

# Assessing the Dangers of “Dabbing”: Mere Marijuana or Harmful New Trend?

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The practice now known as “dabbing” appears to be quickly proliferating as a fashionable way to use marijuana in the United States.<sup>1</sup> Dabbing is the inhalation of a concentrated tetrahydrocannabinol (THC) product created through butane extraction. The use of butane hash oil (BHO) products and the modification of cannabis more generally are not new phenomena, but dabbing has recently moved from relative obscurity to the headlines, leaving cannabis aficionados, adolescents, and parents curious about its effects. Physicians and other health care professionals need to be prepared for discussions about the effects of dabbing to minimize potential harms, particularly because recent marijuana policy changes likely has facilitated youth access to “dabs.”

BHO is made from cannabis and in many instances may be used to salvage less potent portions of the plant.<sup>2</sup> Because BHO production is uncomplicated, requires few resources, and is the subject of countless instructional videos on social media Web sites, recreational users have created BHO at home in a process colloquially called “blasting.” Blasting involves passing butane through a steel or glass tube packed with dried cannabis trimmings. THC and other hydrophobic compounds in the vegetation’s trichomes dissolve within the butane; the butane-THC solution leaves the tube through a filter and is collected in a dish or tray. Because butane is very volatile, it evaporates (or is purged within a vacuum oven), leaving crystalized resins that can have a THC concentration approaching 80%. This product can take many forms depending on heat, pressure, humidity, and other factors. The form most challenging to produce is a clear amber solid referred to as “shatter.” Terms such as “honeycomb,” “budder,” and “earwax” also refer to BHO (a list of colloquial terms that patients may use for dabbing products and devices is presented in Table 1). The process of creating these products is extremely dangerous because butane is flammable and volatile, and a number of fires, explosions, and severe burns have been attributed to home blasting. Fear of incrimination often leads amateur producers to be reticent in seeking medical care and to attribute the damage to some other cause.<sup>3,4</sup> Although blasting may be an appealing project for a young cannabis user, the safety risks have been described as comparable to those of manufacturing methamphetamine.

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**TABLE 1** Definitions of Dabbing Terminology Used by Users and Patients

References to the substance	
BHO	A THC concentrate created through use of solvents via either open column extraction or a closed-loop system. Products have a much higher THC concentration than traditional flower cannabis. They typically are consumed by placing the product on a heated surface and inhaling the vapors.
Shatter	A form of BHO with a solid, glasslike appearance. It shatters when scraped from the dish. Users consider this a superior form.
Budder	An extract that has a viscous, spreadable texture (this is distinct from cannabis-infused butter, which is ingested rather than inhaled).
Earwax or wax	An extract with a sticky, pasty consistency.
Honeycomb or crumble wax	A crumbly extract with a spongiform appearance and dry texture.
Dabbing	The act of inhaling the vapors from a concentrate.
Dab or glob	The amount of extract used for 1 inhalation (hit). Whereas dabs are standard sized dosages, globs represent unusually large amounts.
Honeybuds	Cannabis buds that have been infused with BHO.
References to paraphernalia	
Oil rig or rig	A water pipe or bong designed specifically to use concentrates, with the bowl replaced by a nail and dome (or by a swing or skillet).
Nail	A hollow rod used in place of a bowl to use concentrates, usually made of titanium (glass and quartz are also used).
Swing or skillet	A small metallic plate or pan clipped with wires to an oil rig and used to smoke concentrates. The plate is heated and then swung to the pipe opening before a concentrate is applied. A swing would be used in lieu of a nail.
Wand, dabber, or pick	A device used to apply concentrates to a heated surface.
Dome or globe	A concave glass cap placed over a hot nail to contain vapors.
Torch	A small blowtorch used to heat a nail or skillet for using concentrates (usually a handheld crème brûlée torch or propane canister).
E-pen	Handheld electric smoking device used for vaporizing extracts.
References to manufacturing	
Open column extraction	Extraction method in which a solvent, such as butane, is passed through a stainless steel or glass cylinder packed with cannabis material, through a screen, and onto a Pyrex dish or tray. The resulting product is then purged of solvent.
Blasting	Slang term for open column butane extraction; often refers to amateur production.
Closed loop system	Extraction method and equipment that recaptures the solvent gas released for reuse, typically associated with commercial or medical production.
Dual extraction method	The pairing of a butane extraction with an alcohol wash. Butane is used as a solvent in the “first run.” Alcohol is used for the “second run.”
Purging	The act of drawing out any solvents from concentrate (eg, whipping with low heat, vacuum leaching).

