



ORAL NICOTINE PRODUCTS

Tobacco-Free Nicotine Pouches May Offer Even Greater Public Health Benefits Than Snus

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Conflict of interest statement

- I am an employee of Imperial Brands PLC, a manufacturer of cigarettes, snus and tobacco-free oral nicotine pouches
- The literature review described in this study was funded by Imperial Brands PLC
- The views expressed in this document are of the author and do not necessarily reflect the opinions of Imperial Brands PLC



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Smoking is a cause of serious disease in smokers

Nicotine is not the primary cause of smoking-related disease

The greatest risk of smoking-related disease comes from **burning tobacco** and **inhaling smoke**

However, many adult smokers are **uninterested** or **unwilling** to stop smoking



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Next Generation Products present a global Public Health opportunity

Tobacco Harm Reduction (**THR**) refers to strategies **designed to reduce the health risks** associated with tobacco smoking, which **may involve** the continued use of nicotine/tobacco

Next Generation Products deliver nicotine without burning tobacco



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But ... a harm reduced product is not enough



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Snus has potential as THR product

Oral Tobacco-based product

Many toxicants present in cigarette smoke are not produced

Nicotine is absorbed through the gums



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The “Swedish experience”

> **95-99%** less harmful than cigarettes¹

< **5%** smoking rates in Sweden
which is the **lowest** in Europe²

29 per 100,000 people lung cancer
incidence among Swedish males³

Age-standardised incidence rate of lung cancer (men)³

GREECE:		75 per 100,000 people
EUROPE:		68 per 100,000 people
UK:		53 per 100,000 people
SWEDEN:		29 per 100,000 people

¹Gartner *et al.* The Lancet, 2010; ²SmokeFreeSweden: <https://smokefreesweden.org/2024/11/13/breaking-news-swedes-first-in-world-to-become-smoke-free-its-a-lesson-for-the-world/>; ³Global Cancer Observatory: https://gco.iarc.fr/overtime/en/dataviz/trends?multiple_populations=1



TFNP - a new category of oral nicotine products

Tobacco-Free Nicotine Pouches (TFNP)

