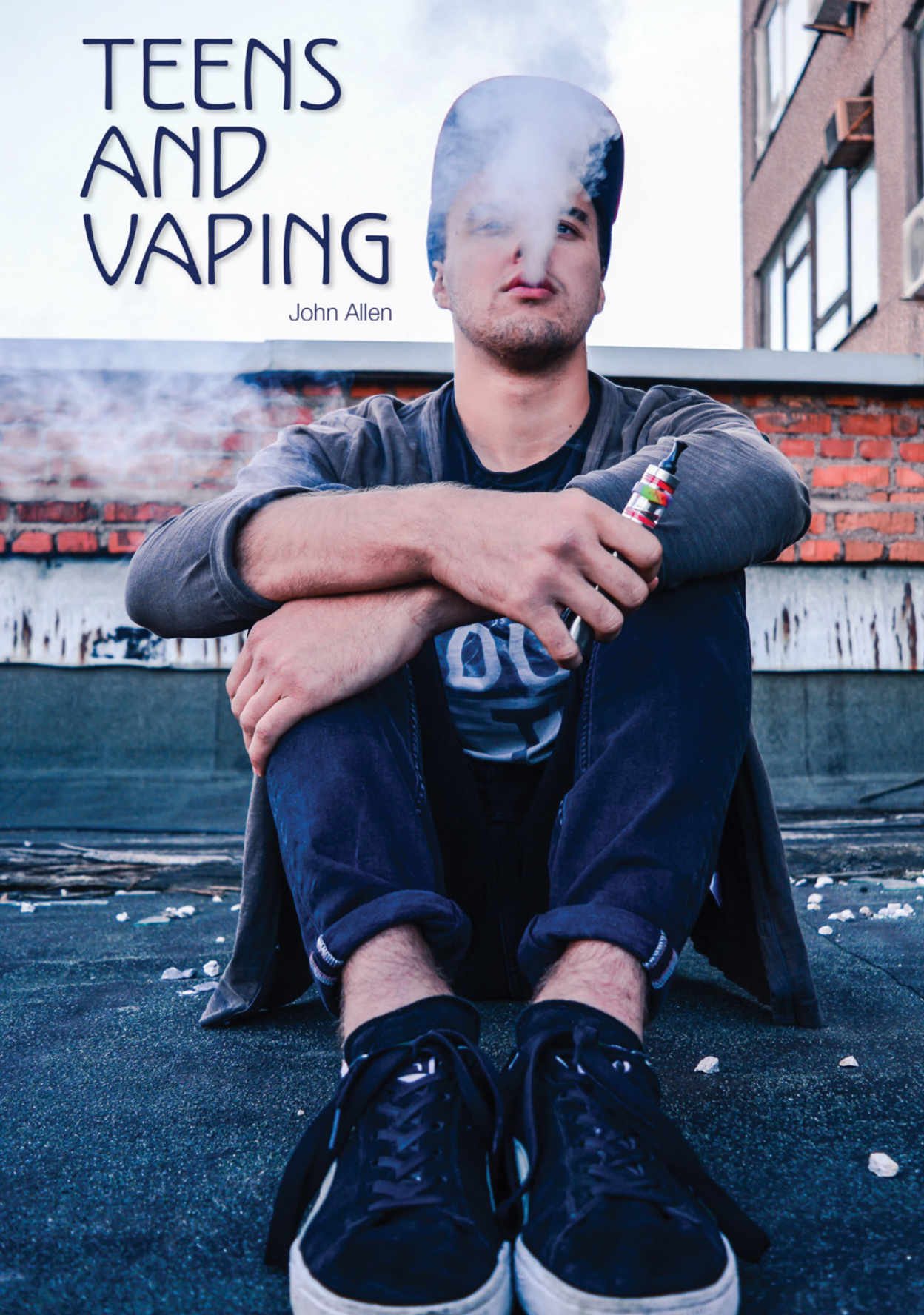


TEENS AND VAPING

John Allen





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The Basics of E-Cigarettes and Vaping

