

# Vaping: Know the Facts

## Fact Sheet

### Vaping and E-Cigarettes

E-cigarettes or “vapes” are battery-operated devices that produce vapor instead of smoke. Instead of being packed with tobacco, they have cartridges filled with a liquid that contains flavorings and nicotine.

Since e-cigarettes were first introduced to the US in 2007, scientists have found harmful ingredients in the devices, including:

- ultrafine particles that can damage the lungs;
- flavorings that are linked to serious lung disease;
- volatile organic compounds (like benzene, which is found in car exhaust)
- and poisonous metals, like nickel, tin, and lead.

Of additional concern are the findings that e-liquids (or “vape juice”) contained in vaping products are not a final product. Reactions that occur as the e-liquid is heated create new molecules and acetals that are not included in the ingredients lists or regulations testing.<sup>1</sup>

E-cigarettes recently surpassed conventional cigarettes as the most commonly used tobacco product among

youth.<sup>2</sup> Vaping has recently taken center stage in the public eye, due to the vaping-related illness (EVALI) that has been linked to 42 deaths to date and prompted eight states to take action to reduce access. In 2018, the Surgeon General declared a youth vaping epidemic.<sup>3</sup> According to the most recent data from the Centers for Disease Control and Prevention (CDC), between 2017-2018, there was a 78 percent rise in e-cigarette use by high-school students and a 48 percent rise in use by middle-school students. Preliminary results for 2019 report that 27.5 percent of American high school students used an e-cigarette in the previous 30 days, a 32 percent increase from 2018.<sup>4</sup>

To date, no e-cigarette or vaping product has undergone a government health and safety review, meaning that all products on the market are currently unregulated.<sup>5</sup> Aggressive marketing and misinformation have resulted in a misinformed consumer base that is largely unaware of the health risks of vaping and perceives vaping as a harmless alternative to smoking traditional cigarettes.

# Nicotine and the Adolescent Brain

Adolescents are uniquely at risk for long-term, long-lasting harms of nicotine, which can change the way synapses are formed, harming the parts of the brain that control attention and learning. Adolescent nicotine use can increase the risk of substance misuse and addiction, mood disorders, and permanent lowering of impulse control. Early nicotine use also makes adolescents more sensitive to other drugs in the future, including traditional cigarettes.<sup>6</sup> Young people who vape are four times more likely to go on to smoke cigarettes than those who don't. And Juuling delivers more nicotine than a combustible cigarette— a single Juul pod is equivalent to 20 cigarettes— which makes all of these risks even more dramatic.

## Vaping-Related Lung Injury

In the summer of 2019, an outbreak of vaping-related lung injuries swept the nation. Gradually, more and more people were hospitalized with symptoms including cough, shortness of breath, chest pain, nausea, vomiting, abdominal pain, diarrhea, fever, chills, and/or weight loss. Some patients reported symptoms having developed over the course of just a few days, while others reported that their symptoms developed over several weeks.<sup>7</sup>

As of November 13, 2019, the CDC has reported 2,051 cases of e-cigarette, or vaping, product use associated lung injury (EVALI) and 42 deaths have been confirmed.

As of November 8, 2019, CDC laboratory testing of lung fluid samples from EVALI

## Fast Facts

1. Young people who vape are four times more likely to go on to smoke cigarettes than those who don't.
2. A single Juul pod is equivalent to 20 cigarettes.
3. Harmful ingredients have been found in vapes, like poisonous metals and chemicals like benzene, which is also found in car exhaust.

patients has found vitamin E acetate present. This is the first detection of a potential chemical of concern in samples from patients of this outbreak. THC was identified in 82 percent of the samples and nicotine was identified in 62 percent of the samples. The exact cause of death has not yet been determined and it remains unclear which vaping products present the highest the risk.<sup>8</sup>

## Sources

<sup>1</sup> Flavorant-Solvent Reaction Products and Menthol in JUUL E-Cigarettes and Aerosol Erythropel, Hanno C. et al. American Journal of Preventive Medicine, Volume 57, Issue 3, 425 - 427

<sup>2</sup> U.S. Department of Health and Human Services, E-Cigarette Use Among Youth and Young Adults. A Report of the Surgeon General. 2016, U. S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health: Atlanta, GA.

<sup>3</sup> National Youth Tobacco Survey 2011-2018

<sup>4</sup> Preliminary results from the Centers for Disease Control and Prevention's annual National Youth Tobacco Survey <https://www.fda.gov/news-events/press-announcements/trump-administration-combating-epidemic-youth-e-cigarette-use-plan-clear-market-unauthorized-non>

<sup>5</sup> Hajek, P., Phillips-Waller, A., Przulj, D., et al. (2019) A Randomized Trial of E-Cigarettes versus Nicotine-Replacement Therapy. New England Journal of Medicine.

<sup>6</sup> Chaffee BW, Watkins SL, Glantz SA. Electronic Cigarette Use and Progression From Experimentation to Established Smoking. Pediatrics. March 2018:e20173594. doi:10.1542/peds.2017-3594

<sup>7</sup> Centers for Disease Control and Prevention. (2019). Severe Lung Disease. What You Need to Know. Retrieved from [https://www.cdc.gov/tobacco/basic\\_information/e-cigarettes/severe-lung-disease/need-to-know/index.html](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease/need-to-know/index.html)

<sup>8</sup> Centers for Disease Control and Prevention. (2019). Severe Lung Disease. What You Need to Know. Retrieved from [https://www.cdc.gov/tobacco/basic\\_information/e-cigarettes/severe-lung-disease.html](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html)