No tobacco. Plant fibre-based substrate or dry powder with high-purity nicotine

Many toxicants present in cigarette smoke are not produced

Nicotine is absorbed through the gums

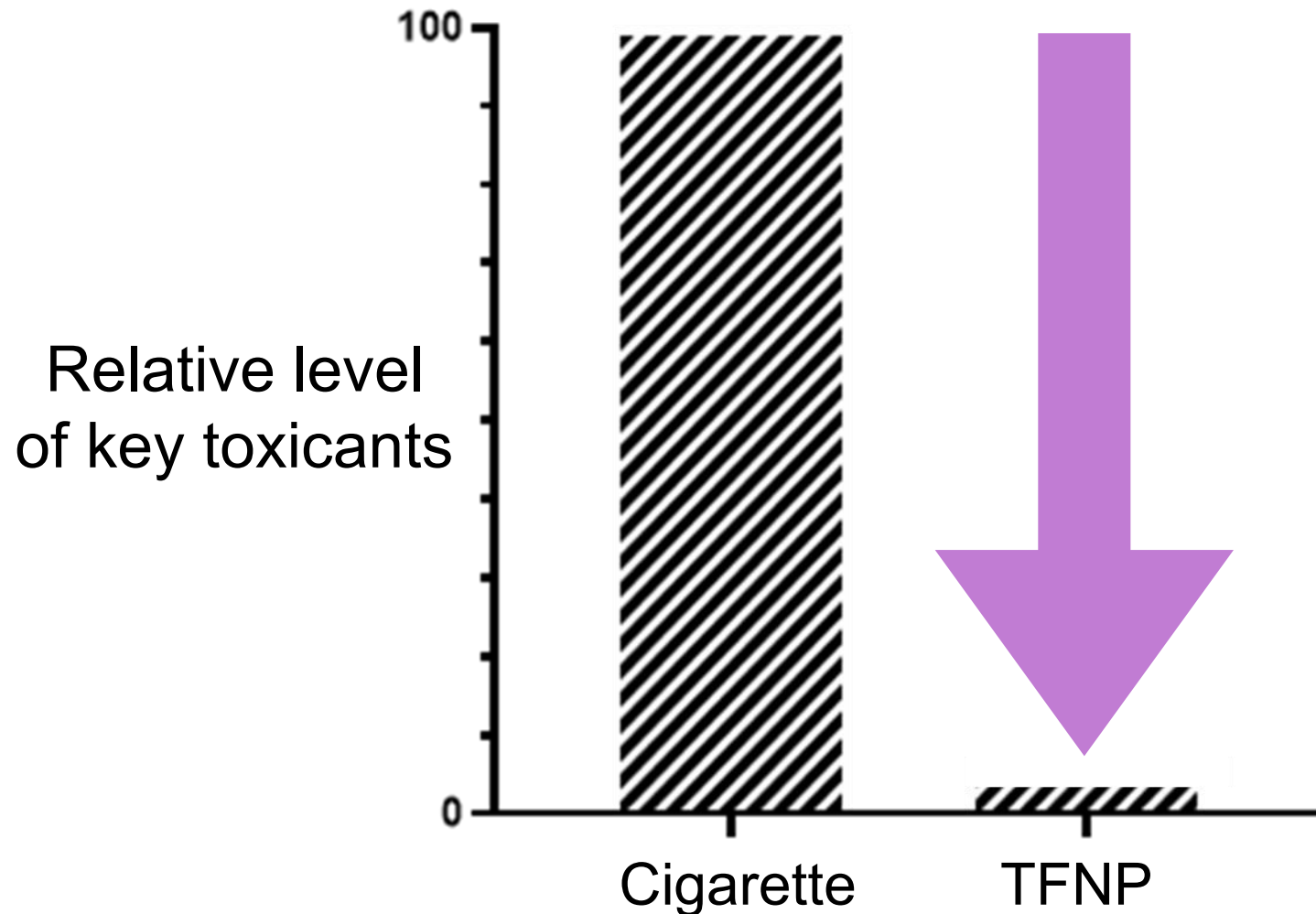
No tobacco No combustion No inhalation



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TFNP may play a meaningful role in THR



**99% less
toxicants***

*Imperial Brands' data for ZoneX. Average reductions in levels of a selection of harmful chemicals of public health interest e.g. WHO TobReg9, compared to levels in smoke of reference cigarettes; this does not mean that ZoneX is risk free.

