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## The Lesser of Two Evils? Vaping and Artificial Sweeteners

10 September 2024

1

### Speakers:



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2

## Agenda

- Part I: Vaping Products
- Part II: Sweeteners
- Part III: Application to Insurance Risk

3

# Vaping: Harm Reduction

4

## Vaping: Harm Reduction

### Is vaping safer than smoking?

#### Myth 1: Vaping is just as harmful as smoking

##### Fact

Nicotine vaping is not risk-free, but it is substantially less harmful than smoking.

In 2022, UK experts reviewed the international evidence and found that "in the short and medium-term, vaping poses a small fraction of the risks of smoking".

'Vaping myths and the facts' on [www.nhs.uk](http://www.nhs.uk)

#### 2.1 Overall conclusions

Based on the evidence that the team reviewed, the conclusions were that:

- in the short and medium term, vaping poses a small fraction of the risks of smoking
- vaping is not risk-free, particularly for people who have never smoked
- evidence is mostly limited to short and medium term effects and studies assessing longer term vaping (for more than 12 months) are necessary

'Nicotine vaping in England: 2022 evidence update main findings', report by the UK Office for Health Improvement & Disparities



**Professor Chris Whitty**  
@CMO\_England

Follow ...

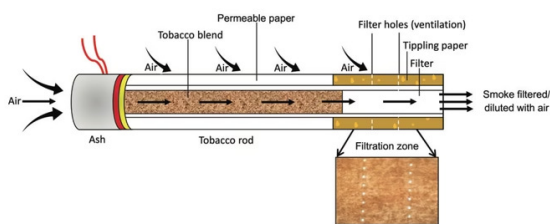
The key points about vaping (E-cigarettes) can be easily summarised.

If you smoke, vaping is much safer; if you don't smoke, don't vape; marketing vapes to children is utterly unacceptable.

5

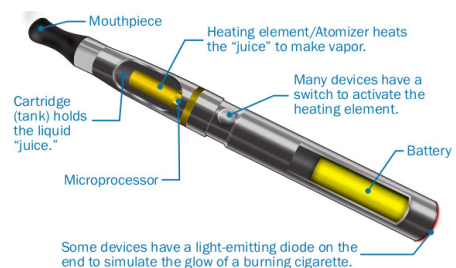
## Vaping: Harm Reduction

### Why do we think vaping is safer than smoking?



Smokers inhale tobacco smoke, comprising:

- Nicotine
- Tar
- Carbon monoxide
- Other chemicals such as benzene, ammonia, formaldehyde, arsenic, hydrogen cyanide



Vapers inhale aerosols, comprising:

- Nicotine
- Vegetable glycerin
- Propylene Glycol
- Flavouring

6

## Vaping: Harm Reduction

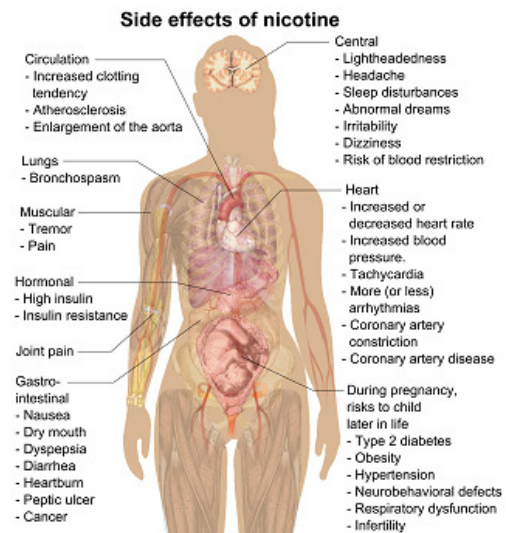
### Does vaping reduce risk enough?

Vaping as harm reduction, not harm abolition.

Immediate side effects of nicotine, including addiction

Long term risk is unknown:

- Irritation to lungs, especially over decades
- Unknown long-term exposure to other vape juice components (vegetable glycerin, propylene glycol and flavouring)
- Potential risks from poor quality vapes and components



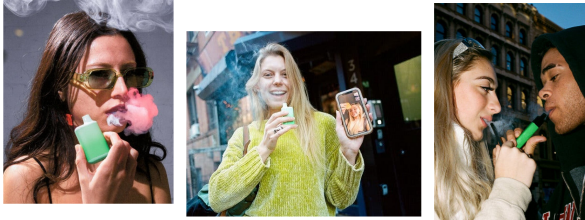
7

## Vaping: Other Consequences

8

## Vaping: Other Consequences

### Youth Vaping



- Heightened health risks for the young:
  - Vulnerability to abuse (e.g. THC usage)
  - More potential decades of use
  - Addiction prior to pregnancy
- Significant increase in youth vaping due to alleged 'targeted' marketing, especially with disposable vapes



