effectively closing the hemp loophole.[3] The hemp policies in Oregon and Colorado have promise for reducing harm because they ensure all psychotropic cannabis products (including those derived from hemp) meet safety standards and adhere to marketing restrictions.

The increasing marketing of psychotropic, hemp-derived cannabis products makes clear that a regulated hemp market that manufactures and sells products with more oversight and stricter safety standards is urgently needed. Many of the potential harms of hemp-derived cannabis products stem from a lack of regulation, including the potential for harmful contaminants, accidental exposure, cross-product sale with tobacco and alcohol, and youth appeal.

State and federal regulators should prioritize new hemp policies that ensure prohibition of sale to minors; set requirements for testing, packaging, and labeling; and place limits on potency and concentration of psychotropic products. The public health implications of psychotropic, hemp-derived cannabis products remain understudied. However, the lack of regulation over the marketing and synthesis of these products, combined with the widespread availability, warrants national surveillance and new hemp policies that close loopholes and prioritize public health.

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