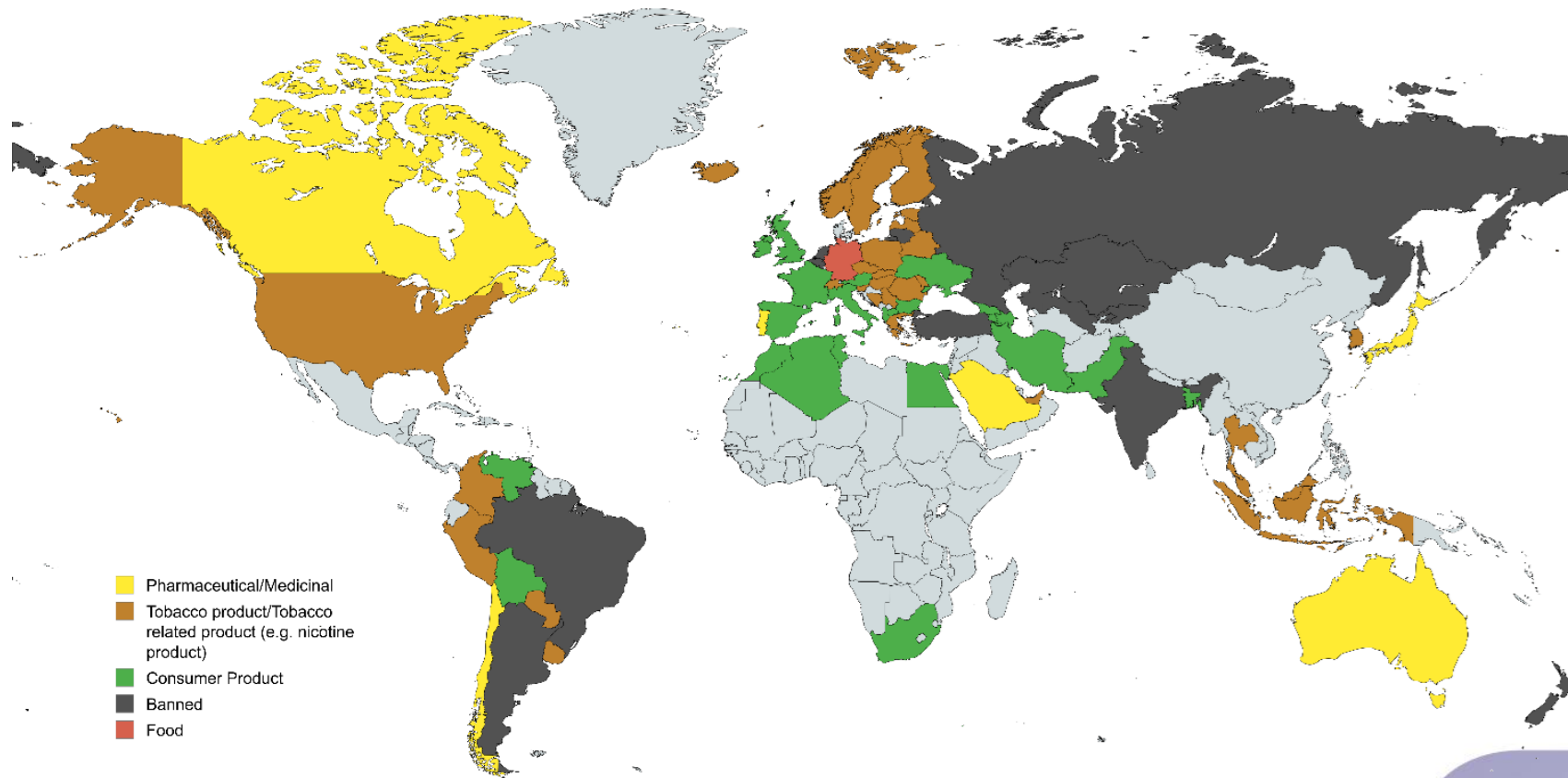


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A successful TFNP approach requires proportionate regulation

TFNP regulations differ markedly around the world



Many regulators are cautious about the introduction of TFNP due to lack of long-term data on their potential health effects

Image generated using MapChart: <https://www.mapchart.net/world.html>;
Data sources from: <https://tobaccointelligence.com>



