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HEALTH

Researchers Say Vitamin E Likely Isn't the Culprit in Vaping-Related Ailments

Public-health authorities had focused on thickeners; lung damage similar to 'toxic-fume exposure,' Mayo Clinic researcher says



Vaping advocates at a rally in Ohio. A team at Mayo Clinic reported that the lung tissue they examined from victims of vaping-related illnesses suggests the damage could have been caused by inhaling a caustic chemical fume. PHOTO: JOSHUA A. BICKEL/ASSOCIATED PRESS

By Robert Lee Hotz

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Researchers at the Mayo Clinic have all but ruled out vitamin E oil and other thickeners as the possible culprit in a wave of vaping-related illnesses and deaths, deepening the mystery of what might be at fault.

Instead, the clinic pathology team reported in the *New England Journal of Medicine* on Wednesday that the lung tissue they examined suggests the damage was more likely caused by inhaling a caustic chemical fume.

“The damage is essentially akin to a chemical burn,” said surgical pathologist Dr. Brandon Larsen at the Mayo Clinic in Scottsdale, Ariz., who led the research team. “It looks like a toxic-fume exposure, like those that occurred in World War I with mustard gas or in an industrial setting with exposure to fumes from a chemical spill.”

In all, the U.S. Centers for Disease Control and Prevention so far has reported 805 lung-injury cases in 46 states and the U.S. Virgin Islands. There have been more than a dozen deaths confirmed in 11 states.

On Tuesday, the New Jersey Department of Health reported the state’s first known vaping-related death. The woman, described only as “beyond college age,” died in August. “This death underscores the potential dangers associated with vaping,” acting state Health Commissioner Judy Persichilli said.

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In the new study Wednesday, Dr. Larsen and his colleagues examined lung-biopsy tissue from 17 patients at hospitals around the country, all of whom had been diagnosed with vaping-associated lung injuries. Almost three-quarters of them had vaped using cartridges containing marijuana or cannabis oils, the pathologists said. Two of them died.

Public-health authorities have struggled to discover exactly what is causing some people to sicken when they vape. There are hundreds of bootleg brands, no standards for “vape juice” mixtures and little systematic research into the health effects of inhaling the heated chemical vapors. Heating changes the chemical composition of vaping liquid in unknown ways, experts said.

Earlier this year, researchers at the University of California, Riverside, identified about 400 different models of vaping devices and 8,000 or so chemical flavor names used in various e-cigarette fluids. Some popular refill fluids contained 22 to 47 flavoring chemicals, the researchers reported in *Nature Scientific Reports*. Many of them can cause cell damage or suppress immune responses, the scientists said.

Thickening oils used to dilute THC, the psychoactive ingredient in cannabis, in black-market vaping mixtures had emerged as a prime suspect. Inhaling such oils has long been known to cause an unusual form of pneumonia.

In September, the New York State Department of Health issued subpoenas for companies in California, Michigan and Massachusetts that sold vitamin E oil as a thickening agent for vaping pods.

Last month, Dr. Kevin Davidson at WakeMed Hospital in Raleigh, N.C., and colleagues reported on five cases of vaping-related illness, all of which showed traces of the distinctive lipid oils in the lungs during diagnostic tests. “Finding oil within the lung is never normal, and it seems to be a hallmark of this disease,” Dr. Davidson said.

But the Mayo Clinic’s lung-tissue samples, the first to be examined directly under a microscope, showed no sign of oils. “We have not seen any evidence of that in any of our cases,” Dr. Larsen said.

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