What are e-cigarettes?

Electronic cigarettes, also known as e-cigarettes or e-cigs, are battery-powered devices designed to look like and be used the same way as conventional cigarettes.

Unlike conventional cigarettes that burn tobacco and release nicotine into the smoke, e-cigarettes heat up a liquid that contains nicotine and release it as an aerosol. The "e-liquid" is dispensed via a cartridge in the e-cigarette. Propylene glycol, another ingredient in the e-liquid, is used to produce the aerosol, which is stored under pressure. The aerosol is released as a fine spray by pressing a button. Nicotine, nicotine-free, and flavored e-liquids are available.

E-cigarettes were invented in China in 2003 and most brands are manufactured in China. Sales have grown rapidly in spite of questions about safety, effectiveness to help smokers to quit, and impact on public health.

What is vaping?

Vaping means using e-cigarettes. Vaping copies the experience of smoking a cigarette by delivering vapor or aerosol to the lungs. The aerosol contains nicotine, propylene glycol or glycerol (glycerin), and flavors.

Is vaping safe?

The US Food and Drug Administration (FDA) says that since clinical studies for safety have not been shown to them, consumers of e-cigarettes have no way to know whether the devices are safe, what types or concentrations of chemicals they contain, or the dose of nicotine being inhaled.

The amount of nicotine and other ingredients in different brands of e-cigarettes varies widely, and researchers struggle to accurately measure the ingredients and by-products from heating the vaping solution. Since e-cigarettes are not currently regulated, manufacturers do not have to state the ingredients or how much nicotine they contain.

Most Public Health officials agree that e-cigarettes are a healthier alternative to smoking conventional cigarettes. However, studies are inconclusive. Science is trying to gauge how much better they really are.

Health effects of using nicotine include addiction, high blood pressure, and, later in life, coronary heart disease and cardiovascular issues.

Nicotine carries a risk of poisoning, especially for children. According to the World Health Organization, if a child swallowed the liquid in a 24 mg e-cigarette cartridge, it would probably die. Nicotine is also especially dangerous to youth, pregnant and nursing women, people with heart conditions, and the elderly. E-cigs may increase nicotine addiction among young people and lead them to try other tobacco products.

Propylene glycol and glycerol, when inhaled, irritate the mouth and throat and cause a dry cough. These and other ingredients in the liquid solution have not been studied for the health effects of inhaling the vapor into the lungs.

The air concentrations of nicotine from different brands of e-cigarettes vary widely, but they have been found to be about 1/10th the concentration of secondhand nicotine from smoking cigarettes. However, using e-cigarettes indoors may expose others to nicotine. One study found that e-cigarettes produce secondhand exposure to nicotine but not to the toxins from burning produced by smoking cigarettes.

Research on e-cigarettes is in process. The government is funding research to supplement independent and tobacco company studies on the health risks of e-cigarettes and other tobacco products, and also to understand who uses e-cigarettes and why.

What about vaping hash oil?

Hash oil is concentrated *tetrahydrocannabinol* (THC), the psychoactive ingredient in marijuana. Hash oil is extracted from cannabis buds using liquid butane.

Vaping hash oil is another way to use marijuana. However, butane is extremely flammable and can explode. Buildings have caught fire and people have

been burned when the concoction of cannabis buds and butane blew up in their faces. School and public health officials are concerned about young people repurposing e-cigarettes for hash oil.

How are e-cigarettes regulated?

The FDA is responsible to regulate e-cigarettes. Currently there are no federal regulations. However, the FDA proposed rules in April 2014 that would require makers of new nicotine products to:
- Register with the FDA
- Report products and ingredients
- Allow FDA to review products before sale
- Not give away free samples
- Require a minimum age and ID
- Warning labels that nicotine is addictive
- Prohibit vending machine sales
- Claim lower health risk only if FDA agrees that evidence supports it AND marketing the product will benefit public health

Further regulations may include banning TV advertising and not allowing fruit or candy flavors. In Washington State, it is illegal to sell e-cigarettes to minors, which is anyone under 18 years of age.

E-cigarettes and vaping solutions

Do e-cigarettes help smokers quit or help non-smokers start?

Some evidence suggests e-cigarettes help people quit smoking, but this is not certain. The FDA has not approved e-cigarettes as smoking cessation aids, so e-cigarettes cannot be advertised as a tool to quit smoking.

E-cigarettes don't make smoke and tar the way burning tobacco by smoking conventional cigarettes does.
This difference may help smokers quit, but it keeps them addicted to nicotine.

E-cigarettes may also hook new users and encourage them to move on to tobacco. Data shows that young people are very aware of e-cigarettes, which are available in flavors such as chocolate, strawberry and mint that may appeal to youth.

The Centers for Disease Control (CDC) found that use of e-cigarettes by youth in grades 6-12 doubled from 2011 to 2012, when 7% or 1,800,000 youth had tried e-cigarettes and 2% or 600,000 were currently using them. Among the students who had ever used e-cigarettes, 9% said they had never smoked, and 75% reported they currently smoked cigarettes.

Questions to think about:

E-cigarettes are currently unregulated. If the health effects of vaping are not known, do you think allowing e-cigarettes to be sold is the right thing to do?

Who besides the people who use e-cigarettes do think might be exposed to the chemicals in the vapor? Do you this it is safe to expose non-users to e-cigarette vapor? Is it fair?

Which items on the list of FDA proposed rules above do you think should be adopted to regulate e-cigarettes? Why? Can you think of additional strategies to regulate e-cigarettes?

If using e-cigarettes is a gateway to smoking, but also helps smokers cut down, do you think e-cigarettes cause more harm than good, or vice versa?

The government is beginning to fund research to understand who is using e-cigarettes, and why. Use of e-cigarettes by young people is fairly low, but the number of young users has doubled every year. Why do you think young people are trying e-cigarettes? Suggest several reasons.

Where can I learn more?

Here are some links to more information about electronic cigarettes:

Federal Drug Administration (FDA):
http://www.fda.gov/newsevents/publichealthfocus/ucm172906.htm

Centers for Disease Control (CDC): E-cigarette Use Among Middle and High School Students
http://www.cdc.gov/tobacco/data_statistics/mmwrs/byyear/2013/mm6235a6/highlights.htm

E-Cigarettes: A Scientific Review, from Circulation, Journal of the American Heart Association, 2014.
http://circ.ahajournals.org/content/129/19/1972

E-cigarettes and vaping: What you need to know
http://seattletimes.com/html/health/2023440408_healthvapingxml.html