# Scientists are working hard to dismiss the anti-vaping argument

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**New York:** Portland State University chemistry professor David Peyton had never been attacked with such intensity.

Peyton and a group of other chemists discovered almost five years ago that e-cigarettes could sometimes produce more cancer-causing formaldehyde than regular cigarettes. Formaldehyde is produced by a chemical reaction when a regular cigarette is lit, and finding it at such high levels in e-cigarette vapor, which has been held out as a safer smoking alternative, was a surprise. The study made headlines when the New England Journal of Medicine published it in January 2015.

But along with the publicity came a swift backlash.

The first wave emanated from critics online. The day the study was published, a provaping activist posted an open letter to Peyton online, questioning it. Bloggers flamed it as "bogus" and "invalid." The inboxes of Peyton and his colleagues were inundated with name-calling emails.

Three months later, the activist, a British anti-tobacco advocate and consultant named Clive Bates, and a little-known Greek cardiologist named Konstantinos Farsalinos called the study "highly inaccurate and misleading" in a 14-page complaint to the journal's editors, seeking its retraction. About 40 researchers and vaping-advocates signed a petition backing the complaint; some of them, or their organizations, have received funding that originated from tobacco or vaping companies or vaping advocacy organizations.

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The New England Journal of Medicine says it rarely receives third-party petitions for retractions. The journal published a critical letter from Farsalinos and two other researchers, but didn't retract the study.

Vaping proponents "really wanted to kill it," said Peyton. "We had published in this very prestigious journal and used the word cancer and put some numbers to it, and they didn't like that."

The stakes are rising quickly in the debate over the safety of vaping. Officials are trying to understand an epidemic of acute vaping-related lung injuries that has hurt 1,888 people and killed 37 as of Oct. 29, according to the U.S. Centers for Disease Control and Prevention. Most cases involved vaping THC, the active ingredient in marijuana. A surge in teen vaping has alarmed parents, strained schools and rattled regulators.

Even before all that, the clash over vaping's long-term effects had become a brawl.

Farsalinos, a 44-year-old doctor affiliated with the University of Patras and the Onassis Cardiac Surgery Center, has emerged as a general in the vaping war. A former smoker who switched to electronic cigarettes, he's made a mission of rebutting what he sees as flawed research, publishing more than 70 studies and letters on e-cigarettes and tobacco harm reduction.

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"I am not aware of any other scientist in the world who has more publications than me concerning e-cigarettes," he said.

Farsalinos travels the global scientific-conference circuit talking up the public-health benefits of vaping. He has a <u>website</u> where he rails against studies and media reports casting vaping in a bad light.

In a recent blog post, Farsalinos called the U.S. reaction to the lung-injury outbreak "emotional and irrational hysteria." In another, he complained of a "witch hunt against ecigarettes" and criticized a Bloomberg article on early signs of vaping-related lung injuries as "a collection of confusing and irrelevant information."

"There is no doubt that e-cigarettes are far less harmful than smoking, absolutely no doubt," Farsalinos said in a phone interview. The concerns over e-cigarettes are exaggerated, he said, and "for a smoker who has failed to quit by other methods, they can be literally life-saving." He recommends vaping only for people who can't quit through other cessation tactics.

Scientists in many fields have seen their research attacked by critics who use invective to seed doubt and drown out adverse findings.

Studies on the dangers of tobacco and climate change have been challenged by groups backed by companies whose profits could be endangered by lawsuits or regulation. Similar campaigns have targeted the science on pesticides and vaccines. Now, vaping advocates — some backed by groups with industry ties — are trying to undermine research questioning the safety of e-cigarettes.

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On one side are researchers who say they've found troubling, if preliminary, evidence from laboratory studies that vaping may pose potentially serious health risks.

Opposing them are those who view e-cigarettes as a historic opportunity to spare smokers from disease and death, and who lash out against research they find flawed, biased or unreliable. Some of the pro-vaping researchers have received funds from e-cigarette or tobacco companies. Their criticisms are amplified by an army of pro-industry bloggers, trade groups and think tanks.

Among addiction researchers, it is a "religious divide now; you are either pro-vape or anti-vape," said Wasim Maziak, an epidemiologist at Florida International University. "A lot of people have invested career and reputation in supporting vaping as the best thing that happened to us since whenever, and they are not backing down."

"The pushback is really significant and really organized," said Peyton. "No matter where you are, the same group of people are going to come after you and try to discredit your work."

Bates, who said he organized the petition against Peyton's study in his spare time, disputed the notion that the pushback is highly coordinated. Anti-vaping forces are far better-funded, he said. "It is a completely asymmetrical conflict," Bates said.

Smoking remains a leading cause of preventable death and disease worldwide, and its effects kill about 480,000 Americans a year, the CDC says. Cigarette use is high in Europe and especially so in Greece, making finding ways for people to quit a matter of compelling interest.

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In a survey of current and former smokers near Athens, Farsalinos found that many who quit cigarettes had used e-cigarettes, "suggesting a positive public health impact in a country with the highest prevalence of smoking in the European Union," according to a paper he and colleagues published this year in the journal Internal and Emergency Medicine.

Farsalinos said he receives no money from e-cigarette companies and that his salary is paid by a government scholarship.

