



Healthy People. Healthy Communities.

Edward D. Simmer, MD, MPH, DFAPA
Director

July 29, 2022

The Honorable Chris Wooten
Subcommittee Chair, Law Enforcement and Criminal Justice Subcommittee
Legislative Oversight Committee
Post Office Box, 11867
Columbia, SC 29211

Dear Chairman Wooten:

In response to your letter on behalf of the House Legislative Oversight Law Enforcement and Criminal Justice Subcommittee dated July 11, 2022, please see the enclosed response to the questions regarding health conditions and applicable costs to the state associated with vaping, e-cigarette and similar products.

Please let me know if you need additional information.

Sincerely,

A handwritten signature in black ink that reads "E. D. Simmer".

Edward D. Simmer

Enclosure

cc: The Honorable Wm. Weston J. Newton
Law Enforcement and Criminal Justice Subcommittee

E-cigarettes and Vaping

Please provide information on health conditions and applicable costs to the state associated with vaping, e-cigarette, and similar products.

Electronic cigarette (e-cigarette) use, also known as vaping, rapidly increased among youth and adults since their introduction, despite their lack of regulation and limited information regarding the long-term risks. The potential impact of e-cigarette use on public health is complex and remains largely unknown, though extensive research is underway. Though limited knowledge exists about the long-term health effects of e-cigarette use, research has suggested these novel nicotine delivery systems may lead to nicotine addiction, initiation and continued use of the products among vulnerable populations, particularly among youth.

Health Conditions

It is known that the use of e-cigarettes is unsafe for kids, teens and young adults and poses a significant and avoidable public health risk to young people. In SC, 21% of high school students report current use of e-cigarettes according to the 2021 SC Youth Tobacco Survey. Most e-cigarettes (approximately 99%) contain nicotine, a highly addictive substance that can harm adolescent brain development, which continues into the early to mid-20s. Using nicotine can harm the parts of the brain that control attention, learning, mood, and impulse control. Youth may turn to vaping to try to deal with stress and anxiety, which can be an entry path into the cycle of nicotine dependence. Further, nicotine withdrawal symptoms can affect their mental health, including causing irritability, restlessness, feeling anxious and depressed, trouble sleeping, problems concentrating, and craving nicotine. Youth may keep using these products to help relieve withdrawal symptoms. Nicotine also primes the adolescent brain for addiction, which could have significant public health consequences, including the increased risk for future addiction to other drugs and alcohol.

In 2020, there was an outbreak of lung injuries and death associated with vaping, though it was identified that these occurred as a result of people modifying their vaping devices or using black market modified e-liquids. This condition, e-cigarette or vaping use-associated lung injury, or EVALI, resulted from some THC-related vaping products containing the chemical additive vitamin E acetate as a thickening agent. EVALI resulted in 2,807 confirmed cases nationwide and 68 associated deaths. In SC, there were 40 confirmed or probable cases of EVALI resulting in one death.

There are other health conditions related to e-cigarettes to consider. Nicotine poisoning, the toxic effect of consuming nicotine, is more common among children and typically occurs when liquid nicotine, such as in e-cigarette juice, is ingested. Symptoms include vomiting, rapid heart rate, unsteadiness and increased salivation. In addition to the impact on youth, nicotine also has a negative effect on adults. As it is a toxic substance, it has been shown to raise blood pressure, spike adrenaline and increase the heart rate, including the likelihood of having a heart attack. It is important to note that despite popular belief, e-cigarettes are not approved as smoking cessation aid by the FDA. However, researchers continue to study the potential benefit they may

have for adult smokers who are not pregnant when used as a complete substitute for combustible cigarettes and other smoked tobacco products.

E-cigarettes can contain other harmful substances besides nicotine and the aerosol emitted from them is not harmless water vapor as initially believed. The aerosol can contain ultrafine particles, volatile organic compounds, and heavy metals that can be inhaled deep into the lungs. Scientists are still working to more fully understand the health effects of e-cigarettes when they are heated and turned into an aerosol, both for the active user inhaling from the device and those who are exposed to the secondhand aerosol.

Another risk to consider involves defective e-cigarette batteries which may cause fires and explosions, some of which have resulted in serious injuries. The FDA is continuing to track cases where this occurs, in addition to other health impacts, such as seizures, chest pain, breathing issues, and cardiovascular impacts, like increased heart rate.

Costs

As highlighted earlier, though many short-term impacts have been identified, e-cigarettes have not been around long enough to know the full risks of long-term use. There is a well-documented latency period for tobacco-related disease, and it will likely be at least two decades until definitive findings from long term studies on e-cigarette use are available. As such, very little information exists on the associated healthcare costs of vaping. However, in a May 2022 research article published in the peer reviewed journal *Tobacco Control*, a first study of its kind, examined the effects of e-cigarette use on healthcare utilization and expenditures among US adults. This study found that in 2018, \$1.3 billion (\$1,796 per user) annual healthcare expenditures were attributable to current exclusive e-cigarette use, \$13.8 billion (\$2,050 per user) were attributable to current dual/poly e-cigarette users (i. e. used both e-cigarettes and combustible tobacco), and \$15.1 billion (\$2,024 per user) were attributable to all current e-cigarette use. Again, further research in this area is needed.

Similar Products

Finally, it should be noted that the e-cigarette market continues to evolve. Pod-based e-cigarettes such as Juul are being replaced by disposable products such as Puff Bars which come in an extensive variety of flavors. These flavored tobacco products are perceived by youth as more appealing, better tasting, and less harmful than non-flavored tobacco products. Flavors, especially sweet and fruit flavors, play a role in influencing tobacco use or experimentation and increase the risk of children becoming addicted. Additionally, new synthetic nicotine products which are not derived from tobacco and are lab developed are now available. The health conditions and associated costs of these similar products will also have to be determined over time.