

## Draft for recommendations on nicotine limits for vaping liquids

Regarding nicotine limits, there is an argument to set a limit on the strength of nicotine solution that can be purchased. Having reviewed the available evidence including <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3880486/> overwhelming data indicating that more than 0.5 g of oral nicotine is required to kill an adult. Indeed nicotine poisoning is very rare and almost unheard-of with nicotine solutions for vaping. The only documented cases are with high strength nicotine for manufacture of vaping liquid. Only one such report in a child where the nicotine concentrate was consumed orally, the report is conflicting but the concentration of nicotine was certainly greater than 100mg/ml possibly 250mg/ml. There are also no reports of overdose that was life threatening using Snus (oral tobacco) even with 43mg/g the strongest available. The only death from suicide with Snus recorded required inserting 48 pouches anally (to avoid vomiting eliminating it) and would have required significant determination due to uncomfortable effects.

It seems below 100mg/ml oral administration results in involuntarily vomiting, before a fatal amount can be absorbed into the blood. This is backed up by the lack of life threatening overdoses even in deliberate suicide attempts.

Given that there are no reported cases of life threatening overdose with oral nicotine with concentration less than 100mg/ml, it would be suggested to set a limit of 80mg/ml or less for safety margin, and to allow for those more susceptible like children. 60 mg/l would allow for low power pod devices and for most DIY mixers making their own liquid.

A sensible limit would be 60-70 mg/ml lower figures are unlikely to improve safety but may limit the ability of heavy smokers to switch to a much safer product.

### Declaration of COI:

I owned a company testing electronic cigarettes for compliance with UK and other standards, as well as carried out investigations of failures including battery failure. I also worked on R&D and provided consulting services on for example battery protection circuits, chargers etc. Payment was from user fees for testing, government agencies (trading standards), trade associations, and sometimes individuals or companies carrying out due diligence testing or failure mode analysis. Ended 2016 since then I have been a consumer only and have not received any funding from any company (of any sort), government agency, or research institution.

I assisted in writing standards for UK vaping products ([PAS 54115 A guide for the importation and sale of electronic cigarettes and directly related products, with product safety testing methods](#)) and proposed an IEEE standard project number P2800. Several sampling machines were supplied to others testing electronic cigarettes, and other custom test equipment, the supplied equipment presumably used to carry out tests on electronic cigarettes as designed. As academic and test houses purchased this equipment it is assumed this was paid for by test fees, or grants to carry out tests on electronic cigarettes, again possibly linked to taxes etc from tobacco and or electronic cigarette sales. The same funding source as government agencies, politicians and others working in the field.

Since 2016 I have been purely a consumer and not received any funding from any industry or government source.