But some research he conducted several years ago was sponsored by industry associations and e-cigarette companies, according to disclosures in medical journals. They include the American E-Liquid Manufacturing Standards Association (AEMSA); the Tennessee Smoke Free Association; Nobacco, a Greek e-cigarette company; and FlavourArt, a maker of so-called e-liquids.

Farsalinos's two studies for the American E-Liquid Manufacturing Standards Association were undertaken independently to answer questions from U.S. regulators, and the trade

group "had no input" in how they were done, AEMSA President Scott Eley said in an email.

Nobacco sponsored a study at the Onassis Cardiac Surgery Center, looking at the effects of e-cigarettes on the elasticity of blood vessels, according to its website. Nobacco funded the study in 2013 and says it has not sponsored any Farsalinos studies since then.

The Tennessee Smoke Free Association said its study with Farsalinos focused on how flavors in e-cigarettes help people switch from regular cigarettes, and results were submitted to regulators. FlavourArt funded a 2013 Farsalinos study showing that e-cigarette vapor didn't harm cells, but hasn't worked with him since then, a company spokesperson said.

Farsalinos knew nothing about e-cigarettes in 2011, when he was sent a picture of two friends vaping. He thought it was a waste of time. At the time, he smoked a pack and a half of cigarettes a day, and he had tried everything to quit, from nicotine gum to prescription treatments, without success.

Curious, he started studying vaping at the Onassis center. In 2012, his team found no signs that e-cigarettes disrupted heart function in a short-term study comparing vapers with smokers. As the results came in, he started vaping himself — and was soon off cigarettes for good. The study was presented at a European Society of Cardiology meeting in Munich that August.

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Farsalinos's work got the attention of a young, fast-growing industry eager to show that its products were safer than smoking. In 2013, AEMSA sponsored an e-cigarette nicotine delivery study by Farsalinos and brought him to present his findings to the U.S. Food and Drug Administration, according to a blog post.

Today, Farsalinos touts his findings at scientific conferences around the world, sometimes in countries considering regulations on the devices. This May, he appeared in the Philippines at a harm-reduction conference, admonishing officials to consider vaping's benefits.

"No one has the right to ignore scientific evidence," he said, according to a local newspaper.

In June, he spoke in Warsaw at the Global Forum on Nicotine. In Seoul, in August, he gave a speech at the third annual Asia Harm Reduction Forum. In September, he cast doubt on research linking e-cigarettes to heart attacks at a conference in Norway. Later that month, he spoke at a gathering in Washington for the tobacco and nicotine industry.

Farsalinos has many fans online. "Your work is priceless," said a YouTube commenter about a video of a Farsalinos talk in Oslo. "We will be always grateful for everything you do for the community."

One of Farsalinos's favored lines of attack is to argue that scientists who are unfamiliar with vaping tested the products under unrealistic conditions.

In the Portland State study, Farsalinos said that the researchers overheated vaping devices, leading to the discovery of contaminants that wouldn't otherwise be present at high levels. He likened it to burning toast and declaring that bread has carcinogens in it. Vapers would taste the so-called dry puff and stop. In May 2015, Farsalinos and two colleagues published a rebuttal study in another journal, finding much lower formaldehyde levels.

But some other research teams, including one at Harvard, another at the Lawrence Berkeley National Laboratory and another at the Desert Research Institute in Reno, Nevada, have since reported finding significant formaldehyde levels in some e-cigarette vapors, including at typical voltage settings. Farsalinos has published studies that challenge some of those formaldehyde findings, too.

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"I would call it a manufactured debate," said public health researcher Joseph Allen, senior author of the Harvard study. He likens the tactics to industry sympathizers trying to sow doubt about climate change.

Farsalinos's work is influential, especially in Europe. In a 2018 review, Public Health England dismissed potential formaldehyde risks, repeatedly citing Farsalinos's work. Other studies have independently found low formaldehyde levels in some e-cigarettes.

Scientists who've been attacked by Farsalinos are critical of his methods. Andrey Khlystov, an atmospheric chemist and co-author of the Desert Research Institute studies, said Farsalinos's work is "full of self-contradictions and crazy jumps in logic."

Farsalinos said he's mystified why people are so worried about e-cigarettes.

"It's a paradox. The more studies we have, the more convinced we are that e-cigarettes are less harmful" than regular cigarettes, he complained. "The public perception of e-cigarettes gets worse and worse year after year."

When the U.S. Surgeon General warned that youth vaping was "a major public health concern" in December 2016, Farsalinos again swung into action. On his blog, he dismissed the report as "highly misleading" and "emotional statements with no real content."

Farsalinos and Riccardo Polosa, an Italian doctor who has received research funding from Philip Morris International Inc. and e-liquids manufacturers, along with two other researchers, later published a detailed critique of the report in Harm Reduction Journal, calling youth e-cigarette use "infrequent or experimental."

Recent U.S. government data have painted a different picture. E-cigarette use among high-school seniors has more than doubled since the Surgeon General's report was published. Last year, the CDC said, 3.6 million Americans middle- and high-school students used e-cigarettes.

Farsalinos said his opinion hasn't changed, and that most youth use is confined to people with a history of smoking.- *Bloomeberg* 

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