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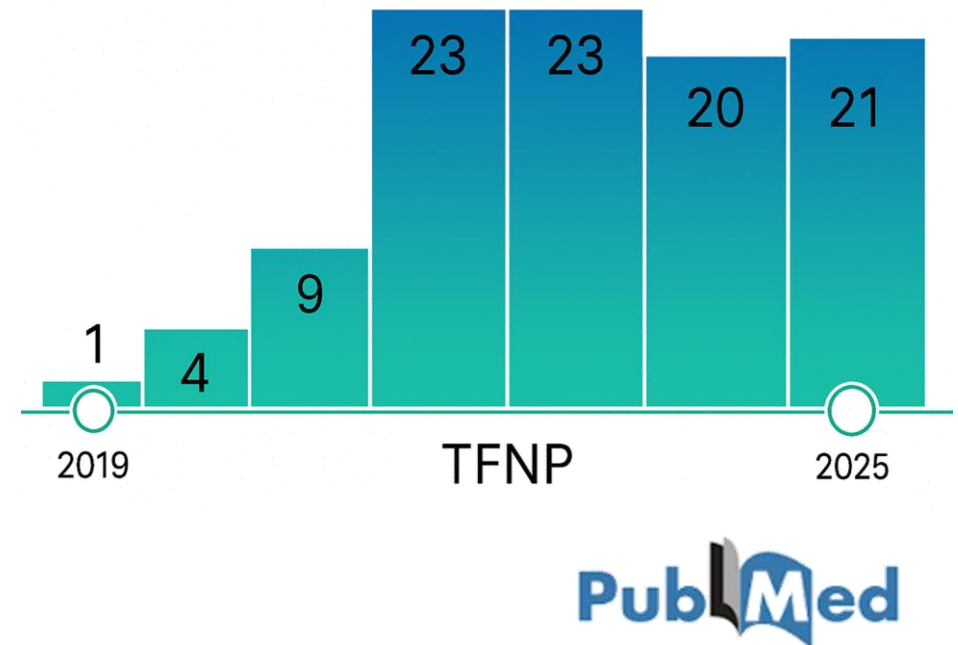
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IMB conducted a bridging review to directly compare snus and TFNP

Aim: Can we accelerate our understanding of this emerging category by leveraging an established THR product like snus, rather than waiting for long-term epidemiological data?

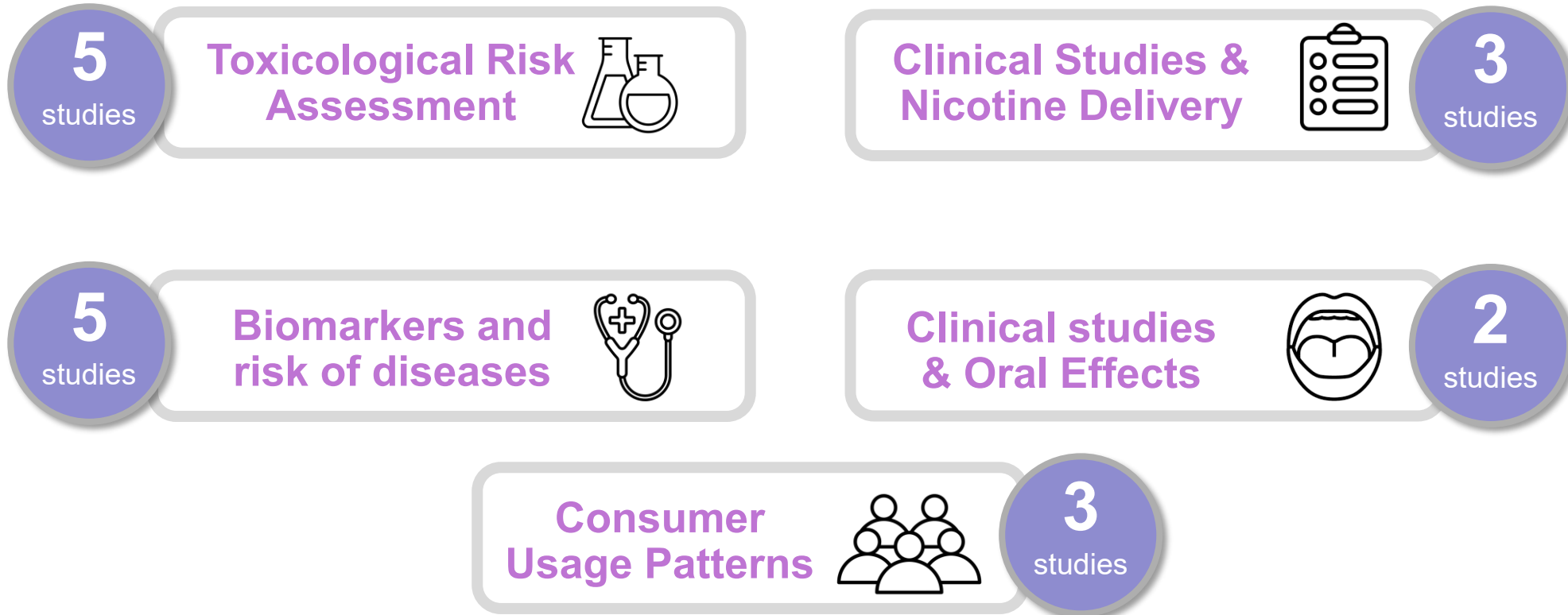
Why?

