



REDUCED EMISSIONS OF HARMFUL CHEMICALS

Aerosol chemistry: Targeted analysis

We measured a number of harmful chemicals in the aerosol of Platform 1 and compared them to the levels found in the smoke of a standard reference cigarette (3R4F). On average, a 95% reduction in the levels of these HPHCs in Platform 1 aerosol was observed.¹⁸

FIGURE 5

Reduced emissions of HPHCs from Platform 1 use. The average level of HPHCs in Platform 1 aerosol is shown by the red bar and is compared with the average level of HPHCs in smoke from the 3R4F reference cigarette marked as 100% in the graphic.



¹⁸ Schaller, J. P., et al. (2016). Evaluation of the Tobacco Heating System 2.2. Part 2: Chemical composition, genotoxicity, cytotoxicity, and physical properties of the aerosol. Regul Toxicol Pharmacol 81 Suppl2: S27-S47.

* Average reductions in levels of a range of harmful chemicals (excluding nicotine) compared to the smoke of a reference cigarette (3R4F).

BY ELIMINATING COMBUSTION, THE LEVELS OF HARMFUL CHEMICALS ARE REDUCED ON AVERAGE BY 95% IN PLATFORM 1 AEROSOL COMPARED TO THOSE IN CIGARETTE SMOKE.

Aerosol chemistry: Untargeted analytical screening

The comprehensive chemical characterization of Platform 1 aerosol using untargeted analytical screening methods revealed that a total of 532 chemical constituents (including water, glycerin, and nicotine, which were measured using different methods) were present at concentrations ≥ 100 ng/heated tobacco unit.¹⁹

The identities for 80% of all chemical constituents measured using untargeted screening, representing > 96% of the total determined mass, were confirmed with purchased reference chemicals. All compounds that were detected in Platform 1 aerosol ≥ 100 ng/heated tobacco unit were also found to be present in smoke from the standard reference cigarette 3R4F.

¹⁹ Bentley, M. C., et al. (2020). Comprehensive chemical characterization of the aerosol generated by a heated tobacco product by untargeted screening. Anal Bioanal Chem 412:2675-2685.

²⁰ U.S. Food and Drug Administration. Premarket Tobacco Product Marketing Order TPL (Technical Project Lead Review); PM0000424-79. 29 Apr 2019; Section 6 – Summary of Toxicological Findings: p42. <https://www.fda.gov/media/124247/download>

Only a minority of compounds in Platform 1 aerosol were present at concentrations exceeding those measured in cigarette smoke.

To identify any potential new hazards presented by exposure to Platform 1 aerosol, untargeted differential screening was also performed, which only looked for chemicals that were significantly more concentrated in Platform 1 aerosol compared with cigarette smoke.

The compounds that were found to be significantly higher in Platform 1 aerosol compared with cigarette smoke, including three compounds that were unique to Platform 1 aerosol (all with concentrations <100 ng/heated tobacco unit), were submitted for toxicological evaluation. Four compounds were subsequently highlighted to be of potential toxicological concern.

The levels of these four compounds were very low and the U.S. FDA concluded that “Although some of the chemicals are genotoxic or cytotoxic, these chemicals are present in very low levels and potential effects are outweighed by the substantial decrease in the number and levels of HPHCs found in combusted cigarettes.”²⁰

FIGURE 6

This graph presents the untargeted characterization results of the regular variant of the Platform 1 heated tobacco unit. The 532 chemicals present in Platform 1 aerosol are also present in 3R4F cigarette smoke (≥ 100 ng/heated tobacco unit).

TEN TIMES FEWER CHEMICALS IN PLATFORM 1 AEROSOL THAN IN CIGARETTE SMOKE.

