

## Miscellaneous

**Beyond Regulation is Harm Reduction Efforts**

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It is undeniable that regulations as the primary cause of today's lowered smoking rates. Those regulations include taxation, age restriction for purchasing and marketing tobacco products, graphic health warnings, and efforts to reduce public smoking. While we may celebrate victories in reducing smoking and its harm, failures of prohibition with respect to nicotine-containing products are known experience. Nevertheless, a recent hypothesis focusing upon tobacco harm reduction sounds logical and hopeful in respect of avoiding drastic lung disease development as well as malignancies of various vital organs. Toward this practice, switching from conventional cigarettes to heat-not-burn tobacco products is currently advocated and seem's to be logical. Of note, there have been reports suggesting that e-cigarettes somehow would cause respiratory diseases (as well) (N.B. as yet no references available).

On the other hand, there are recent articles, namely, "A comparative *in vitro* toxicity assessment of electronic vaping product e-liquids and aerosols with tobacco cigarettes smoke" by R. Wieczorek, et al, in *Toxicology in Vitro* pre-proof, April 14, 2020 (<https://doi.org/10.1016/j.tiv.2020.104866>) and "Free Radical Production and Characterization of Heat-Not-Burn Cigarettes in Comparison to Conventional and Electronic Cigarettes" by Zachary T. Bitzer, and colleagues in *Chemical Research in Toxicology*, May 20, 2020 (<https://doi.org/10.1021/acs.chemrestox.0c00088>). Both papers disclosed that the conventional cigarettes, which its burning cone reached temperatures of >900 degrees Celsius, producing numerous toxicants and significant levels of highly reactive free radicals, while the electronic heat-not-burn cigarettes below the temperature of 250-350 degrees Celsius potentially limiting the production of combustion-related toxicants by the conventional cigarettes (Table 1).

**Table 1** Gas-Phase Radicals Per Puff

Device	Nicotine (mcg)	Particulate-phase radicals (pmol)	Total gas-phase radicals (pmol)
IR6F	189.5 ± 7.9	73.9 ± 7.5	567.6 ± 78.3
IQOS	122.2 ± 9.6	nd	12.6 ± 1.1
Juul	155.7 ± 44.6	nd	5.3 ± 0.5

IR6F (conventional cigarettes)

IQOS (HnB product)

JUUL (nicotine liquid e-cigarette)

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