

SMOKING VS VAPORIZATION

Many organic substances and blends contain desirable components that we traditionally ingest by smoking, i.e. burning the material and breathing in the mix of gases. While we know that the desired compounds are present, we also know that organic combustion always produces some compounds that we'd rather do without, some of which are even classed as carcinogens.

Smoking uses the type of combustion called smoldering (technically, oxidative pyrolysis). The important point about smoldering is that it is incomplete combustion, therefore it yields a lot more toxic products than actual flame. Exactly what is produced depends on the material that is smoldering, but certain toxins are common to all organic combustion.

Due to the extreme high temperatures, there are a wide variety of both organic and inorganic compounds produced when smoking plant material. The exact composition of smoke depends on the nature of the burning substance and the conditions of combustion, but it is always a mixture of microscopic particles mixed with a gaseous-vapor phase.

The gaseous-vapor phase contains many of the smaller, more volatile compounds, such as carbon monoxide, carbon dioxide, ammonia, hydrogen cyanide, formaldehyde, acetaldehyde, nitrosamines, acrolein, benzene, and toluene, among numerous others.

The particulate phase contains particles of various sizes. The smallest size aerosols contain the semi-volatile compounds like phenols, cresols and naphthalenes. The relatively larger particles have the heaviest, non-volatiles deposited on them: polyaromatic hydrocarbons such as benz(a)anthracene and benzo(a)pyrene.

One class of smoke by-products, called asphyxiants, prevents oxygen uptake. Some of these asphyxiants, such as carbon dioxide, just displace oxygen. Carbon monoxide, however, interacts with your blood and reduces its ability to carry oxygen--and it's the most commonly produced asphyxiant! Both CO₂ and CO are produced when you smoke.

Another class is called irritants. Smoked plant material produces acrolein, a highly potent irritant that severely affects the lungs, throat, nasal passages, and eyes. Combustion also produces another powerful irritant, formaldehyde, as well as particulate matter and tars that cause irritation.

Smoldering organic material has a pungent sharp odor that lingers. Smell and taste are closely linked, so smoke always has a charred taste that competes with and often overpowers the natural flavor. There's yet another problem: the heat of combustion is so high that it can destroy (pyrolyze) or diminish (chemically alter) components. Still, people tolerate the numerous negative aspects in order to benefit from the desirable components that are released.

Clearly, all of these problems can be avoided if we just heat the material to the point where the desirable components are released but not destroyed, and the material itself doesn't ignite. That is exactly what a vaporizer does. (For a full explanation of vaporizers, see [What Is A Vaporizer?](#))

The idea is to release only the vapor of the target component, which is usually found in the plant resins. In smoke, the desired component is diluted and mixed with particulates, tars, and toxic gases. Vapor, on the other hand, is much purer. The exact components released at the vaporization temperature depend on the material, but none of the toxic products of organic combustion will be present, so vapor contains a much higher percentage of the desired component than smoke does.

Vapor has a slight odor but it doesn't cling or linger for nearly as long as smoke. It certainly doesn't smell like burning. Vapor delivers full flavor. Because a large percentage of your material is no longer destroyed or floating away in smoke, vaporizing lets you get the most out of your material. One more potential benefit: a vaporizer with a variable temperature control lets you target components that vaporize at different temperatures. Our article on [Vaporizing by Temperature](#) explains why you would do this and how to approach it.

If you are still subjecting yourself to the hazards of smoke, you owe it to yourself to try the switch to vaporizing. Vaporizers have become widespread and affordable, and Vape World carries a wide selection of home and portable units. See our [Vaporizer Buying Guide](#) for advice on how to choose one that suits your needs, and our article on [switching from smoking to vaporizing](#) for tips on how to make a successful transition.