9

## Vaping: Other Consequences

### Why are disposable vapes attractive to young people?

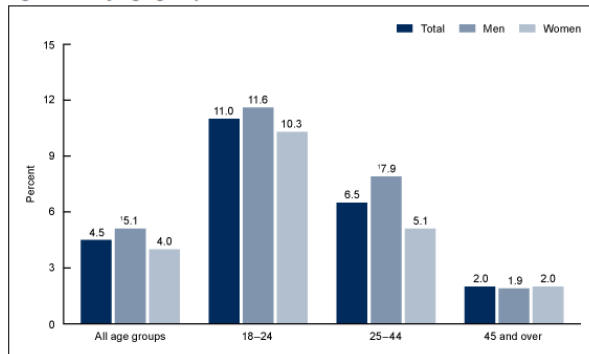


10

## Vaping: Other Consequences

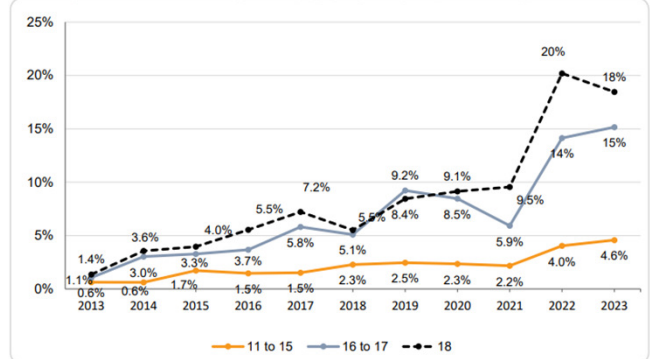
### Youth Usage

Figure 1. Percentage of adults aged 18 and over who currently use e-cigarettes, by age group and sex: United States, 2021.



cdc. Current Electronic Cigarette Use Among Adults Aged 18 and Over: United States, 2021

Figure 4. Current use of e-cigarettes by age, GB youth (11-15, 16-17 and 18), 2013-2023



ASH Smokefree GB Youth Survey, 2013-2023. Unweighted bases: All 11-18 year olds (n counts in table in the appendix).

11

## Vaping: Other Consequences

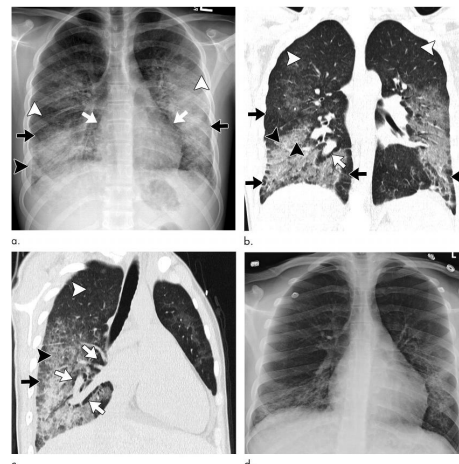
### EVALI - E-cigarette or Vaping use-Associated Lung Injury

Outbreak of serious inflammatory lung injury amongst vape users in US in 2019-2020.

2,668 hospitalised and 68 deaths as of 14 January 2020, with mostly young patients:

- 15% of patients were under 18 years old;
- 37% of patients were 18 to 24 years old;
- 24% of patients were 25 to 34 years old;
- 24% of patients were 35 years or older.

Linked to vitamin E acetate oil, an additive in third-party / black market THC vape juice.



12

## Vaping: Other Consequences

### UK Regulatory Response

#### Tobacco and Vapes Bill 2024

- Ban on disposable vapes “*which have driven alarming rise in youth vaping*”
- Restriction on vape flavours, introduction of plain packaging / in-shop displays
- Introduction of vaping tax
- Creation of ‘smokefree generation’ for anyone born after 2009 – applicable to tobacco only?

Introduced by Conservatives- Labour government plans?



13

Artificial Sweeteners:  
Harm Reduction ...but of what  
harms?

14

## What's wrong with sugar: the official position

The screenshot shows the Food Standards Agency website. The main heading is "What's wrong with sugar: the official position". Below the heading, there is a navigation bar with "News & consumer advice", "Business guidance", "Our work", and "About us". The page content includes a section titled "Nutrients - what you need to know" with a sub-section for "Northern Ireland specific". The text discusses the health risks of consuming high amounts of sugar, such as obesity and tooth decay, and recommends that no more than 5% of energy should come from free sugars. It also mentions the Soft Drinks Industry Levy (SDIL) and the importance of reading food labels.

The screenshot shows the NHS website. The main heading is "How to cut down on sugar in your diet". Below the heading, there is a sub-section titled "Added sugars, such as table sugar, honey and syrups, should not make up more than 5% of the energy you get from food and drink each day. That's about 30g a day for anyone aged 11 and older." The page also features a search bar and navigation links for "Health A-Z", "Live Well", "Mental health", and "Care and support".