Vaping began as a way to help people stop smoking tobacco cigarettes. The idea was to provide nicotine without the harmful tar, carbon monoxide, and other substances associated with burning tobacco. In 1963 American inventor Herbert A. Gilbert obtained the first patent for a nontobacco cigarette. The modern version of the e-cigarette appeared forty years later. It was invented by Hon Lik, a pharmacist from Shenyang in northeast China. A heavy smoker himself, Hon was seeking a means to quit the habit, which had caused his father's fatal lung cancer. He tried various Chinese remedies as well as doses of nicotine to wean himself off cigarettes. One night before bed, Hon forgot to remove the nicotine patch he wore on his stomach to satisfy his smoker's craving. Hours later he awoke from bad dreams. He had dreamed that he was drowning until suddenly the water turned to vapor and he could breathe again. Inspired, Hon set about turning his dream into reality.

An Alternative to Cigarettes

Hon decided that the steady release of nicotine via the patch was inadequate. Heavy smokers like himself needed more intense nicotine highs to allow them to relax. Using his knowledge of mechanics and electronics, he created a device that looked like a cigarette and could heat a nicotine-laced liquid into vapor for inhaling. Hon obtained patents for his vaporizer in the United

States, enabling it to be sold worldwide. In China the device was called Ruyan, meaning “like smoke.” At the time Hon could barely imagine how successful his invention would be.

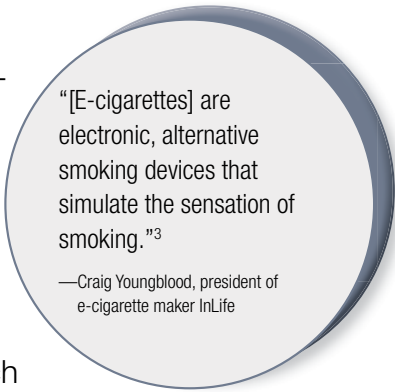
His breakthrough created a huge new market for e-cigarettes and their liquids. In 2007 e-cigarettes began to appear in the United States at convenience stores, smoke shops, and mall kiosks. Internet campaigns promoted the new devices as an anti-smoking aid—sort of a halfway house on the road to quitting tobacco. Many longtime smokers turned to vaping as a healthier alternative to cigarettes, just as Hon intended. Early e-cigarette companies stressed the health aspects as well. “They are electronic, alternative smoking devices that simulate the sensation of smoking,” says Craig Youngblood, president of e-cigarette maker InLife. “They do not expose



Hon Lik, who designed a modern version of the e-cigarette, demonstrates the use of his invention.

the user, or others close by, to harmful levels of cancer-causing agents and other dangerous chemicals normally associated with traditional tobacco products.”³

In 2013 Hon sold his e-cigarette company for \$75 million—although Hon himself received only a fraction of this amount. Ironically, Fontem Ventures, which snared the rights to Hon’s invention, is part of Imperial Tobacco Group, one of the UK’s largest tobacco firms. Today Hon travels the world for Fontem, which makes Blu e-cigs. He spreads the word about vaping and warns about the dangers of tobacco. Above all, Hon wants to be remembered for his efforts to curb smoking. It does not bother him that his employer is owned by a tobacco company. “What Fontem is doing is quite the opposite [from Imperial Tobacco]. Fontem shares my values,” asserts Hon. “The e-cigarette is the alternative to smoking cigarettes.”⁴



“[E-cigarettes] are electronic, alternative smoking devices that simulate the sensation of smoking.”³

