



## CONTROVERSY CLOUDS E-CIGARETTES

Rising popularity of electronic cigarettes prompts debate over **HEALTH IMPACTS** for users and the public

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**ON A RECENT AFTERNOON** in Seattle's University District, a steady stream of customers—mostly young men—filtered in and out of a small, recently opened shop called E Cig 'N Vape. It's one of a chain of six Washington state stores that sells supplies for smoking electronic cigarettes, or e-cigarettes. The battery-powered devices deliver an inhalable vapor, with or without nicotine, in a variety of flavors.

Pete Knutson, a 32-year-old University of Washington student who works at the shop, told a customer about some of the 60 flavors of e-liquid, or e-juice, the store offers. Key lime pie “tastes like key lime going out with a kind of a graham cracker crust,” he said; black honey tobacco, one of the most popular flavors, is “nice and earthy. It's good for people who are transitioning from smoking—they don't quite like fruit, but they don't want to taste tobacco.”

In addition to flavoring agents, the e-liquids contain an aqueous solution of glycerol or propylene glycol, which turns into an opaque vapor when heated. E-liquids come in five different levels of nicotine, ranging from 0 mg to 24 mg in 1 mL of juice.

Similar to about 90% of the store's customers, Knutson smoked tobacco cigarettes for years before switching to smoking e-cigarettes—often called vaping—two years ago. Taking a drag from a reusable e-cigarette, he let out a cloud of a flavor called hypnotic. It smelled like cotton candy.

Nathan Pierce, a 19-year-old customer who attends North Seattle Community College, sat in a chair and puffed on his e-cigarette. Pierce had smoked tobacco occasionally, enjoying the nicotine buzz but not how it made him feel and smell afterward. So he bought a reusable e-cigarette

a month and a half ago. “It's nice to be able to enjoy different flavors and choose how much nicotine I'm putting in my body,” he said.

E-cigarette use is on the rise in the U.S., with projected sales of \$1.5 billion in 2014. Like Knutson, many start using the devices because they seem like a safer alternative to tobacco cigarettes, with the added draw that they can still be enjoyed in public in many places. Some also use them to aid in quitting smoking by reducing their nicotine intake.

**THIS GROWTH** in use has also fueled a debate over the health risks of e-cigarettes. Some researchers project that a widespread switch to the devices by current smokers could reduce the number of smoking-related deaths. But they and others also worry about e-cigarettes' acute and secondhand health risks, as well as a lack of regulation of the devices. Additionally, some public health advocates say that e-cigarettes pose a risk of remystifying smoking, a habit that has been on the decline in the U.S. since the 1960s.

Because of these concerns, several states and more than 100 counties and cities in the U.S., including New York City and Chicago, have banned the use of e-cigarettes in spaces where tobacco smoking is prohibited. Many other states prohibit their use in specific locales such as schools, workplaces, and corrections facilities. In 2011, the Food & Drug Administration announced its intention to regulate e-cigarettes as tobacco products; the agency's proposed plan is anticipated soon.

Compared with tobacco products, e-cigarettes are a safer option for smokers; they don't deliver many of the harmful by-products of tobacco combustion, says Maciej L. Goniewicz, a toxicologist at Roswell Park Cancer Institute, in Buffalo. Nicotine is addictive and can increase heart rate, but it poses lower risk than the carcinogenic compounds in tobacco smoke, he says. The glycerol and propylene glycol in e-liquid are generally recognized as safe by FDA.

“But there's no reason for experimenting with this product if you're not already smoking tobacco cigarettes,” he adds. Little research has been done on e-cigarettes' acute health risks, and their danger,

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