New study shows higher formaldehyde risk in e-cigarettes than previously thought

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Portland State University researchers who published an article three years ago in the *New England Journal of Medicine* about the presence of previously undiscovered forms of formaldehyde in e-cigarette vapor revisited their research and found that formaldehyde risks were even higher than they originally thought.

The 2015 study by PSU chemistry professors David Peyton, Robert Strongin, James Pankow and others revealed that e-cigarette vapor can contain the new forms of formaldehyde at levels five to 15 times higher than the formaldehyde in regular cigarettes. The chemicals were detected when the vaping device used in their experiments was set at the high end of its heat settings.

Formaldehyde is a known carcinogen. Unlike gaseous formaldehyde, the newly discovered compounds are bound to particulates in the e-cigarette aerosols, enabling them to be deposited more deeply in the lungs than gaseous formaldehyde.

The 2015 study drew criticism from e-cigarette advocates, who said that the high settings would produce an unpleasant taste and therefore would be avoided by the vast majority of people who use e-cigarettes.

In their new study, published in *Scientific Reports*, Peyton and Strongin found that both gaseous formaldehyde and the new formaldehyde compounds were detectable at levels above OSHA workplace limits even when e-cigarettes were operated at lower, more commonly used heat settings. Strongin said this raises concerns about the overall risks of e-cigarette use.

"In 2016, more than 9 million Americans were current e-cigarette users, including more than 2 million U.S. middle and high school students," he said. "It is thus concerning if even a minority of users cannot properly control e-cigarette-derived intake of formaldehyde and related toxins."

More information: James C. Salamanca et al, E-cigarettes can emit formaldehyde at high levels under conditions that have been reported to be non-averse to users, *Scientific Reports* (2018). DOI: 10.1038/s41598-018-25907-6

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