—Craig Youngblood, president of e-cigarette maker InLife

The Cloud Chasers

As the market for e-cigarettes grew, some companies began to experiment with new styles of vaporizers and new flavors for e-liquids. Some e-cigarettes looked like ordinary cigarettes with filters, while others resembled pens or markers. Designs became more efficient, and the number of choices available in e-liquids grew rapidly. A whole culture of young users sprang up to embrace the e-cigarette as a cool product in its own right. Pax Labs’s 2015 introduction of Juuls, with their hip flash-drive design and trademark pods containing an extra jolt of nicotine, helped cement the youth craze for vaping. Juul offered pods with flavors aimed at attracting young users, such as mango, grape, and crème brûlée. Other brands, like Blu, Logic, and Njoy, also helped expand the youth market for e-cigarettes. Online forums gave teens a new platform in which to rate e-cigs and discuss the finer points of vaping. Overall more than 2 million middle and high

school students today vape regularly. This growing legion of teen-age vapers has made e-cigs into a cutting-edge lifestyle choice and a multibillion-dollar industry.

This development turned Hon Lik's original plan for e-cigs on its head. Health officials now worry that e-cigs will lead nonsmoking youths to try cigarettes. That is why, they contend, a huge tobacco firm like Altria Group is investing billions—\$12.8 billion, to be exact—in the maker of Juuls. Although Juul Labs still claims its mission is to eliminate cigarettes, its marketing of ultrastylish e-cigarettes holds an obvious appeal for young people. “Juul says

The E-Cigarette That Mimics the Real Thing

For smokers looking to quit by switching to e-cigarettes, the cigalike (short for *cigarette-like*) is a popular choice. Cigalikes are small, light, and made to look like ordinary cigarettes. Their tan filter patterns have a familiar look for smokers. The LED tip that lights up fiery red when the user inhales helps mimic the process of smoking. Holding a lightweight cigalike feels natural to a smoker. This is important for a habit that is so wrapped up in ritual and repetitive movements. Smokers can occupy their hands and fill their lungs while experiencing much less harm from the many chemicals associated with smoke from burning tobacco.

When e-cigarettes first hit the American market, most of the devices were cigalikes. They heated e-liquid into mist via a mechanism that created ultrasonic vibrations. Most featured disposable plastic cartridges with saturated sponges inside. These early cigalikes produced much less vapor than today's e-cigs, and the sponges were less reliable than later cartridges. The technology of ultrasonic vibrations soon gave way to more efficient heating coils for a greater volume of vapor. Even today, cigalikes' small size presents shortcomings. The low-capacity battery necessary to fit in the small tube must be recharged more frequently than larger pod and box models. Heavy vapers must refill them with e-liquid much more often than with larger devices. Nonetheless, for as little as five dollars, a smoker can try a cigalike and embark on a path to potentially stop lighting up for good.

their goal is to save the lives of a billion smokers,” says Robert Jackler, a Stanford physician who leads a team that researches the effects of tobacco advertising on youths. “You have to ask yourself, ‘Is the company’s behavior aligned with that goal?’ I would have to say, sadly, no. . . . Their marketing in the first six months was patently youth-oriented.”⁵

“Juul says their goal is to save the lives of a billion smokers. You have to ask yourself, ‘Is the company’s behavior aligned with that goal?’ I would have to say, sadly, no.”⁵

—Robert Jackler, a Stanford physician who researches the effects of tobacco advertising on young people

Hon dismisses all those enthusiastic young vapers as “cloud chasers.” This refers to the popular stunt of cloud-chasing, or competing to blow the most enormous clouds of vapor from e-cigarettes. Hon hopes the youth-based fad for vaping itself will dissipate like a vapor cloud. He likens the cloud chasers to reckless hot-rodders. “When automotive manufacturers first started out, they were not thinking about a sport to be called Formula One,” he says, referring to the car-racing competition. “You always have groups of people who are looking for excitement.”⁶

How Vaping Works

Many young people are drawn to the sleek, cutting-edge aspect of e-cigarettes. They see them as smart cigarettes, without the ash, toxicity, and odor of smoking. The technology is simple and effective, with no match or fire involved. An e-cigarette consists of three parts: a rechargeable lithium battery, an atomizer tube with electronic controls, and a cartridge filled with e-liquid. The tip of the cartridge serves as a mouthpiece for inhaling. Inside the atomizer is a cotton and fiberglass wick. The wick is soaked in the e-solution, which is made of propylene glycol, vegetable glycerin, flavor aromas, and varying levels of nicotine. When the user pushes a button on the battery, heating coils wrapped around the wick heat the solution. This releases a vapor that mixes with the air. The user inhales the vapor through the mouth-

piece, delivering nicotine to the lungs. The vapor is then exhaled in a cloud that quickly dissipates.