- ▶ Relatively new product category
- ▶ Perceived lack of understanding of their potential role in THR
- ▶ To assess current evidence given the growing research since 2019

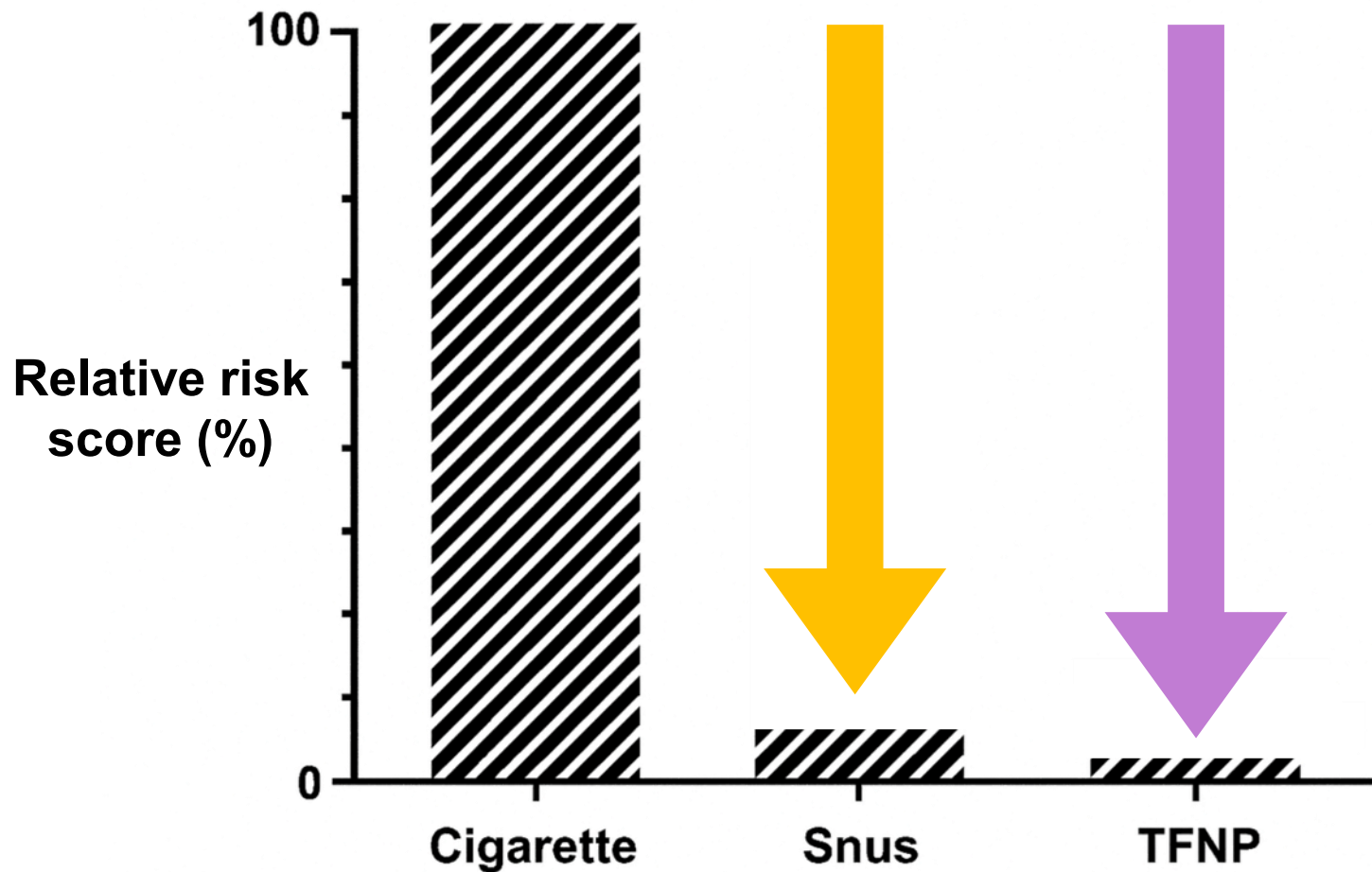


Relevant studies were organised under five key endpoints

Limited studies compared snus directly to TFNP



