Examining heated tobacco product emissions

June 28 2022

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A new paper examining whether heated tobacco products emit smoke has been published in the academic journal *American Chemical Society Omega*.

Professor Colin Snape and Dr. Clement Uguna, in the Faculty of

Engineering at the University of Nottingham, have conducted a literature review of the studies that investigate the emissions generated by heated tobacco products (HTPs).

HTPs, which are often viewed as an alternative to cigarettes, are electronic devices that heat a rod or stick containing cast tobacco sheet, or reconstituted tobacco made from ground tobacco powder prepared with ingredients such as glycerol, water, cellulose fiber, and guar gum to produce vapors. Hybrid HTP devices generate nicotine aerosols by heating an e-liquid and passing the vapor through a capsule of tobacco.

The academics found that, from the materials reviewed, the chemical evidence to date indicates that these devices generate Harmful and Potentially Harmful Constituents (HPHC) and other compounds that are linked to concerns regarding human health.

The study suggests that the emissions from heated tobacco products contain the same HPHCs as released in cigarette smoke and, in terms of their temperature of release, they do fit the definition of smoke, containing compounds such as levoglucosan that are markers of biomass combustion and black carbon that are associated with biomass, wood and tobacco smoke.

Professor Snape and Dr. Uguna, experts in pyrolysis and hydropyrolysis (the heating of materials to convert to liquid or gas), received funding for this study from STOP, a global tobacco industry watchdog.

"While the literature does point to heated tobacco products emitting smoke and other chemicals—less than cigarettes—there is much more work to be done to understand this phenomenon more clearly," says Snape. "Analysis after repeated use needs to be investigated to provide more reliable assessments of the compounds released from the devices in relation to human use, as recommended by their respective

manufacturers, before cleaning the device," he added.

More information: Clement N. Uguna et al, Should IQOS Emissions Be Considered as Smoke and Harmful to Health? A Review of the Chemical Evidence, *ACS Omega* (2022). DOI: 10.1021/acsomega.2c01527

Provided by University of Nottingham