15

## Public health and sugar reduction as public policy

### Governmental body reports and statements on 'Sugar reduction'

**Scientific Advisory Committee on Nutrition (SACN)** in its 2015 report, *'Carbohydrates and health'*, concluded that reducing sugar intake would reduce weight gain and benefit dental health. It recommended that the sugar intake recommendation be lowered to no more than 5% of daily energy intake, a halving of the previous recommendation.

In October 2015, **Public Health England (PHE)** published *'Sugar reduction: the evidence for action'* and recommended the introduction of 'the Sugar Tax' and placing restrictions on advertising and promotions. The sugar reduction programme, announced in the then government's obesity plan in 2016, challenged all sectors of the food industry to reduce sugar in the foods that contribute most to the intakes of children up to 18 years of age, by 20% by 2020. In 2018, juices and milk-based drinks were added to the programme and challenged industry to reduce sugar by 5% and 20%, respectively, by mid-2021.

Drinks in scope of the **Soft Drinks Industry Levy (SDIL)** are included as part of the monitoring of the sugar reduction programme on behalf of HM Treasury.

16



## Types of 'non sugar alternatives'/Sugar substitutes

1. Nutritive sweeteners – sucrose, fructose, honey etc.
2. 'Natural' sweeteners – sugar alcohols or 'polyols' e.g. sorbitol, xylitol, lacticin, mannitol, erythritol and maltitol. Slightly lower in calories than sugar but not as sweet.
3. Non-nutritive sweeteners (NNS)/Non-calorific artificial sweeteners (NAS) -e.g. aspartame, acesulfame k, saccharin, sucralose

17

## The context of harm – Sugar vs NNS

What harms are we trying to reduce with lower sugar intake?	Do NNSs reduce those harms?
Increased obesity	No – some studies show increase in post prandial appetite
Increased insulin resistance	No – some studies evidence similar spike in blood glucose and glucose intolerance and change in gut microbiome.
Dental caries	Yes
Probably the topic of another discussion but increasing evidence that sugar feeds tumors & cancer	No – Long running question of whether aspartame and possibly acesulfame k and sucralose are carcinogenic. Aspartame 2B World Health Organisation (WHO) Classification as ' <i>possibly carcinogenic to humans</i> '.

18

*Any other risks or problems I need to know about?*

Erm...

### Xylitol is prothrombotic and associated with cardiovascular risk

Get access

🔒, 🔒, 🔒, 🔒, 🔒

European Heart Journal, ehae244,

<https://doi.org/10.1093/eurheartj/ehae244>

Published: 06 June 2024 Article history ▼

#### Conclusions

Xylitol is associated with incident MACE risk. Moreover, xylitol both enhanced platelet reactivity and thrombosis potential *in vivo*. Further studies examining the cardiovascular safety of xylitol are warranted.

WHO: 2B



Gasoline and gasoline engine exhaust, welding fumes, pickled vegetables, aloe vera whole leaf extract



FYI: MACE = MAJOR ADVERSE CARDIAC EVENT!!!

19

Artificial Sweeteners:  
How and why did we get here?

20

## How did we get here?

### 1. Study funding/self-interest

#### Affiliation

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harriett.h.butchko@nutrasweet.com

PMID: 12180494 DOI: [10.1006/rtp.2002.1542](https://doi.org/10.1006/rtp.2002.1542)


### 2. Ubiquity of NNS use within consumables and market size coupled with governmental drives on public policy

### 3. “Man is not a big rat” – Bernard L. Oser



The American Journal of Clinical Nutrition  
Volume 97, Issue 5, May 2013, Page 1154

#### Conclusions in a study on the role of artificially sweetened soda and risk of lymphoma and leukemia are misleading

Haley Curtis Stevens<sup>1</sup>  

<sup>1</sup> Calorie Control Council 1100 Johnson Ferry Road Suite 300 Atlanta GA 30342

Available online 1 May 2013, Version of Record 20 February 2023.

In conclusion, the statement, “we observed a positive association between diet soda and total aspartame intake and risks of NHL [non-Hodgkin lymphoma] and multiple myeloma in men, and leukemia among both men and women” is not an accurate reflection of the study results given the weak associations as well as the possibility of residual confounding and statistical bias.

The author is President of the Calorie Control Council, an international association representing the low- and reduced-calorie food and beverage industry. The author had no other conflicts to disclose.

