

Chemical substances are sometimes added to cannabis extracts used in vaporizers. Some of these substances increase vaporization efficiency by diluting the thick, gooey cannabis extract. Others are used to change the appearance of the extract, to make it appear unadulterated if a fluidizing agent has been used.

## **Pine Rosin**

Earlier this year, researchers from Portland State University acquired a sample of an unfamiliar cannabis extract adulterant. The person who supplied this substance (a cannabis industry contact) didn't know exactly what it was, and they were concerned enough about its contents to want it analyzed. The researchers eventually discovered that the adulterant contained pine rosin (or resin), a thick, sticky chemical extract that could make cannabis concentrates seem denser and purer than they are.

Pine rosin fumes have been linked to a condition called occupational asthma, which can develop in laborers who inhale chemical pollutants daily. Pine rosin can cause significant internal damage to tissues in the respiratory system if excessive amounts are inhaled, as they would almost assuredly be if a substance containing pine resin were to be consumed in vaporized form.

This discovery was an unexpected and disturbing result since pine rosin is a highly problematic choice as a cannabis extract thickening agent.

## **Vitamin E Acetate**

Notably, another sample of extract adulterant tested by the Portland State research team contained large quantities of Vitamin E acetate. This additive was linked to [the 2019 outbreak of vaporizing-related illness](#) that caused more than 50 deaths and sent over 2,500 people to hospital emergency rooms seeking treatment for severe lung injuries.

Vitamin E acetate is perfectly safe when taken as an oral supplement. But it becomes highly dangerous when heated, vaporized, and inhaled. Vitamin E acetate can be highly caustic to sensitive lung tissue, causing a severe and sometimes life-threatening reaction.

Pine resin and Vitamin E acetate are potent chemicals. Neither substance is safe for use inside a vaporizer and could represent a serious threat to the health of consumers if unknowingly consumed. The primary source of the problem is black market vape pens, which come from illicit sources where monitoring for quality control is nonexistent.

“The two reasons we published were to warn people, to make regular users and the general public aware, and also to put it on regulators’ and law enforcement’s radar,” explains Portland State’s Dr. Robert Strongin, who co-authored the [April 2020 Forensic Science International article](#) announcing the discovery.

While Vitamin E acetate has been used as a cannabis extract adulterant for some time, this new study provides the first confirmation that pine rosin is also being added to products designed for vaporizing.

## **The Dangers of Dabbing: When Terpenes Turn Toxic**

Toxic chemicals added to extracts are a concern. But in some instances, the chemicals that occur naturally in cannabis can be the source of trouble.

When done carelessly, dabbing subjects cannabis extracts to high heat, often surpassing 800 or even 900 degrees Fahrenheit. This vicious blast of heat can release impressive quantities of THC in the resulting vapor, delivering a radically more potent, faster onset of effects.

Butane Hash Oil (BHO), a common extract for dabbing, can contain THC concentrations that range from 80–90 percent. Vaporization of these products will always release significant amounts of THC, but dabbing takes the potency of the vapor to a whole new level.

However, when BHO is heated to extreme temperatures, it can cause chemical changes in the extract that are unhealthy for the human body.

Vapors released by high-temperature dabbing may release measurable quantities of two toxic byproducts, [methacrolein \(MC\)](#) and [benzene](#). These chemicals are derived from the degradation of terpenes that are common in full-spectrum extracts.

Terpenes, which give various cannabis strains their distinctive aromas, are believed to increase the efficacy and potency of THC through a synergistic relationship known as the entourage effect, which is still somewhat theoretical but sought by cannabis users nonetheless. Cannabis extracts are generally rich in terpenes, but they are sometimes combined with a terpene-dense liquid solution to increase the content even further.

But terpenes subjected to intense heat can turn toxic. In fact, the most commonly occurring terpenes, including myrcene, limonene, and linalool, can become prolific emitters of MC and benzene, if conditions are favorable. Terpenes have an excellent reputation in general (which is well-earned), but their health-restoring capacities can be entirely negated when they undergo certain heat-induced transformations.

MC is a noxious irritant that can act as a toxin to the respiratory system, with both the throat and lungs being vulnerable to damage. However, benzene is a bigger problem. This chemical is a notorious carcinogen, and the concentrated doses released during high-temperature dabbing could be a significant cause for concern.

## **Safety is Everyone's Responsibility**

Toxic contamination of cannabis products is an issue of quality control and smart practice. Unfortunately, there will always be irresponsible cultivators, manufacturers, and vendors who will choose to take shortcuts.

Most of these individuals operate in the shadows of the black market. Nevertheless, the cannabis industry must make consumer safety its main priority to ensure legal cultivators, manufacturers, wholesalers, and retailers aren't tempted to take shortcuts. Strong regulation and monitoring must always be welcomed rather than resisted.

But reckless and uninformed conduct on the consumer end of the supply chain is also part of the problem.

The best way for cannabis users to ensure they're purchasing reliable and safe products is to stick with established brands that sell their products in licensed dispensaries, either in person or online. Fly-by-night operators and illicit suppliers are generally looking for quick and easy profits, and trusting them to be responsible is a foolish choice in every instance.

Meanwhile, research has shown that dabbing can be done safely [if vaporizing temperatures are carefully controlled](#) and not allowed to exceed 750 degrees Fahrenheit. At temperatures below that level, terpene breakdown is more gradual and does not appear to produce noxious or poisonous chemicals.

This approach puts the onus on users to monitor temperatures while dabbing and adjust their practices if high heat is being generated. If they fail to do so, they may suffer severe long-term consequences as a result.

Ultimately, it is everyone's responsibility to stay informed about current trends and safe practices, regardless of what position they occupy on the cannabis supply chain.

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