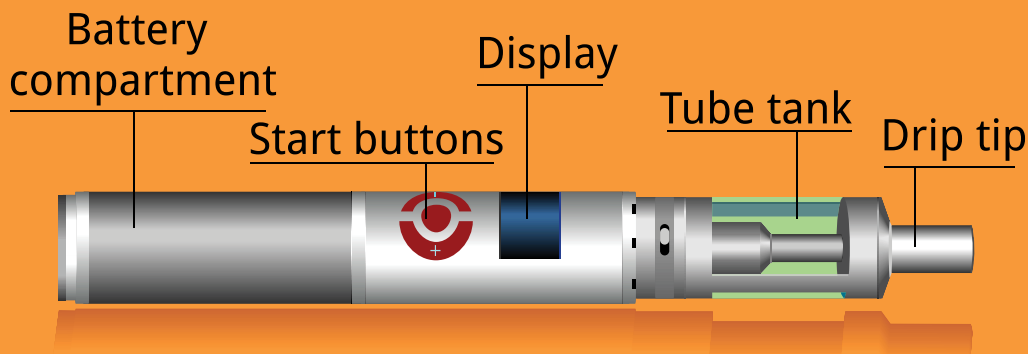
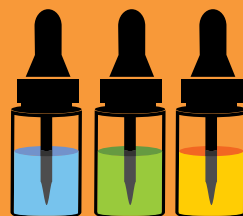
Some e-cigs, like the Juul, are mouth-activated and do not have a button to press before inhaling. To vape with a Juul, the user pops in an e-liquid pod and begins inhaling through the mouthpiece. The Juul device employs haptic feedback—electronic communication via the user's touch—to tell itself it is in use and to activate the heating element. It also turns itself off when not in use. This is the kind of smart technology kids have grown used to on their cell phones and other devices. In fact the lithium battery on a Juul can be recharged by plugging the device into the USB port on a laptop.

The battery for most vaping devices is permanently enclosed inside a casing. However, mods (short for modifieds) feature a battery that can be removed for recharging. This allows vapers to replace a run-down battery with one that is fully charged and ready. Mods tend to be thicker and heavier than standard e-cigarettes. They are prized by cloud chasers who seek longer vaping sessions.

Some e-cigs, like cigalikes, are built to mimic ordinary cigarettes. They have mouthpieces shaded like filters and red LED

The basic design of an e-cigarette consists of a battery, an atomizer tube with electronic controls, and a cartridge containing the e-liquid.

e - liquid



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ORGANIZATIONS TO CONTACT

American Cancer Society

250 Williams St. NW

Atlanta, GA 30303

www.cancer.org

The mission of the American Cancer Society is to free the world from cancer. The organization funds and conducts research, shares expert information, supports patients, and spreads the word about prevention. Its website includes a large section on e-cigarettes, their health effects, and the problem of youth vaping.

American Lung Association

55 Wacker Dr., Suite 1150

Chicago, IL 60601

www.lung.org

The American Lung Association engages in research, education, and advocacy to improve air quality and beat lung cancer. The group's website includes a great deal of material on teen use of e-cigarettes, including articles like "E-Cigarettes, 'Vapes,' and JUULs: What Teens Should Know."

Consumer Advocates for Smoke-Free Alternatives Association (CASAA)

PO Box 2991

Plattsburgh, NY 12901

www.casaa.org

CASAA is a nonprofit group that seeks to educate the public and increase awareness about alternatives to smoking, including e-cigarettes. Its website includes a timeline of the history of e-cigarettes, news stories, scientific studies, and other informational materials relating to vaping products.

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