Electronic cigarettes, which deliver a dose of nicotine via vapor instead of smoke, were not introduced to the marketplace until 2007 but have spread like wildfire. Estimated sales of e-cigarettes are on pace to grow from $1.7 billion in 2013 to $2.5 billion in 2014. More and more young people are among those buying, according to Suchitra Krishnan-Sarin, PhD, Associate Professor of Psychiatry and Co-leader of the Yale Tobacco Center of Regulatory Science (TCORS). The Yale TCORS, created by a $20 million federal grant in 2013, is one of 14 such research centers being funded by the Food and Drug Administration (FDA) and the National Institutes of Health to study the risks of e-cigarettes.

At the moment, no one knows what is in the vapors that millions of people are pulling into their lungs, what is in their exhalations, or what the effects are on health. None of this is regulated because there is not enough research available to base regulations on. “To get to that point we need sufficient scientific evidence,” said Dr. Krishnan-Sarin, “and we don’t have it yet.”

Yale’s TCORS is focused on the role played by flavors such as menthol, cherry, and chocolate that are added to the tobacco in e-cigarettes. The Center’s scientists are studying whether flavors make e-cigarettes more enticing, especially to youth. They are investigating whether these flavors change behaviors and perceptions about the risks of tobacco, and also whether they increase the likelihood of nicotine addiction.

In 2012, Dr. Krishnan-Sarin and her colleagues began collecting information about e-cigarettes in 10 Connecticut middle schools and high schools. Through focus groups and anonymous surveys, the researchers are compiling data about use-rates and why kids are attracted to these products.

“We are seeing significant rates of increases in the use of these products by youths,” said Dr. Krishnan-Sarin. The most recent data, 25 percent of the high school students had tried e-cigarettes, and 12 percent had used them in the past month. “That’s substantial,” she said. Among middle school students, 3.5 percent had tried e-cigarettes, 1.5 percent in the past month. Perhaps equally alarming, among those who had not yet tried e-cigarettes, 32 percent of high schoolers and 26 percent of middle schoolers said they might try them in the future. This echoes the findings of the latest National Youth Tobacco Survey by the Centers for Disease Control and Prevention, which found that the number of youths who had never smoked but had used e-cigarettes nearly tripled between 2011 and 2013. Worse, half of the kids using e-cigarettes expected to start smoking regular cigarettes within a year.

The Yale researchers have found that e-cigarettes are not used just by cigarette smokers, but by kids who have never smoked a regular cigarette. “Many state that if the products didn’t have flavors, they would never have tried them,” explained Dr. Krishnan-Sarin. E-cigarettes are also being advertised on television, which cannot be used to advertise cigarettes.

The manufacturers of e-cigarettes tout them as an alternative for smokers who want to quit, and as a cleaner form of nicotine delivery, far less toxic than the carcinogenic chemicals in tobacco smoke. Researchers are looking into these claims.

Meanwhile, notes Dr. Krishnan-Sarin, “‘shopping shops’ are offering unregulated electronic products some of which are being shown to deliver much higher nicotine levels than a regular cigarette. ‘We know so little about e-cigarettes,’ she said, ‘and that’s this increase in use-rates among youth, which is very concerning because you may be creating a generation that is addicted to nicotine. Will they then move on to regular cigarettes?’

It will be another few years, she added, before the FDA has enough scientific evidence from Yale and the other Tobacco Centers to consider writing regulations.

Cancer Prevention and Control RESEARCH PROGRAM

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The Growing Use Of E-Cigarettes Among Youth

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