

Liquids from e-cigarettes can be detrimental to health

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“Smoking” of e-cigarettes results in the evaporation of so-called liquids, which represent solutions of certain ingredients. The liquid is heated by means of a battery-operated mechanism, which allows to inhale the vapour. The users of e-cigarettes can either replace the liquid-filled cartridges or refill them by their own. Little is known about the ingredients of the liquids. The Federal Institute for Risk Assessment (BfR) has assessed typical ingredients regarding of their health effects.

Smokers of e-cigarettes do not inhale the characteristic carcinogenic combustion products and substances known to be present in tobacco smoke. Nevertheless, e-cigarettes can not considered safe with respect to health effects. An important risk factor is posed by inhaling nicotine. Some pharmacological effects of nicotine – such as increased blood pressure and accelerated heart frequency, excessive production of gastric acid, increased adrenaline release – are often discussed as being associated with chronic diseases. In the future but not yet it might be possible to reliably assess the long-term health effects of e-cigarettes.

Another possible risk factor of e-cigarettes is acute nicotine poisoning in adults through excessive use of e-cigarettes or in children as a result of incautious handling of the liquids (e.g. swallowing).

According to the assessment of BfR, e-smoking might also trigger nicotine dependency which might subsequently facilitate smoking of tobacco.

Moreover, additional ingredients of the liquids such as fumigation agents (propylene glycol, glycerine), chemical additives, added pharmacologically active compounds, various scent and aroma substances (e.g. menthol, linalool), and contaminants can pose health risks. Propylene glycol, for example, can lead to irritation of the upper respiratory tract and thus might affect proper lung function. Again, little is known about the long-term effects of chronic exposure to propylene glycol. In addition, there are indications in the literature that some e-cigarette brands release carcinogenic aldehydes.

Furthermore, risks for passive smokers cannot be ruled out on the basis of the current knowledge. Considering a wide product spectrum of liquids as well as virtually unlimited possibilities for e-smokers to regroup active ingredients and concentrates, the nature of the substances that are inhaled and exhaled remain often unclear. It is therefore difficult to identify pollutants that contribute to the contamination of indoor air. The BfR therefore recommends that e-cigarettes should be treated like conventional cigarettes in non-smoking areas and that e-smoking is banned in such zones.

The full version of this BfR Opinion is available in German on <http://www.bfr.bund.de/cm/343/liquids-von-e-zigaretten-koennen-die-gesundheit-beeintraechtigen.pdf>