Some colloquial definitions are adapted from Black.<sup>7</sup>

Compared with flower cannabis use, dabbing is more complex and carries the risk of accidental injury. Young people may use the term “oil rig” to refer to their dabbing paraphernalia, which typically consists of a glass water pipe and a 4- to 6-inch hollow titanium rod called the “nail.” Nails have a concave surface area for dabs that extends beyond the pipe; nails are sometimes covered with a dome.<sup>2</sup> The oil rig is prepared by heating the nail with a blowtorch. Once the nail is sufficiently heated, users place a dab

onto the nail’s exposed surface. The user inhales as the dab is vaporized by the heat in the nail, pulling its vapors through the nail and water. An underappreciated risk associated with this technique is the open flame. Unlike the lighters used when smoking flower cannabis, which typically pose no more of a threat than a first-degree burn, a blow torch is often used to heat the nail to temperatures >400°C. In addition to the risks inherent in using these types of heating devices while cognitively impaired, there are

long-term health risks associated with inhaling offgassing solder, rust from oxidized metal parts, and benzene,<sup>5</sup> some of which are increasingly released at higher temperatures. Extracts can also be consumed in other ways, such as the use of a modified electronic cigarette. These techniques avoid some of the indirect risks (eg, fire), but are likely to be associated with similar health consequences.

The potential health outcomes of BHO as compared with flower cannabis are largely unknown because research on dabbing is clearly lacking. Those promoting the practice have suggested that it is safer in that nonpsychoactive compounds that may cause lung damage are no longer smoked and that the preparation process eliminates bacteria, mold, and fungi.<sup>2</sup> Others stress that there are greater acute risks in inhaling all of a more potent form of marijuana in a single breath.<sup>6</sup> Loss of consciousness, accidents, and falls have been hypothesized to be more common after dabbing than after traditional cannabis use. Similarly, some have suggested that dabbing is more likely to lead to dependence and withdrawal symptoms,<sup>6</sup> but research has yet to substantiate these claims. In the only peer-reviewed manuscript that assesses user reports of dabbing, Loflin and Earleywine<sup>6</sup> failed to find dabbing to carry increased risk of accident or injury. However, their sample was limited to experienced cannabis users ( $n = 357$ ) and may have been unable to detect long-term problems or problems specific to novice users. Legislation and policy changes may be warranted to ameliorate harms associated with dabbing, but without adequate research such action may be premature.

Some of the potential harms associated with dabbing are potentially moderated in states with regulated production of marijuana for medicinal and recreational purposes because there is less incentive for amateur production, and efficient closed-loop systems are mandated. These closed-loop systems

properly ventilate flammable compounds and more efficiently purge butane. Similarly, most potential home cooks and users would likely be dissuaded from engaging in a process that allows flammable gases to accumulate around their homes if they could legally and affordably purchase the product. States that allow commercial production consider “blasting” to be the operation of a drug laboratory; the associated prison sentence probably deters home production of a product that is commercially available. Commercial materials may contain a greater concentration of THC,<sup>2</sup> but it is also reasonable to assume that they more effectively purge the product of harmful solvents by using a vacuum oven rather than open-air purging. The closed-loop systems used in the commercial process are also likely to be more environmentally friendly, resource efficient, and fire safe. Of course, the retail availability of dabs and dabbing equipment may make it more accessible and facilitate an increase in experimentation and continued use.

BHO production and dabbing seem to be on the rise across the United States and necessitates a new message to young people, a message physicians

need to help deliver. Health care professionals have the responsibility to remind their patients, particularly those who have used marijuana, of the dangers that may be associated with a stronger product. They serve a key role in educating young people that BHO extract use potentially carries risks beyond that of flower cannabis smoking. Patients’ assumptions that products originating from the same plant are equivalent must be refuted proactively in the clinical setting. Primary care physicians should avoid hyperbolic arguments like those of the media that describe dabbing as “the crack of pot,” and instead urge caution. Patients should be advised that research is lacking, information is still largely anecdotal, and the safest option is to refrain from use when definitive answers are absent. Conversations that lead patients to the conclusion that dabbing may not be as safe as flower cannabis should be a goal and should result in fewer young people engaging in this practice.

#### ABBREVIATIONS

BHO: butane hash oil  
THC: tetrahydrocannabinol

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