

Information for consumers: Switching from smoking to vaping

A host of media reports has caused uncertainty among smokers about the potential benefits and drawbacks of stopping smoking via vaping. Here is a summary of the most important points.

Tobacco cigarettes

With tobacco cigarettes, plant material (tobacco) is burned and the resulting smoke is inhaled. The harmfulness of smoke has been common knowledge for centuries. That's why people don't have indoor fireplaces without proper chimneys. Besides carbon monoxide (CO), which impairs the body's oxygen supply and is the cause of flue gas poisoning, smoke contains several thousand substances formed through tobacco combustion. Many of those are carcinogenic or otherwise toxic. Hence smokers chronically suffer from mild flue gas poisoning and increase their risk of lung cancer and other malignant tumors. Moreover, the inhalation of smoke impairs lung function, causing the well-known smoker's cough in the morning and in some cases severe irreversible lung diseases (emphysema, COPD). Due to impaired function of the immune system smokers also suffer from frequent infections, particularly of the upper respiratory tract (common cold).

E-Cigarettes

E-Cigarettes (e-cigs) vaporize a liquid, mostly but not necessarily containing nicotine, by electric energy from a battery. The resulting vapor (fog, mist) is inhaled by the user. As there is no combustion, no toxic combustion products are generated, among others no CO. In regular usage the solvents (propylene glycol and glycerol) and added flavors are vaporized unmodified. Propylene glycol and glycerol are benign substances that are metabolized in the body. In December 2016, the inhalation of propylene glycol, which is also used to generate artificial fog in theaters, has been declared as safe by the very strict European Chemicals Agency (ECHA).

Nicotine

Among other ingredients of tobacco smoke, nicotine contributes to the addiction of smokers but is relatively harmless by itself. Otherwise, drug agencies wouldn't have approved over the counter sale of nicotine containing chewing gums, patches, lozenges and inhalers. Similar to caffeine, nicotine induces a slight short-term increase in heart rate and blood pressure. These effects raise no problems in healthy individuals but could exert negative effects in persons with severe cardiovascular diseases, e.g. angina pectoris or survived myocardial infarction, or during pregnancy. However, vaping is always distinctly less harmful than the inhalation of tobacco smoke. Health organizations and medical expert associations issue warnings about nicotine in e-cigs but at the same time recommend nicotine containing drugs for smoking cessation. In this paper, I am not going to discuss the motivation for this apparently inconsistent assessment.

Residual Risk

Like drink and tobacco products e-cigarettes are used for pleasure and don't need to be healthy. In fact, most people accept the known associated risks when enjoying coffee or alcoholic beverages. The decisive issue is the harm of e-cigs compared to tobacco cigarettes. The relative risk of e-cigs has been estimated by a panel of international experts, and their assessment was published by the worldwide recognized health authority Public Health England (PHE). In its report PHE suggested that vaping is at least (!) 95% less harmful than smoking, i.e. maximal 5% risk of e-cigs compared to tobacco cigarettes. The residual risk is probably even smaller and close to 0% for potentially lethal diseases like cancer or COPD because the harmful substances known to cause these conditions are either not detectable or only contained in traces in the vapor.

Health Improvement

Published studies as well as surveys among vaping ex-smokers, and their stories, show that switching to vaping entails the same health benefits as smoking cessation. The typical smoker's cough disappears within a few weeks, susceptibility to infections is massively reduced, and physical fitness increases. One of the most severe consequences of smoking is COPD, an irreversible chronic lung disease that substantially affects the quality of life. Clinical studies and reports from individuals suffering from COPD unequivocally show that the switch to vaping prevents disease progression with similar efficiency as a total abstention.

Harm Reduction

There is worldwide agreement among scientists that the health risks of smokers are significantly reduced upon the switch to vaping. However, many health experts reject the concept of harm reduction and insist on abstinence as the only desirable objective. In the past, there were similar discussions about needle exchange programs for heroin addicts or the use of condoms for HIV protection. Having no sex at all is certainly safer than having sex with condoms, but for the majority of the people total abstinence doesn't appear to be a realistic alternative.

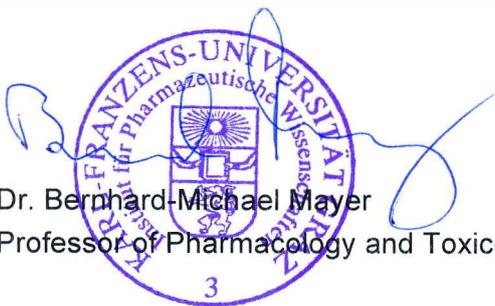
Harm to Bystanders ("passive vaping")

Analyses of the vapor produced by e-cigarettes, exhaled air of users, and vapor-loaded room air consistently show that the emission of potentially harmful substances is far below international limits for air quality, with concentrations often even below the detection limit of the analytical methods. Thus, harm to bystanders can be excluded, and there is no scientific basis for the extension of the laws for the protection of non-smokers to vaping. Subjective fears of third parties cannot be taken as the basis for legal regulations. However, in my opinion, it is a matter of courtesy towards others to be considerate and unobtrusive when vaping.

Public health authorities regularly claim via the media that vaping contaminates the air with particulate matter. This scientific term includes both, demonstrably harmful solid particles in smoke formed by combustion (tobacco cigarettes, diesel engines, industry exhausts, etc.) and harmless liquid droplets. Similarly to the air inhaled on a foggy November day or the emission of approved asthma inhalers, the mist generated by e-cigs is made up of liquid droplets causing no harm to the lungs. Therefore, the warnings about particulate matter in e-cig vapor have to be judged as deceptive scaremongering of the public.

Recommendation

In summary I urgently recommend that smokers switch to vaping. Individual consultation in a specialized vape shop is advisable to ensure starting with devices and liquids that meet the varying personal needs of consumers. Switching to vaping should not be regarded as smoking cessation, a term many smokers associate with failure and aversion. It rather means switching to an alternative that is by orders of magnitude less harmful than inhaling the smoke of burned tobacco.



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Conflicts of Interest

As Full Professor and Chair of Pharmacology and Toxicology at the University of Graz I have prepared Expert Opinions commissioned by the pharmaceutical industry as well as manufacturers and retailers of electronic cigarettes and liquids. I am financially independent of my clients and have no economic or personal relationship with industry.

As a former heavy smoker who has ceased smoking quick and easy by switching to e-cigs more than five years ago and experienced the health benefits first hand, personal bias might be assumed. However, my statements are based on current knowledge published in scientific papers, and I would be pleased to provide references to interested consumers.