

Ex-smokers might be better off with high rather than low nicotine e-cigs

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Vapers using low rather than high nicotine e-cigarettes may be using their devices more intensely, potentially increasing the risk of exposure to toxins in the vapour, according to new research funded by Cancer Research UK and published in *Addiction* today.

Researchers, based at London South Bank University, studied 20 [e-cigarette](#) users and found that people using low nicotine e-liquid in their devices puffed more deeply and more often than those using high nicotine liquid. Those using low nicotine also increased the power of their vaping devices when possible.

Despite this 'compensatory' behaviour, the low nicotine vapers were unable to get as much nicotine as the high nicotine group. But in their quest to do so their puffing behaviour may have increased their exposure to toxins such as formaldehyde, a [chemical](#) formed when the e-cigarette liquid is heated.

While there can be toxic chemicals present in vapour, they are far fewer and generally at lower concentrations than in tobacco smoke. Evidence so far still shows both high and low nicotine e-cigarettes are far less harmful than smoking.

Vaping more intensely and at higher power raises the temperature inside the device which can cause the glycerine and glycol found in most e-liquids to break down.

This raises the risk of exposure to chemicals. While this exposure is generally still at far lower levels than with smoking, it should be minimised where possible. The low nicotine group also reported a stronger urge to vape, more acute withdrawal symptoms and were less satisfied after use.

This is similar to the evidence on using [nicotine replacement therapy](#) (NRT) in a quit attempt that shows that smokers need a sufficiently high dose of nicotine to increase their chances of successfully giving up tobacco by reducing cravings.

Dr. Lynne Dawkins, lead author of the study based at London South Bank University, said: "Some vapers might believe that starting out on a low nicotine strength is a good thing, but they should be aware that reducing their nicotine concentration is likely to result in the use of more e-liquid. This obviously comes with a financial cost but also possibly with a health cost. The results of our study suggest that smokers who want to switch to vaping may be better to start with higher, rather than lower, nicotine levels to reduce compensatory behaviour and the amount of e-liquid used.

"Although e-cigarettes are much less harmful than smoking, the vapour can still contain some potentially harmful chemicals that present a higher risk to health than nicotine, which is relatively safe. Our research shows that more intense vaping behaviour associated with using low nicotine e-liquid has the potential to increase users' exposure to some of these chemicals. To draw any firm conclusions more research on a larger scale is needed."

Alison Cox, director of prevention at Cancer Research UK, said: "Let's be clear. While there are potentially harmful chemicals present in the e-cigarette vapour, there are far more in tobacco smoke. The best thing smokers can do for their health is to stop smoking, and switching to e-

cigarettes is one way to do this.

"Tailored help and support from local Stop Smoking Service offers the best chance of stopping [smoking](#) for good. But this research suggests that a low [nicotine](#) approach may not be the best for everyone or the safest path to a successful attempt to give up. First time vapers should be prepared to experiment to find what suits them best and helps them to give up for good."

More information: Dawkins et al. 'Real-world' compensatory behaviour with low nicotine concentration e-liquid: subjective effects and nicotine, acrolein and formaldehyde exposure. *Addiction*, [DOI: 10.1111/add.14271](#)

Provided by Cancer Research UK

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