TFNP have a reduced risk profile compared to snus and cigarettes



Less key toxicants

Weaker or absent biological effects

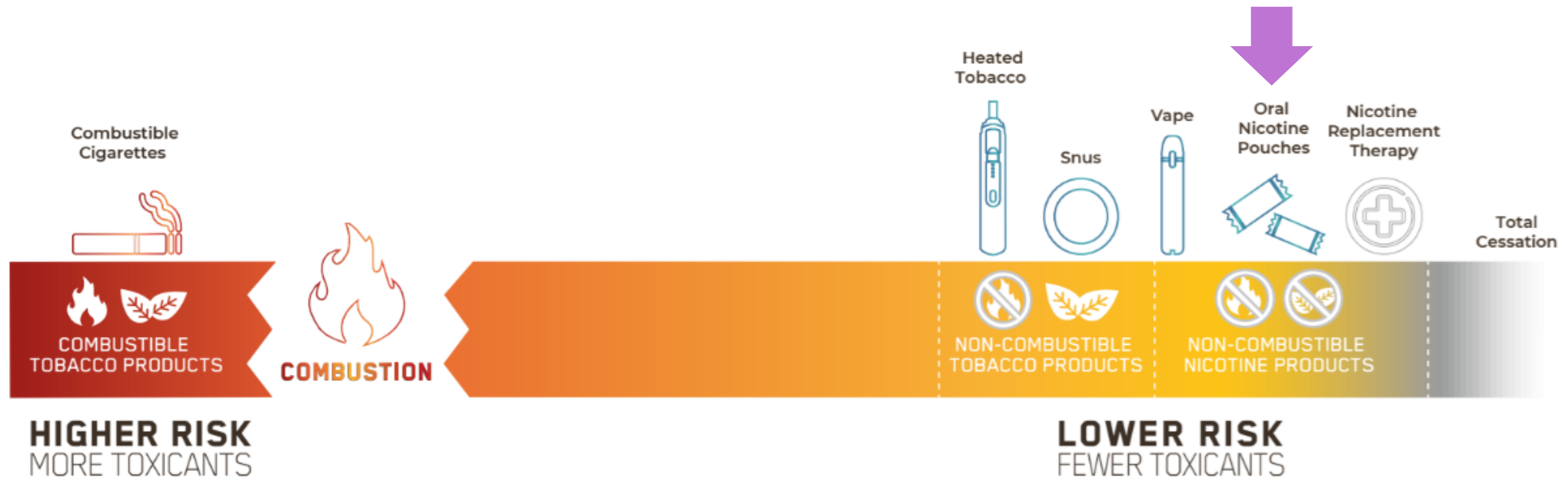
Illustrative representation of a simplified comparison of relative levels of toxicants in TFNP, snus, and cigarette. Other relevant data sources: Nutt *et al.* 2014; Murkett *et al.*, 2020; Azzopardi *et al.*, 2022.



