

TerranearPMC Safety Share

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Vaping has become quite popular over the past few years. Many people that vape are ex-smokers, trying to find a “healthier” alternative to cigarettes as well as other types of tobacco use. Many from the older generation grew up without scientific knowledge that tobacco use is a significant health risk. So, as an alternative, vaping has been touted as a healthier choice. However, a growing segment of Millennials and Generation Y’s and Z’ers have taken up this latest trend. And these are persons that grew up with the knowledge that putting smoke into ones’ lungs is an extremely unhealthy practice. And while cigarettes and other tobacco products are banned from television commercials, vaping products have – very recently – entered into the TV market.

E-cigarettes are battery-operated devices that can look like a real cigarette or pen. Some with refillable tanks look a bit different. There are hundreds of brands, and they’re sometimes marketed as a way to get your nicotine fix without the danger of cigarettes. They all work the same basic way having containers filled with liquid that’s usually made of nicotine, flavorings, and other chemicals, while a heating device turns the liquid into vapor.

The Centers for Disease Control and Prevention (CDC) has recently announced that 2,051 lung injury cases as well as thirty-nine deaths have been attributed to vaping. The actual chemical responsible for these cases has been identified as vitamin E acetate.

So, what is Vitamin E acetate? This substance is commonly found in skin care products and dietary supplements. It is also known as Alpha-tocopheryl acetate, tocopheryl acetate or simply tocopherol. It has antioxidant properties that help protect the body’s cells against the effects of free radicals, which are produced when the body converts food into energy. Free radicals, which play a role in heart disease and cancer, also are produced when the body is exposed to smoke or radiation.

So, Vitamin E Acetate sounds like a very healthful product. So why the hysteria? Well, the latest evidence is that while Vitamin E Acetate may be a beneficial when applied with skin-care products, this material is an oil and the latest research shows that this oily material has been identified in the lung-fluids. It should also be mentioned that Vitamin E acetate has been found solely in THC (Tetrahydrocannabinol: the principal psychoactive constituent of cannabis) vaping products; although no one specific product has been specifically identified. It appears that vitamin E acetate is added to stretch the amount of THC in vape cartridges. Vitamin E acetate is a popular additive because it is colorless and odorless, has similar viscosity to THC oil and is much cheaper.

Aside from vaping products that contain THC, most contain the chemical nicotine, which has been purposefully added as e-cigarettes have been marketed as a product to help wean smokers from tobacco products. So, by adding nicotine – in reduced quantities - people can gradually reduce their cravings. And while people have claimed that this process has been successful, many people are picking up this new vaping fashion with no intention to stop. We all know that nicotine is unhealthful; especially for those with heart problems. At the same time nicotine can harm the developing brains of children during their critical growth stages including affecting memory and attention. Medical professionals have declared that pregnant women shouldn’t use anything with nicotine.

One of the more common assertions is that e-cigarettes contain chemicals including formaldehyde. However, research on this subject indicates that this is a not quite true. The fact is formaldehyde is not an added material, but rather propylene glycol is added (a material used in food products and as an “environmentally friendly” antifreeze). Yet, when heated, formaldehyde can be created as a byproduct of incomplete combustion of propylene glycol.



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Flavors in e-cigs may also be a concern. For instance, some products use a buttery-tasting chemical called diacetyl; which is often added to foods like popcorn to give that buttery taste. Currently there is considerable research that indicate workers exposed to diacetyl to have developed serious respiratory illnesses.

E-cigarettes aren't thought of as 100% safe, but most experts think they're less dangerous than cigarettes. Cigarette smoking kills almost half a million people a year in the United States. Most of the harm comes from the thousands of chemicals that are burned and inhaled in the smoke.

A 2015 expert review from Public Health England estimated e-cigs are 95% less harmful than the real thing. However, that figure is controversial and might be slightly off-base. Staunch critics of e-cigarettes would probably argue they're a half to two-thirds less dangerous. Meanwhile the latest data suggests that vaping is more on the order of 80% to 85% less dangerous.

Some states and communities that ban smoking in public places also ban vaping. And while second-hand smoke from tobacco products are a public concern, experts acknowledge that the airborne contaminants from vaping "appears to be very low," although the danger from secondhand vapor isn't zero.

Nevertheless, e-cigarettes are still advertised as a way to help smokers quite tobacco. And while there have been success stories, evidence suggests that that such cases are the exception, rather than the rule. The problem is most of the e-cigarette use in the U.S. is dual use with cigarettes. People use e-cigs in places or situations where they can't smoke, like in a restaurant, but continue lighting up when they can. This finding is supported by the Food and Drug Administration (FDA), where according to the FDA, there's no evidence any e-cigarette is safe and effective at helping smokers quit. Meanwhile the American Heart Association says e-cigarettes should only be used as a last resort to quit.

Critics of e-cigarettes fear that vaping will get kids hooked on nicotine and that they'll "graduate" to cigarettes when they want a bigger kick. This is supported in a 2016 study in the journal *Pediatrics* that found teens that never smoked but used e-cigs were six times more likely to try cigarettes compared to kids who don't vape. A study in the *Journal of the American Medical Association* in 2015 found a connection too. Researchers surveyed 2,500 Los Angeles high school students who had never smoked. They found that kids who used e-cigs were more likely than non-users to smoke cigarettes or other tobacco products over the next year.

Yet, the CDC shows statistical evidence whereby teen smoking, while use of e-cigs went up to 24% in 2015, cigarette smoking dropped to an historic low -- to just under 11%.

The FDA is regulating e-cigarettes and tobacco products such as hookah tobacco and cigars in the same way as cigarettes and smokeless tobacco. Key rules include:

- No one under age 18 can purchase them -- in stores or online.
- Sellers will need to check ID of anyone under 27 years of age.
- The products can't be sold in vending machines, except for in adult-only facilities.
- Free samples are banned.

E-cigarettes placed on the market after 2007 must go through an FDA safety and approval review to enter or stay on the market. That could take years, but products can be sold while they wait for approval.



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Aside from the controversy related to the health effects due to vaping, current information also has shown some other facts. For instance, there were 134 reports of e-cigarette batteries overheating, catching fire, or exploding between 2009 and January 2016. Some people were seriously hurt. New rules will allow FDA to review the safety of batteries and eventually take action to protect the public.

One more point about nicotine. Liquid nicotine is a poison and can be especially dangerous to young children. Therefore, e-cigarettes need to remain out of reach of children (just as tobacco products). The FDA plans on future rules that will require nicotine warnings and child-resistant packaging for products with e-liquids. Nevertheless, opponents of e-cigarettes, would like to see more stringent controls including ending the sale of flavored products as candy and fruity flavors appeal to children and teens.

Children are the world's most valuable resource and its best hope for the future

John Fitzgerald Kennedy

