

## ERS Position Paper on Heated Tobacco Products

A statement prepared by the ERS Tobacco Control Committee and approved by the ERS Advocacy Council, Science Council and Executive Committee

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### What are heated tobacco products?

Heated tobacco is a new nicotine delivery system that is commonly referred to as “Heat-not-Burn” by the tobacco industry. Heated tobacco products consist of a small tobacco stick that is heated electronically, rather than burned. The tobacco industry is actively pursuing the market with sales on the rise of products such as ‘iQOS’ and ‘glo’.

### Tobacco industry research claims a 90-95% reduction in harm

According to a press release by the tobacco industry the main ingredient in their heated tobacco products is water, whereas the main ingredient in conventional cigarettes is tar. The tobacco industry claims that there is a 90-95% reduction in harmful and potentially harmful substances and toxicity <sup>1</sup>.

### Not the full picture: digging deeper into tobacco industry research

Tobacco companies have not informed the public that their studies on emissions from heated tobacco found high concentrations of e.g. particulate matter, tar, acetaldehyde (a carcinogen), acrylamide (a potential carcinogen), an acrolein metabolite (toxic and irritant) <sup>2-6</sup> and formaldehyde (a potential carcinogen) <sup>7, 8</sup>. Independent researchers have investigated tobacco industry data and point out that heated tobacco products emit significantly higher levels of several substances that are not recognised as harmful or potentially harmful by the Food and Drug Administration compared with combustible cigarette smoke. Twenty two harmful or potentially harmful substances were >200% higher and seven were >1000% higher than in reference cigarette smoke <sup>9</sup>. Further, human studies show that there is no statistically detectable difference between users of heated tobacco and conventional cigarette for 23 of the 24 biomarkers of potential harm <sup>10</sup>. Both animal and human studies performed by the tobacco industry also show there is no evidence of improvement in pulmonary function or inflammation in smokers who switched to heated tobacco <sup>11</sup> and there is possible hepatotoxicity of heated tobacco <sup>12</sup>.

### Independent research: a substantially higher risk than claimed by the tobacco industry

Historically, there is strong evidence that studies performed by the tobacco industry or by researchers funded by the tobacco industry cannot be trusted <sup>13-17</sup>. Former employees and contractors have detailed irregularities in the clinical experiments on heated tobacco products performed by the industry <sup>18</sup>. Independent research shows that heated tobacco products emit substantial levels of carcinogenic tobacco specific nitrosamines <sup>19 20</sup>

as well as toxic and irritant substances and potential carcinogens <sup>21</sup>. Nicotine and tar levels have been found to be almost identical to a conventional cigarette <sup>22</sup>, the potentially carcinogenic substance acenaphthene is found to be almost 3 times higher than in conventional cigarettes <sup>21</sup>, and release of formaldehyde cyanohydrin takes place, which is of great concern as it is highly toxic at very low concentrations <sup>23</sup>. In-vitro studies found that emissions for heated tobacco cause damage to human bronchial epithelial cells <sup>24</sup>, have the potential to increase oxidative stress and inflammation, infections and airway remodeling and initiate epithelial mesenchymal transition-related changes in the airways <sup>25</sup>. Experimental animal studies found that exposure to heated tobacco led to decreased blood vessel function comparable to that induced by cigarette smoke <sup>26</sup> and impaired arterial flow-mediated dilation, a measure of vascular endothelial function in a manner very similar to tobacco smoke <sup>27</sup>. In addition, a study found that users of heated tobacco may be forced to smoke at a rapid pace which could lead to an increase in intake of carbonyls (potentially carcinogenic) and nicotine, inducing a high level of nicotine dependence <sup>23</sup>.

### What does ERS recommend?

Even though heated tobacco products may perhaps be less harmful for smokers they nevertheless remain both harmful and highly addictive, and there may be a risk that smokers will switch to heated tobacco products instead of quitting. ERS cannot recommend any product damaging the lungs and human health.

### Why does ERS make this recommendation?

It is tempting to recommend to smokers to switch to heated tobacco products without considering all the consequences. Experiences with filter cigarettes and light cigarettes have shown that 'safer products' undermine smokers' wish to quit, and they have not improved smokers' health <sup>28</sup>. Quoting the tobacco industry on 'safer products': "Quitters may be discouraged from quitting, or at least kept in the market longer ..." <sup>29</sup>. We must remember that two to three out of four smokers want to quit <sup>30</sup> and almost all smokers regret that they started to smoke <sup>31 32</sup>. Also, many smokers want to quit because they want to regain control of their life <sup>33 34</sup>, and get cured of their nicotine dependency – this will not happen if they switch to heated tobacco products. A majority of smokers want to quit, and there is not a 'hardening' of smokers <sup>35</sup> – on contrary there are fewer hard core smokers <sup>36</sup> and they report being less dependent <sup>37</sup>. We have no evidence that heated tobacco products are efficient as smoking cessation aid. Dual use is very frequent for other harm reduction products as e-cigarettes (approx. 70-80%) <sup>38 39</sup> and snuff/snus (>40%) <sup>40</sup>, and dual use of heated tobacco cigarettes combined with conventional cigarettes cannot be ruled out. Finally, ex-smokers and never-smokers might be tempted to start using this 'harmless' product and a renormalisation of smoking in the public might occur <sup>41</sup>. Four studies show that heated tobacco is used by non-smokers in up to 45% of cases <sup>42</sup>.

The European Commission underlines that "with regard to the sale, presentation and manufacturing of these products within the European Union, the relevant provisions of the Tobacco Products Directive apply and should be enforced. This includes the ban on misleading elements foreseen by Article 13 and notably any suggestions that a particular tobacco product is less harmful than others <sup>43</sup>. Member states are currently assessing the toxicity of these products. For example, there is concern in the UK" over the potential for non-smokers including children and young people, who would not otherwise start to smoke cigarettes, to take up using these products as they are not without risk. There was also concern over whether use of these products would lead people to take up smoking cigarettes" <sup>44</sup>.

An expert scientific panel has advised the Food and Drug Administration (FDA) to vote against the tobacco industry's claim that heated tobacco products cut the risk of tobacco-related diseases and that a heated tobacco product is less risky than continuing to smoke cigarettes <sup>45</sup>.

## Conclusion

Heated tobacco products, regular tobacco smoking and smokeless tobacco for oral or nasal use are all addictive and carcinogenic to humans <sup>46 47</sup>. We should not allow debate around the new tobacco products to distract us from the main job at hand – promoting regulatory measures that we know are effective at reducing smoking and continue to support those who wish to quit smoking.

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