21

## Sweet Summary

### What do we know?

1. Evidence on any cancer-causing properties or link with artificial sweeteners remains in a state of flux with studies that reach different conclusions. Absence of any conclusive link being proven rather than any evidence of actual causation. The *Debras et al* study of 2022 is one study which stands out and, may need a conclusive response.
2. The absence of the hoped for beneficial effects on obesity and metabolic health (i.e. insulin resistance/diabetes) is becoming clearer. The science is reaching something closer to a consensus: You can avoid rotting your teeth, but perhaps not much else in the way of health benefits.
3. Use of artificial sweeteners (NNS) is ubiquitous and is present in almost every beverage and foodstuffs even outside of 'diabetic friendly' products is huge and embedded within public health policy.
4. Honey is delicious.

*Affiliations: NONE!!!*

22

# Application to Insurance Risk

23

## Immediate Risk: Vaping

### Product Liability Claims for Lithium Batteries



Vapes are peak lithium battery product risk – small, portable electronics that can cause ‘opportunistic’ damage.

Thermal runaway of the vape battery can cause explosions resulting in:

- Property damage
- Physical injury (e.g. burns, shattered jaws) - 2,000 injuries to US emergency departments from 2015-2017

Standard product liability claims - exposure for retailers, manufacturers and importers

Complex to defend - straightforward causation in law, but highly technical causation in fact

Risk to increase with move away from disposables?

24

## Immediate Risk: Artificial Sweeteners

### False Advertising re Purported Health Benefits

- *Prescott v TC Heartland LLC* – Splenda’s ‘Diabetes Care’ shakes (Dec 23)
- *Prescott v Abbott Laboratories* – Glucerna’s shakes (June 24)
  - Class action for consumer fraud - product advertised as a healthy alternative and is “suitable for people with diabetes” but contains sucralose, believed to cause or worsen Type 2 diabetes and other health issues i.e. promoting insulin resistance, destabilises glucose absorption, obesity and harming the gut microbiome.
  - Glucerna shakes’ labelling included phrases such as “scientifically designed for people with diabetes” and “to help manage blood sugar”. Similar allegations relating to sucralose and its ill effects on pancreatic cells and promotion of insulin resistance. California District Judge agreed that complaint plausibly alleges that the shakes’ labelling may mislead consumers about the drinks’ health aspects.



The growing body of evidence regarding the efficacy of NNS in regulating metabolism and insulin resistance should likely impact how these products are marketed. Significant care will need to be taken by manufacturers of artificial sweeteners and the prod that use them in the claims made as to their benefits/uses.



25

## Long-Term Risk: Group Action for ‘Other Consequences’

### Vaping

- Public nuisance claim brought by several US states against Juul and others, inc. Altria Group for aggressively marketing vaping to young people
- Multiple settlements, incl. USD 1.1bn from Juul
- History repeating itself with tobacco litigation?



### Artificial Sweeteners

- Cancer
- Cardiac/prothrombotic events
- Migraine
- Birth defects/impairments
- Addiction - study showed oral saccharine to be preferred by rats to intravenous cocaine. Super sweetness of NNS may also change taste/drive for sweetness in humans.

Comparison with mesh used in bowel/gynaecology surgical procedures and/or head injury in sport claims?

26

## Long-Term Risk: Group Action for 'Other Consequences'

### Claims in the UK?



UK may be less fertile for these kinds of claims than US.

Unlike the UK, the US has:

- Basis – e.g. broader Public Nuisance doctrine
- Claimants - Mass tort / class action and state / Attorney General litigation – but this is changing
- Damages - Punitive damages, large personal injury awards and jury trials
- Costs - No 'loser pays costs' rule

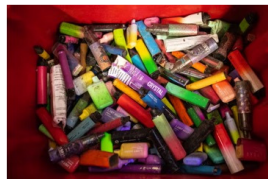
In UK, more robust legal causation principles (applied by Judge not a jury). reduces prospect of success for many claims.

27

## Environmental Claim

### Vaping

- Contributor to plastics pollution?
- Plastics litigation arising in multiple jurisdictions (French claim against Danone under 'Duty of Vigilance' law, New York claim against PepsiCo for plastics and Dutch claim against Shell for carbon emissions)
- 5m disposable vapes thrown away each week in UK - Compare impact of vapes vs:
  - 150m plastic bottles
  - 50m plastic cutlery
  - 2bn pieces of packaging



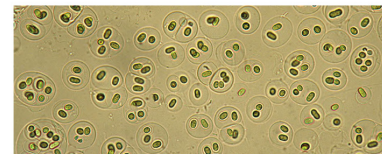
### Artificial Sweeteners

- Sucralose appears to be akin to a 'forever chemical' and does not degrade within the ecosystem. May lead to environmental damage and regulatory and other enforcement resulting in fines and obligatory remediation.

sciencealert

### Artificial Sweetener May Be Wreaking Havoc on Microorganisms

ENVIRONMENT 28 July 2024 By DAVID NIELD



Cyanobacteria under a microscope. (Ed Reschke/Stone/Getty Images)

28

## Thank you. Any questions

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