

E-Cigs Exposed – Not a Safe Alternative to Smoking

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STORY AT-A-GLANCE

- › Electronic cigarettes, or e-cigarettes, contain not only nicotine but also flavorings developed to satisfy your taste buds while the nicotine reportedly curbs your addiction
- › The number of middle schoolers and high school students taking up e-cigarettes is rising precipitously, as the number of people smoking traditional cigarettes is declining
- › Researchers have found it takes smoking just one traditional cigarette or taking 10 puffs on an e-cigarette per day to increase your risk of an early death

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If you're using e-cigarettes, there's a chance you're doing so to reduce your risk of exposure to dangerous chemicals, or to experience smoking without the risk of using tobacco. However, in either case, you may be putting yourself at just as much risk of dangerous health conditions.

For instance, diacetyl is an artificial flavor used for adding a buttery taste to microwave popcorn. It has been linked to respiratory damage, including inflammation and permanent scarring of the airways, dubbed "popcorn lung," in workers at a microwave popcorn plant.¹

Diacetyl is just one of the chemicals used to flavor e-cigarettes.² Unfortunately, the perception that e-cigarettes are safe has fueled the rise in middle school and high school student use.

From 2011 to 2015 the use of e-cigarettes (vaping) in middle school rose from 0.6% of students to 5.3%.³ At the same time, the use of traditional cigarettes declined from 4.3% to 2.3% among students.

Sparked by the rising numbers of students' vaping and consuming nicotine and other harmful chemicals at an early age, the U.S. Surgeon General is taking a hard look at e-cigarettes and the effects they have on your health.

Numbers Are Clear yet Spur Industry Controversy

In 2016, the U.S. Surgeon General released a report detailing the increased use of e-cigarettes in children, calling for action to address the problem.⁴ E-cigarettes hold a significant portion of the tobacco industry marketing, netting the industry \$2.5 billion from a \$125 million ad spend.⁵

According to the U.S. Centers for Disease Control and Prevention (CDC), about 5 of every 100 middle school students claim to have used an **e-cigarette** in the past 30 days and 16 of every 100 high school students could make the same claim.⁶

As the tobacco industry is evaluating their future profits, it is the teenage demographic that is the most critical to the addition of new users and future revenue.

The report from the Surgeon General made several recommendations to curb the use of e-cigarettes in children, one of which was to use known strategies to reduce purchases, including incorporating e-cigarettes into current smoking policies, and the additional tax structure that discourages use.⁷

As expected, the report drew an angry response from groups who argue the use of e-cigarettes – loaded with the addictive substance nicotine – are potentially helpful to those trying to quit smoking combustible cigarettes.

Research on e-cigarettes were done on the first generation products. The new products deliver nicotine more effectively, but with additional heat, chemicals and fine particles.

Dr. Pamela Ling from the University of California San Francisco points out that even assuming e-cigarettes are safer for use than combustible cigarettes, the safety measurement is compared against the world's most deadly consumer product and sets the safety bar extremely low.⁸

Despite media attention on the potential health risks from using e-cigarettes, sales continue to climb and are expected to reach \$4.1 billion in 2016.⁹ Philip Morris International has now filed an application to market a new product using tobacco that is heated but not burned, claiming it is also safer than traditional cigarettes.¹⁰

Cigarette Smoking on the Decline

As the rates of e-cigarettes have risen, the number of middle schoolers and teenagers who are smoking combustible cigarettes has declined.¹¹ According to statistics from the CDC, the use of tobacco products is often established first during adolescence.¹²

Nearly 90% start before age 18 and 99% start before age 26. Each day more than 3,200 adolescents try their first cigarette and 2,100 young adults become daily users.

Between 2011 and 2015, CDC statistics demonstrate a reduction in tobacco use among middle school and high school students, as more are turning to e-cigarettes. Between 2011 and 2015, the percentage of high school students smoking cigarettes dropped from 15.8% to 9.3%.¹³

For the first time since statistics have been kept in the U.S., the number of people who are smoking cigarettes has dropped to record lows.¹⁴ In 2005 there were slightly over 45 million people smoking and in 2015 that number had dropped to just over 36 million.

The decline in **cigarette smokers** has not been consistent across different groups however. For instance, the sharpest drop has been in the youngest group, while those getting Medicaid actually had an increase in number who smoked.¹⁵

The percentage of those who smoked declined with an increase in education. Those with a G.E.D. smoked 34%, while only 4% with a graduate degree smoked. Brian King,

deputy director in the office of smoking and health at the CDC, comments:¹⁶

"We've made commendable progress toward reducing smoking ... But there is still work to do. If we are going to make a difference, we are going to need to implement what we know works: price increases, mass media attention and prevention services."

As the rate of combustible cigarette smoking declines, especially in the younger age group most important to sales in the tobacco industry, marketing is moving to promoting **e-cigarettes** to a young audience under the auspices of being a healthier choice.

How E-Cigarettes Work

E-cigarettes deliver nicotine and other chemicals to your body using heat but not combustion. Using heat created by a battery, an e-cig heats a liquid to create an aerosol that contains nicotine, flavorings and other chemicals.¹⁷

Inhaling this combination gives the user the same effect they get from the nicotine in cigarettes, without the chemicals commonly found in traditional cigarettes.

E-cigarettes come in a variety of shapes and sizes but all deliver the same composition of chemicals. Advocates claim they are healthier as they don't contain the hundreds of other chemicals in cigarettes. Marketing practices of tobacco companies appear to be driving this point home with their intended consumers.

