

A relatively new nicotine delivery product on the market is the electronic cigarette, commonly referred to as an e-cigarette. Although not a tobacco product, they are designed to look and feel in every way like a conventional cigarette. E-cigarettes are actively marketed as an alternative to regular cigarettes for use in places where smoking is not permitted. However, since e-cigarettes have not been scientifically evaluated, there is no credible evidence that these products are safe for human consumption or that they are effective at helping smokers or other tobacco users quit, as some manufacturers continue to claim. Unlike other nicotine replacement products such as gums or patches, the U.S. Food and Drug Administration (FDA) has not approved e-cigarettes as smoking cessation aids. As a result, and combined with data about health effects, e-cigarettes cannot be recommended as a safe alternative to smoking or tobacco use.

How Do E-Cigarettes Work?

A typical e-cigarette consists of a battery, a heating element and a cartridge containing nicotine, propylene glycol and water. The levels of nicotine in the cartridges can vary drastically and many also contain candy-like flavorings. They operate by electronically vaporizing the nicotine solution, creating a mist that is inhaled into the lungs. After the user inhales, the residual aerosol, or vapor, is exhaled into the surrounding air.

Health Effects of Nicotine

- Nicotine is a highly addictive drug, research suggests even more so than cocaine or heroin.^{1,2}
- Nicotine raises blood pressure and cholesterol, increasing the likelihood of a heart attack or stroke.^{3,4}
- Exposure to high doses of nicotine can be fatal for adults; the lethal dose for children is just 10mg.⁵
- Nicotine promotes insulin resistance, also called prediabetes, which is a risk factor for cardiovascular disease.⁶
- Acute nicotine toxicity is associated with over-stimulation of nicotinic receptors; burning in the throat with nausea and vomiting occurs quickly after ingestion. More toxic manifestations include cardiac tachyarrhythmias (abnormal electrical activity in the heart, i.e. heartbeat is too fast, too slow, or irregular), seizures, and hypertensive crisis.⁷
- Nicotine is used in a number of pesticides because of its toxic properties.⁸

Electronic Cigarettes and Secondhand Smoke

- After the user inhales, the residual aerosol, or vapor, is exhaled into the surrounding air.⁹
- E-cigarettes may emit nicotine, propylene glycol, carcinogens, and other substances.¹⁰
- Nicotine deposits on indoor surfaces and lasts for weeks to months.¹⁰

Public Health Concerns: Untested, Unproven

- The FDA announced that preliminary testing of e-cigarette samples indicate that they contain carcinogens and toxic chemicals such as diethylene glycol, an ingredient used in anti-freeze.¹⁶
- E-cigarettes produce a vapor of potentially harmful substances, which may appear similar to the smoke emitted by traditional tobacco products. Their use in workplaces and public places where smoking of traditional tobacco products is prohibited creates confusion and leads to difficulties in enforcing existing smoking prohibitions.¹¹
- E-cigarettes model smoking behavior to youth.
- Research shows that reduced risk product claims undermine adult cessation and youth prevention. Lulled by a false sense of security, consumers may not quit and instead continue their addiction.¹²
- Misleading advertisements, many times comprised of anecdotal testimonials rather than scientific facts, misrepresent e-cigarettes as harmless and a healthy way to quit. E-cigarettes have not been adequately evaluated for safety or approved as a cessation aid.
- A wide array of flavored nicotine cartridges are available, many of which are candy/fruit flavors, including vanilla, chocolate, strawberry, grape, bubble gum, cherry, mint, peach cobbler, etc. This increases the appeal of e-cigarettes to youth and can become a "gateway" to tobacco product use.¹³
- Studies have shown that when smokers use vaporized nicotine as a smoking alternative or to quit, the vaporized nicotine produces similarly addictive and psychological effects as cigarettes.¹³
- Claims of reduced exposure to toxins does not necessarily mean reduced risk. That lesson was painfully learned from the promotion of 'light' cigarettes as a harm reduction product which turned out not to be the case.¹⁴
- Allowing smoking/vaping indoors puts businesses at risk for violation of the Americans with Disabilities Act which can occur when people with respiratory problems have limited access or cannot patronize or work in a business due to exposure to indoor air pollutants.

Safety Concerns: No Regulation, No Oversight

- FDA has not evaluated e-cigarette to verify safety or effectiveness claims.
- Some of the documented poor manufacturing practices include:⁸
 - Poor cartridge labeling that lacks any indication of cartridge content, expiration date, or health warnings.
 - Once removed from packaging, cartridges claiming high nicotine content are indistinguishable from those claiming to have low or no nicotine content.
 - No instructions for proper disposal of used cartridges.
 - Sold with vague amounts of nicotine on the label. It is unclear if a value (eg, 24 mg), is mg/cartridge or mg/ml.
- Because e-cigarettes have not been submitted to the FDA for evaluation or approval for use as nicotine delivery devices, at this time the agency has no way of knowing, except for the limited testing it has performed, the levels of nicotine or the amounts or kinds of other chemicals that these products deliver to the user.¹⁶
- The nicotine solutions for e-cigarettes are offered in different strengths and vary by company, each with their own concentration methods. Solutions are very concentrated and can contain 500 to over 1,000 mg of nicotine in one 30 ml (about 1 oz) bottle. This creates a risk of overdosing or poisoning, as the lethal dose of nicotine for adults is 30-60mg if swallowed, and for children is just 10mg. Solutions come in a small bottle, are often fruit-flavored and without a child safety cap.⁵
- More research is needed around what inhaling water vapor, propylene glycol, pure nicotine (and any other undisclosed substance contained in the vapor) will do to human lungs, heart or cardiovascular system.¹⁴

Response From Other Jurisdictions

- American Cancer Society, American Heart Association, Campaign for Tobacco-free Kids, and the American Lung Association recommend that smoke-free laws and policies prohibit the use of e-cigarettes.¹⁷
- On July 22, 2009 the FDA warned of the toxic ingredients in e-cigarettes.
- The Air Force and the Marine base at Quantico have banned the use of e-cigarettes in the workplace. New Jersey and Suffolk County, NY, have banned use wherever smoking is prohibited.¹⁸
- All U.S. domestic airlines ban the use of e-cigarettes.¹⁸
- Oregon filed suit against two e-cigarette distributors based on misrepresentations by the company about the safety of e-cigarettes and marketing practices geared toward minors. An agreement was reached that bans the sale and distribution of e-cigarettes in the state.¹⁹
- California reached a settlement with an e-cigarette distributor that prohibits marketing to minors, such as a ban against flavored nicotine cartridges, and from making false or misleading claims about e-cigarettes.²⁰
- Utah, Arizona, Tennessee, New Hampshire and Minnesota ban the sale of e-cigarettes to minors.
- E-cigarettes are banned in Canada²¹ and Australia²².

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