

## **Are Electronic Cigarettes Safe?**

**By Kristin Noll-Marsh, CASAA**

Recently, there has been media coverage about the safety of electronic cigarettes, which may be confusing and a bit scary.

Electronic cigarettes are intended to be a less-toxic (or “safer”) alternative to smoking tobacco cigarettes, but not as a treatment for nicotine addiction. Chinese pharmacist Hon Lik invented an e-cigarette in 2003 with a patented ultrasonic technology. Hon Lik was a highly motivated inventor, given that his father was dying from lung cancer at the time. Since then, most Chinese e-cigarette makers have replaced the ultrasonic technology with a heating element that vaporizes the nicotine solution in the e-cigarette mouthpiece so it can be inhaled.

Read more: [http://emerging-business-markets.suite101.com/article.cfm/sources\\_for\\_imported\\_ecigarettes#ixzz0TNTSptUJ](http://emerging-business-markets.suite101.com/article.cfm/sources_for_imported_ecigarettes#ixzz0TNTSptUJ)

### **Nicotine**

It's well documented that currently available treatments for smokers, nicotine replacement therapies such as patches and gums, are largely ineffective, with just a 7% success rate after 12 months. This is largely due to the fact that most smokers aren't just addicted to the nicotine; they are addicted to the actual habit and ritual of smoking a cigarette. It is a comfort system for them that can be even stronger than nicotine addiction.

However, the greatest danger in cigarette smoking is not the nicotine. Nicotine, while highly addictive, is a stimulant similar to caffeine and not toxic in low, intermittent doses, which is why it can be used in nicotine replacement therapies. Nicotine does NOT cause cancer, but is known to have some side effects. Cigarette smoke, on the other hand, contains more than just nicotine. It contains hundreds of toxic chemicals and dozens of known carcinogens.

Hon Lik seems to have believed that there could be an option for smokers, to still have the act of smoking, while limiting exposure to the chemicals, toxins and carcinogens found in tobacco smoke. He had to have known that the smoker would still need relief from the nicotine addiction, so to get them to switch to the less toxic electronic cigarettes; he had to include doses of nicotine. The typical electronic cigarette liquid contains water, propylene glycol, glycerin, nicotine & food-grade flavoring.

Read more: <http://www.drugs.com/sfx/nicotine-side-effects.html>

### **Diethylene glycol**

You may have heard that the FDA found traces (1%) of diethylene glycol in one Smoking Everywhere brand prefilled cartridge. Diethylene glycol is a highly toxic substance used in tobacco processing (and in anti-freeze), but it is NOT used to manufacture electronic cigarette liquid. Because it is used in tobacco processing, cheaper, less refined nicotine may become contaminated with traces of diethylene glycol. It can also be a by-product of the manufacture of low-grade propylene glycol. It is the most likely explanation of how one cartridge may have been contaminated. The other 17 cartridges and other brands tested by independent labs were not found to have been contaminated with diethylene

glycol. Many liquid manufacturers use USP-grade nicotine( the same as used in FDA-approved nicotine patches and gums) and USP propylene glycol and should not contain any diethylene glycol.

Read more: [http://en.wikipedia.org/wiki/Diethylene\\_glycol](http://en.wikipedia.org/wiki/Diethylene_glycol)

### **Propylene Glycol**

Propylene glycol is commonly confused in the media (and by well-meaning enthusiasts) with diethylene glycol as the toxic ingredient found in antifreeze. (Anti-freeze is actually most commonly made with ethylene glycol.) While propylene glycol can be found in some antifreeze, it is actually added to it to make it LESS toxic.

“Antifreeze typically contains ethylene glycol as its active ingredient, but some manufacturers market propylene glycol-based antifreeze, which is less toxic to humans and pets. The acute, or short-term, toxicity of propylene glycol, especially in humans, is substantially lower than that of ethylene glycol. Regardless of which active ingredient the spent antifreeze contains, heavy metals contaminate the antifreeze during service. When contaminated, particularly with lead, used antifreeze can be considered hazardous and should be reused, recycled, or disposed of properly.”

Read more: <http://www.epa.gov/waste/conservation/materials/antifreeze.htm>

Propylene glycol is actually approved for human consumption by the FDA and approved for human inhalation by the EPA. It is a common ingredient in many foods and medicines, such as McCormick (and other brand) imitation food flavoring, toothpaste, cough syrup, hand sanitizer, lotions, cosmetics and more.

Read more: [http://en.wikipedia.org/wiki/Propylene\\_glycol](http://en.wikipedia.org/wiki/Propylene_glycol)

### **Tobacco-specific Nitrosamines**

The FDA analysis found “tobacco-specific nitrosamines” in some of the samples tested. These nitrosamines are created during the curing and processing of tobacco and would be expected to be found, in trace amounts, in nicotine extracted from processed tobacco. In tobacco smoke, they are found in high concentration and are a leading cause of tobacco-related cancers. These carcinogens were found in just trace amounts in the electronic cigarette liquid and are found in other low-risk smokeless tobacco and nicotine products, including chew, snuf, patches, gum and inhalers. A study at Oxford concluded that the highest levels of these nitrosamines are found in the reaction of tobacco smoke and minimal in NRTs. Levels of nitrosamines found in electronic cigarettes are at or below those found in NRTs.

Read more:

[http://en.wikipedia.org/wiki/Tobacco-specific\\_nitrosamines](http://en.wikipedia.org/wiki/Tobacco-specific_nitrosamines)

<http://www.ecassoc.org/downloads/Response-to-the-FDA-Summary.pdf>

<http://carcin.oxfordjournals.org/cgi/reprint/18/3/587.pdf>

## **Food Flavorings**

Artificial food flavorings are often called “the great unknown” when it comes to electronic cigarettes. While all flavorings are FDA-approved for human consumption, very little is known about the short or long-term health effects of the inhalation of the ingredients in artificial flavors.

One thing to know is that the artificial flavor drops used in electronic cigarette liquids are highly concentrated, so very little is needed to add sufficient flavor. Most of the flavors are already mixed in a propylene glycol base and make up between 10% to 25% of the total electronic cigarette liquid. What is inhaled into the lungs could be reduced further when vaporized and mixed with air.

One known flavoring agent – diacetyl – has been shown to be linked to bronchiolitis obliterans, a condition also known as “popcorn lung.” Diacetyl is used in some artificial butter flavors. Several workers at microwave popcorn factories, who had long-term exposure to high concentrations of diacetyl, reported a higher incidence of asthma or bronchiolitis obliterans. It is not known if the much lower levels of diacetyl that might be found in some electronic cigarette liquid flavors pose a similar health risk, but some electronic cigarette users choose to err on the side of caution and avoid flavors which contain diacetyl.

Other than diacetyl, no other artificial flavorings have been widely reported to be linked to respiratory illness or disease in factory workers or consumers.

Read more: <http://www.osha.gov/dsg/guidance/diacetyl-guidance.html>

**Now you have the facts. You should decide for yourself if you consider electronic cigarettes safe (or at least *safer* than tobacco cigarettes) for YOU.**