According to the Surgeon General's 2016 report, a little over 60% of high school students believe that e-cigarettes cause little harm as long as they aren't used every day. Students who have used e-cigarettes are also more likely to believe they cause little harm than those who have never used them.

Public health concerns center on the potential risk to the entire population. Scientists are still determining if e-cigarettes increase your risk of smoking combustible cigarettes, sustain your cigarette habit through the consumption of nicotine in a

different delivery system, and increase the likelihood former smokers may once again become addicted to nicotine.

While e-cigarettes contain other chemicals, which scientists are continuing to study, the risks associated with nicotine are well researched and documented. The Surgeon General's report criticized the industry for blatantly marketing to middle school and teens by using candy flavorings in their nicotine liquid.¹⁸

Scientists Find It Takes Just One

A 2016 study finds that smoking just one cigarette a day leads to a 64% higher risk of **early death** over a lifetime, confirming the belief there is no level of safe smoking.¹⁹

The National Cancer Institute evaluated lifetime smoking patterns and found those smoking between one and 10 cigarettes a day had an 87% increased chance of early death.²⁰

The study is a reminder that smoking even a small number of cigarettes presents a significant hazard to your health. Maki Inoue-Choi, Ph.D., Division of Cancer Epidemiology and Genetics, and lead author of the study, commented:²¹

"Together, these findings indicate that smoking even a small number of cigarettes per day has substantial negative health effects and provide further evidence that smoking cessation benefits all smokers, regardless of how few cigarettes they smoke."

Researchers also found smoking a mere 10 puffs of an e-cigarette increases your risk of heart disease.²² Within the first hour of smoking an e-cigarette, researchers discovered a rise in endothelial progenitor cells (EPCs) of the same scale as smoking one traditional cigarette.

These cells indicate damage to the inner lining of your blood vessels. It took 24 hours for levels to return to normal. Dr. Joep Perk, spokesman for the European Society of Cardiology commented:²³ 'It really surprises me that so little vapor from an e-cigarette is

needed to start the heart disease ball rolling. It's worrying that one e-cigarette can trigger such a response."

There is significant concern that diseases associated with the chemicals in e-cigarettes could begin to emerge in as little as 10 years, placing children at significant risk for ill health early on in their adult life.

Do E-Cigarettes Help You Quit Tobacco?

E-cigarette advocates claim vaping can help you quit tobacco, but they don't tell you the whole story. Ling advises physicians to use any strategy that is safe and effective to help their patients quit smoking, and believes that e-cigarettes are neither.²⁴ She points to a randomized clinical study comparing nicotine patches and e-cigarettes showing virtually no difference between the methods.²⁵

This means it's not necessary to inhale additional chemicals or continue a physical action to quit smoking. In a major review of the medical evidence, the U.S. Preventive Services Task Force did not find sufficient evidence to recommend using e-cigarettes as a method of helping people to quit smoking.²⁶ Other major health and medical organizations have followed suit, citing poor evidence that e-cigarettes are effective.^{27,28}

Unfortunately, not only does the research not support the use of e-cigarettes to help quitting, scientists have also found that people continue to smoke and use e-cigarettes, just adding another nicotine delivery system to their routine.²⁹

Most of the major U.S. tobacco companies have created electronic cigarette products. It would be business suicide to believe the tobacco industry would develop and market a product they believe would damage their company profits. E-cigarette companies claim their products are safer than traditional cigarettes and offer a real-world trade-off for the dangers associated with combustible cigarettes. However, these trade-offs come with real world consequences.

No Matter How It Is Delivered, Nicotine Is Addictive

In this short video you'll discover side effects from nicotine in your cigarettes or e-cigarettes. Studies demonstrate the health dangers associated with nicotine, the active ingredient in e-cigarettes. Your risks may be slightly different, but they are no less dangerous than smoking tobacco.

Research has determined that individuals who quit smoking for at least three to six months have the greatest chance of stopping smoking permanently.³⁰ This means not smoking or vaping for three to six months. While you may believe you're using e-cigarettes to help you stop smoking, the reality is that you continue to remain addicted to nicotine and engage in the same physical activity.

E-cigarettes deliver a dose of nicotine, the drug in cigarettes to which your body is addicted, through an electronic mechanism. While many would like to think the jury is out on whether vaping is harmful to your health, data from several studies published in early 2015 demonstrate otherwise.

Nicotine is one of the oldest botanical insecticides,³¹ and a powerful poison³² that has been linked to a number of different health conditions.³³ Doing a Medline and PubMed database search on specific keywords, researchers gathered data from over 3,400 different articles and studies.

This evidence suggests **nicotine** adversely affects your cardiovascular, respiratory, renal and reproductive systems. Preliminary studies show nicotine does direct damage to your heart cells and vascular cells.³⁴ This damage triggers an inflammatory response and may lead to atherosclerosis.³⁵ Nicotine also promotes tumors by affecting cell proliferation, and increases resistance to chemotherapeutic agents.³⁶

According to the CDC, more people in America are addicted to nicotine than any other drug, and it may be as addictive as **heroin**, cocaine or alcohol.³⁷ It is not clear that adding nicotine to your body will actually help you stop smoking, or if e-cigarettes help or just get in your way.³⁸ Chances are, they will not be helpful, for the reasons already mentioned.

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