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TFNP sit between snus and NRT on the relative risk scale



An illustrative representation of the Relative Risk Scale developed by Imperial Brands to visually convey what science currently says about the potential risk between the various nicotine product categories:
<https://imperialbrandsscience.com/>

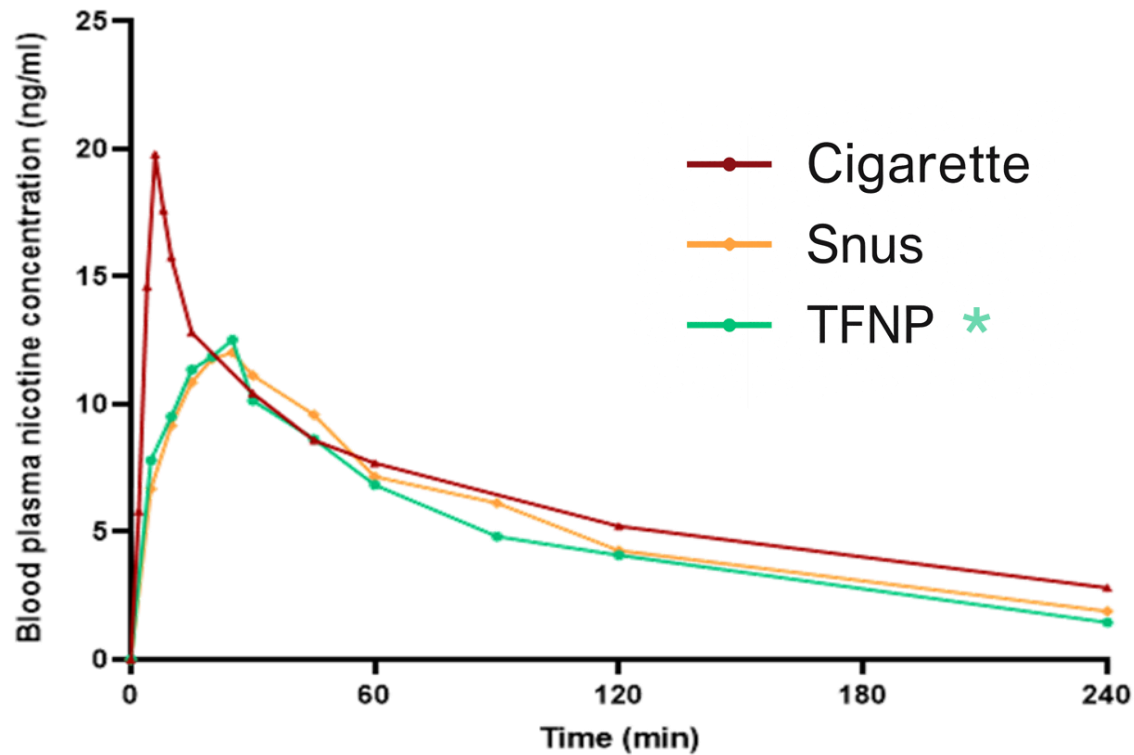


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TFNP may provide a satisfying alternative to cigarettes and snus

TFNP can reduce craving, urges to smoke and withdrawal symptoms, and increase satisfaction and relief among smokers



Influenced by*

- Nicotine content
- Pouch composition
- Usage durations
- Not flavours

Illustrative representation of nicotine delivery among users of TFNP (16 mg nicotine/pouch), Snus (16.6 mg nicotine/pouch), and cigarettes (users' own brand). Source: Marinas-Lacasta A-F *et al.* 2025.



