HEATED TOBACCO PRODUCTS: EVIDENCE AND HEALTH HARMS

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Heated tobacco products (HTPs) are tobacco products that require the use of an electronic device to heat an insert containing tobacco. Though marketed by the tobacco industry as a smoke-free product, the tobacco insert is heated to a temperature high enough to produce smoke. HTP systems are fully integrated so that the heating device and inserts for each system must be used together.

glo device and neostick inserts, manufactured by Japan Tobacco International (JTI).

> *[S]moke is produced whenever substances are heated beyond a temperature at which pyrolysis occurs, whether such temperatures are achieved through combustion or other means…Novel and emerging tobacco products, particularly HTPs, emit pyrolysis products such as volatile aldehydes; therefore, these aerosols are clearly within the scientific definition of "smoke," and any smoke emitted by HTPs is unambiguously "tobacco smoke."*[1]

Though HTPs make up a small fraction of the global tobacco market, their share has rapidly grown as the tobacco industry invests in HTPs to make up for shrinking sales of cigarettes.[2] Between 2015 and 2022, the volume of inserts sold globally increased from 0.6 billion inserts to 149.6 billion, and the HTP share of the global tobacco market increased from less than 1% to over 3% (based on market retail value).[3] The market for HTPs is dominated by multinational tobacco companies whose conventional products have addicted generations and killed millions annually around the globe.

Evidence suggests relatively few cigarette smokers switch to HTPs completely, instead becoming dual users with little, if any, reduced risk. While tobacco companies promote HTPs as devices that reduce harm to smokers who switch, the evidence on harm is evolving. Further, the tobacco industry makes harm reduction claims for the use of HTPs, while simultaneously opposing policies to minimize the use of both HTPs and conventional cigarettes among youth and never smokers. HTPs are marketed to a broader audience than just existing smokers, risking potential addiction of youth and never smokers that offsets any potential health benefit at the population level. Regulation according to the WHO Framework Convention on Tobacco Control (FCTC) is critical to ensure that public health is prioritized—not the continued profits of the tobacco industry.

IQOS device and HEET inserts, manufactured by Philip Morris International (PMI).

HEALTH HARMS

Independent research is needed to better understand the short- and long-term health impacts of HTPs. A recent systematic review on HTPs found discrepancies between independent and industry-funded studies on measured levels of tar, tobacco-specific nitrosamines (TSNAs), and secondhand emissions, with manufacturer studies generally showing more favorable results.[4] Despite the definite health effects of HTP use being unclear, evidence demonstrates that HTPs produce smoke,[5] and use is not harmless nor without risks, particularly among never smokers and youth.

- Smoke from HTPs exposes the user and bystander to many of the same harmful compounds found in cigarette smoke.[6] These compounds cause health complications including cancer and heart and lung diseases. Though HTPs were found to produce lower concentrations of many harmful constituents compared to cigarettes, the US FDA determined there was not sufficient evidence to conclude that *IQOS* reduced the risk of tobacco-related disease.[7]
- Nicotine exposure is the same for exclusive HTP users and exclusive conventional cigarette users.[8] In addition to being highly addictive, nicotine can also harm the cardiovascular system. During pregnancy, nicotine exposure negatively affects maternal and fetal health, contributing to preterm delivery and stillbirth. Nicotine exposure during fetal development and adolescence has lasting negative consequences for brain development.[9,10]
- A study including 18,839 non-smokers in Japan found that individuals exposed to secondhand emissions from HTPs were more likely to report respiratory symptoms including asthma attacks, asthma-like symptoms, and persistent cough, compared to participants not exposed to emissions from HTPs.[11]

Preliminary Clinical Evidence

- Laboratory studies examining the effects of exposure to *IQOS* emissions found evidence of cell poisoning and inflammation in lung cells which could lead to lung damage.[12]
- Another laboratory study found that exposure to *IQOS* emissions may lead to negative side effects in the cardiovascular system, including increased blood pressure, heart rate, endothelial dysfunction, and arterial stiffness.[13]
- HTP use may compromise immune system function, increase susceptibility to respiratory infection, and suppress responses to vaccinations.[14]

