



Quick Facts on E-Cigarettes

Electronic cigarettes also known as e-cigarettes, personal vaporizers, or electronic nicotine delivery systems, are used as safer alternatives to conventional tobacco cigarettes.

Because no smoke is generated with e-cigarettes (just evaporation and condensation occurs with no carbon monoxide or tar released) these products are regularly advertised to be free of primary and second-hand smoke risk. However, there is growing evidence of health risks associated with the intended use of e-cigarettes.

Health Effects of E-Cigarettes

The main components of e-cigarettes (propylene glycol, glycerine, and flavours) have been approved for use in food, but this does not necessarily mean that they are also safe when they are repeatedly inhaled over 30 minutes or more, or daily for years.

Propylene Glycol

- Main ingredient of e-cigarette liquids (e-liquid) is an approved food additive
- Short-term exposure to propylene glycol in indoor air causes irritation of the eyes, throat and airways, as well as cough, nausea and vomiting
- Long-term exposure propylene glycol in indoor air may increase risk of asthma
- When heated and vaporized propylene glycol can form propylene oxide which is considered a class 2b carcinogen by IARC

Glycerine

- Used for aerosol production
- Considered generally safe for oral intake and is used in food production
- Aerosol inhalation has not been well studied
- One report published in 2012 of patient with lipoid pneumonia caused by glycerine-based oils from aerosol of e-cigarettes (symptoms disappeared when patient stopped using electronic cigarettes)

Nicotine

- Active component in e-cigarettes
- Raises blood pressure and heart rate, curbs appetite, increases basal metabolic rate and promotes bowel motility
- Lowers urine production, promotes blood coagulation, stimulates breathing and may cause pain sensitivity as well as nausea and vomiting
- Can cause damage to fetal lungs, heart and central nervous system
- Large amounts of nicotine are toxic (approximately 50 mg of nicotine is lethal if swallowed. Liquids used in e-cigarettes contain up to 36 mg of nicotine per ml of fluid)
- Nicotine promotes release of neurotransmitters causing various psychological effects which can lead to nicotine dependence. (nicotine dependence consists of a physical and psychological component making cessation/ quitting difficult.)

Cancer-Causing Substances

- E-liquids contain small amounts of nitrosamines
- Formaldehyde, acetaldehyde and acrolein are also found in the aerosol of various e-cigarettes (although considerably less than in regular cigarette smoke)
- Nickel and chromium have been detected in the aerosol, with higher levels of nickel measured than in cigarette smoke
- Micron particles comprised of tin, silver, iron, nickel, aluminum and silicate, as well as nanoparticles containing tin, chromium and nickel which can cause respiratory problems and disease.
- These components are likely to add to the risk of cancer, even though the levels appear low (which they in fact may not be when users continue e-cigarette use).

Source: Williams M, Villarreal A, Bozhilov K, Lin S, Talbot P. (2013) Metal and silicate particles including nanoparticles are present in electronic cigarette cartomizer fluid and aerosol. PloS One 8, e57987

