

E-cigarettes found to cause as much DNA damage as unfiltered cigarettes

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A new study from the University of Connecticut has found the vapor from electronic cigarettes, or e-cigarettes – which are often seen and marketed as a safer alternative – can cause as much DNA damage as smoke from tobacco cigarettes. The results surprised the researchers, who concluded that e-cigarettes are "potentially as harmful as tobacco cigarettes."

While a flurry of ongoing research is attempting to determine the long-term health effects of e-cigarettes, the "vaping" trend is getting more and more popular – currently, nearly three million adults in Great Britain alone use e-cigarettes. Despite most research still being in the early stages, the majority of studies have suggested that e-cigarettes are safer than tobacco smoking.

In 2016, the Royal College of Physicians concluded that the long-term health hazards of e-cigarettes are "unlikely to exceed 5 percent of the harm from smoking tobacco." But despite e-cigarettes seeming to be a safer alternative to smoking tobacco, we do still see studies warning of the dangers from inhaling e-cig vapors. A study in 2015 found e-cig vapor to contain the same damaging free radicals found in tobacco smoke, albeit in much lower quantities, and a recent study found e-cigarettes could pose a risk to cardiovascular health, though again, probably much less than tobacco smoking.

While the long-term effects of e-cigarettes are still unknown, most research to this day has found the health impacts to be, in varying degrees, lower than tobacco smoking. This new study from a team of chemists stands in stark opposition to most prior reports in that it claims e-cigarette vapor causes the same amount of damage as tobacco smoke, in this case in relation to DNA damage.

This study used a new electro-optical screening device that can quickly detect DNA damage and showed that such damage from nicotine e-cigarettes was approximately equivalent to damage caused by smoking unfiltered cigarettes.

"I never expected the DNA damage from e-cigarettes to be equal to tobacco cigarettes," says Karteek Kadimisetty, lead author on the study. "I was shocked the first time I saw the result, so I ran the controls again. I even diluted the samples. But the trend was still there – something in the e-cigarettes was definitely causing damage to the DNA."

The research didn't identify which specific chemicals in the e-cigarette vapor were causing the DNA damage, but the results were clear, damage on a genetic level was being done.

Interestingly, [a contrasting study was released late in 2016](#) claiming e-cigarette vapor had no mutagenic effect on DNA. This earlier study, published in the journal *Mutation Research*, utilized a very different experiment model. It is also worth noting that this earlier study was funded by British American Tobacco.

The recent study from the University of Connecticut is not without its own other interests either. The team behind the study is using this research to reveal a new DNA screening device utilizing a cheap, disposable 3D-printed "lab on a chip."

While many cigarette smokers have switched to e-cigarettes believing them to be a safer alternative, more research needs to be done before we have a conclusive answer. Of course, the safest approach would be to partake in neither – that's one thing for certain.

The new study was published in the journal [ACS Sensors](#).

Source: [University of Connecticut](#)

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