EVIDENCE OF HEATED TOBACCO PRODUCTS FOR SMOKING CESSATION IS INCONCLUSIVE

Even if HTPs are found to be less harmful than conventional cigarettes, only smokers who switch completely are likely to benefit. To date however, research suggests that most smokers who use HTPs have not quit using cigarettes, and extensive dual use of HTPs and conventional cigarettes has been documented in several countries.[15] The US FDA concluded that the risk for disease or mortality is unlikely to be substantially reduced as a result of reduced exposure in dual users of cigarettes and *IQOS*.[16]

Currently, there is insufficient evidence to support that HTPs are an effective tool for quitting smoking. Evidence of use patterns from several countries demonstrates that HTPs often result in dual use rather than complete cessation of conventional cigarettes. Japan and the Republic of Korea, two established markets for HTPs, provide clear examples of this.

- In Japan, the largest market for HTPs globally, a national longitudinal study of more than 7,000 adults concluded that HTP use did not assist current conventional cigarette smokers in quitting.[17]
    - The study followed cigarette smokers over the course of three years and found that long-term HTP use did not prevent former smokers from relapsing.[17]
    - It found that any use of HTPs was significantly associated with a lower likelihood of cessation and likelihood of being completely tobacco-free.[17]

- In the Republic of Korea, where HTPs were first introduced in early 2017 and quickly became popular, several surveys have documented high rates of dual use:
    - A survey of 21,100 adults in one province found that 96.25% of current HTP users were also current smokers of conventional cigarettes.[18]
    - A nationally representative survey of 6,182 adults found that 90% of current HTP users were also currently smoking, using e-cigarettes, or both.[19]
- Results from a survey of 2,831 adult tobacco users found that dual users of conventional cigarettes and HTPs were less motivated to quit HTPs and less likely to attempt quitting both conventional cigarettes and HTPs, compared to individuals using conventional cigarettes only.[20]
- A study of 10,839 adults in 11 European countries found that the majority of HTP users were dual conventional cigarette users.[21]

MARKETING OF HEATED TOBACCO PRODUCTS

Even if proven to be less harmful, so-called reduced harm products may only be beneficial to public health if they actually help people completely switch from conventional cigarettes and these benefits are not offset by marketing that induces youth and non-users to begin using tobacco. Sophisticated marketing tactics reveal that tobacco companies are not advertising exclusively to smokers but rather targeting broad audiences that include youth and non-users to normalize tobacco use and attract new users.

- Companies use social media platforms and influencers to market HTPs. Images feature influencers who have been paid to model with HTPs, speak about and promote the products, and attend glamorous parties and dinners that make HTP brands like *IQOS* look like part of a desirable and appealing lifestyle.[22]
- British American Tobacco (BAT), manufacturer of the HTP *glo*, promotes their product at events and festivals and uses flashy advertising tactics like light shows to advertise their product (see image at bottom right).[23]
- To glamorize the product and link it to sophistication and fashion, Philip Morris International (PMI) has sponsored fashion and design events, such as Mercedes-Benz Fashion Days in Ukraine; partnered with designers such as Karim Rashid to create limited-edition *IQOS* charger covers; and entered into partnerships with several women's magazines, including in Russia and Italy, for projects that include designing *IQOS* covers and empowering women in the workplace.

PMI has paid influencers to promote their heated tobacco products online. These promotions are particularly appealing to youth.

glo manufactured by Japan Tobacco International (JTI) uses a light show to market their product

KEY POINTS

- **The short- and long-term health risks of HTPs remain relatively unknown, with much of the available research provided by the tobacco industry. However, current evidence does suggest that HTPs are likely as addictive as conventional cigarettes and emit many of the same harmful chemicals, albeit at lower levels.**
- **More research is needed to understand the specific health harms caused by HTPs.**
- **Currently, there is not sufficient evidence to suggest that HTPs are an effective strategy to quit conventional cigarette use, and dual use of HTPs and conventional cigarettes is common, with little or no health benefit to those who do not switch completely.**
- **Governments should apply tobacco control provisions that are fully compliant with the WHO FCTC to regulate HTPs, including both the HTP heating devices and their inserts.**

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