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Biomarkers of exposure and biomarkers of effect

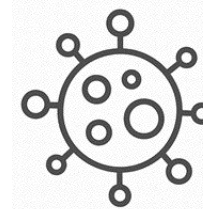
Reported positive individual health benefit when consumers completely switch from cigarettes or snus to TFNP



Reduction in Biomarkers of exposure



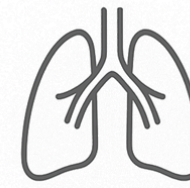
Reduction in Biomarkers of effect



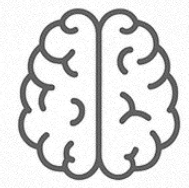
Infections



Cardiovascular disease



Respiratory disease



Neurological damage

Illustrative representation of a simplified comparison of Biomarkers of exposure (left) and biomarkers of effect (right) reported for TFNP, snus, cigarettes and never users of combusted and non-combusted nicotine products. Data sources: Ogden *et al.*, 2015; Azzopardi *et al.*, 2023.



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Switching from cigarettes and snus to TFNP may benefit oral health



Oral effect		Cigarette	Snus	TFNP
Oral cancer risk		High	No significant	Not established
Caries, periodontitis, gingivitis		Common	No significant	Limited data
Oral lesion		Widespread	Localised, reversible	Some reported, severity unknown
Tooth staining		Strong	Noticeable	Minimal

Exemplar table of potential oral effects associated with cigarettes, snus, and TFNP. Data sources: Luo *et al.* 2007; Roosaar *et al.* 2008; Nutt *et al.* 2014; Aragi *et al.* 2021; Valen *et al.* 2023; Murkett *et al.* 2020; Azzopardi *et al.* 2023.



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Reported differences in usage patterns between TFNP and snus

TFNP users reported consuming fewer pouches, with lower nicotine content, and for a shorter duration than snus users



Pattern of use	Snus	TFNP
Pouches/day	~12	~9
Nicotine (mg)	8-22	6-15
Duration (min)	30	10-20



Exemplar table of differences in usage patterns between TFNP and snus. Data sources: Havermans *et al.* 2021; Prasad *et al.* 2022; Azzopardi *et al.* 2022.

Use of TFNP is low but growing among tobacco & nicotine users



Key trends:



TFNP

In EU and US,
current use is low
(~2%) but growing

Increased use
among Swedish
women

Appealing
to tobacco/
nicotine users

Snus

In EU, use is
concentrated in
Sweden (~22%)

In US, use is rare (1.4%) and
prevalent among smokeless
tobacco product users

Data sources: Hrywna *et al.* 2021; Brose *et al.* 2021; Tattan-Birch *et al.* 2022; Sparrock *et al.* 2023; Dai and Leventhal. 2024; Public Health agency of Sweden - National Public Health Survey. 2024.



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Low interest and use of TFNP reported among youth



Key trends:



TFNP

In EU and US,
interest and
current use is low

Growing interest in
Nordic and Baltic
countries

Snus

In Sweden,
prevalence of
use is ~20%

Use is relatively low
(1.2%) in the US

Data sources: Leventhal and Vogel. 2022; Harlow *et al.* 2022; Gentzke *et al.* 2022; Tackett *et al.* 2023; Patel *et al.* 2023; Dai and Leventhal. 2024; Nordic Welfare Centre, 2025.



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The THR potential of TFNP can positively impact population-level health

- ▶ TFNP contain significantly fewer and lower levels of harmful chemicals compared to cigarettes, and even snus.
- ▶ Significantly reduced biomarker levels in TFNP users compared cigarettes and snus users, therefore may lead to a reduced risk of harm to health
- ▶ TFNP can offer an acceptable and satisfying alternative to both cigarettes and snus, reduce desire to smoke, and elicit positive subjective effects in smokers
- ▶ Surveys across the EU and US show low interest and prevalence of TFNP use among unintended population, such as youth
- ▶ TFNP predominantly appeal to, and are used by, existing adult users of combustible and non-combustible tobacco products

The role of regulation

Final Remarks



Regulation
needs to
be risk
proportionate



Regulation
should be
supported by
rigorous science



Engagement is key
to help develop
proportionate
regulations

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Thanks for your attention!



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or via the QR code

