



INTRODUCTION

TRANSFORMATION

Designing a smoke-free future

Our goal is to offer smoke-free alternatives that have the potential to reduce the risk of developing smoking-related diseases as compared with continued smoking. Recent advances in science and technology have made it possible to develop innovative products that current adult smokers accept and that are less harmful alternatives to continued smoking.

KEY FACTS & FIGURES

120 million USD invested in the construction of the Cube.
PMI's remarkable R&D facility in Neuchâtel (Switzerland).

Over 6 billion USD invested by PMI since 2008 in fundamental research, product development, scientific substantiation and manufacturing capacity of our smoke-free products.

60% of global commercial expenditure dedicated to smoke-free products in 2018.

Over 4,600 patents granted with approximately another 6,300 pending patent applications.

45th largest patent filer listed by the European Patent Office in 2018 and the only tobacco company among the top 50.



Over 340 peer-reviewed publications and book chapters related to our smoke-free products since 2008.

Investment includes the expansion of our first Greenfield factory in Italy, as well as the conversion of existing factories in Greece, Russia, Romania, Korea and two additional production lines in Switzerland.

Over 30 worldwide locations with research and technology partners.

Over 430 scientists and engineers working on our smoke-free products.

Around 30 scientific and engineering disciplines including: materials science, consumer electronics, clinical science and systems toxicology.

REGULATORY

Our comprehensive body of scientific evidence for Platform 1 has been submitted to regulatory bodies in several countries. We submitted Modified Risk Tobacco Product Applications (MRTPAs) in December 2016 and Premarket Tobacco Product Applications (PMTAs) in March 2017 to the U.S. FDA. We also submitted technical and scientific dossiers to regulatory authorities in several EU member states. In April 2019, following a rigorous science-based review through the PMTA pathway, the U.S. FDA determined that authorizing Platform 1 for the U.S. market is appropriate for the protection of the public health.

This decision on the PMTAs allows the marketing of Platform 1 without modified risk or exposure claims and is independent of the U.S. FDA's decision on the MRTPAs, whose scientific review is ongoing.

PMI's step-by-step approach to research
Inspired by long-adopted practices of the pharmaceutical industry and in line with the U.S. FDA guidance, including FDA draft guidance for Modified Risk Tobacco Products.

RESEARCH APPROACH



FIND OUT MORE



PMI SCIENCE
PHILIP MORRIS INTERNATIONAL

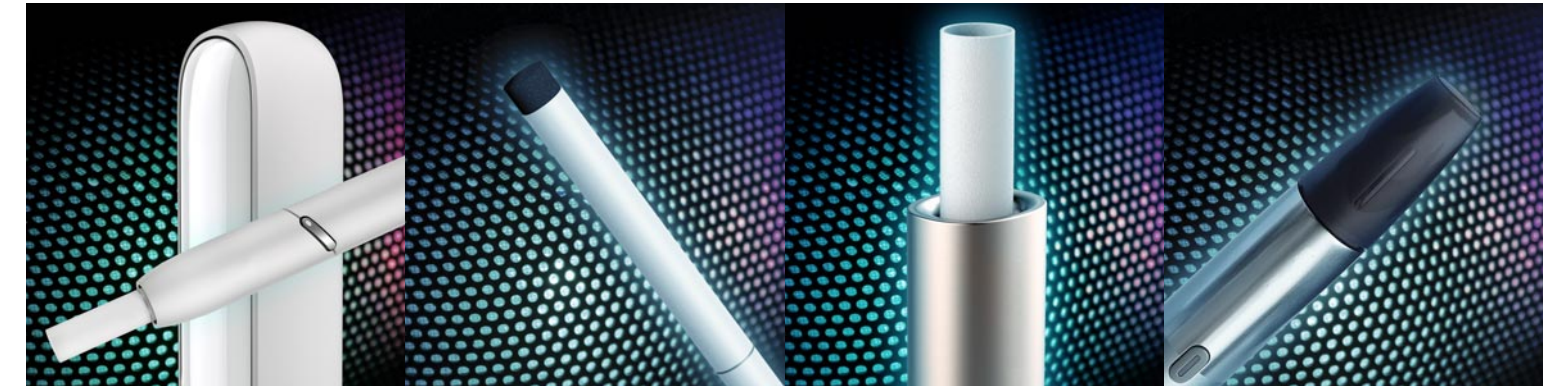
Get up close with PMI Science
pmiscience.com



PMIScience.com is operated by Philip Morris International for the purpose of publishing and disseminating scientific information about Philip Morris International's efforts to develop and assess products that have the potential to reduce individual risk and population harm associated with tobacco use.

PMISCIENCE.COM

Our platforms
We believe that a portfolio of different smoke-free products is essential to achieve a reduction in harm otherwise caused by continued smoking.



Platform 1

uses an electronic heat-control technology to heat tobacco within a specific temperature range. Extensive laboratory and clinical data are available supporting its potential for risk reduction compared with continued cigarette smoking. Standard Platform 1 consists of three components: a pocket charger, a holder, and a heated tobacco unit.

Platform 2

relies on its product design to control the heating of tobacco within a specific temperature range. A carbon heat source at the tip generates heat which is transferred to the tobacco without the use of electronics.

Platform 3

a novel platform that generates a nicotine powder aerosol through a mechanical process. The nicotine powder is made of nicotine salt formed from nicotine and a weak organic acid.

Platform 4

Battery-powered devices that vaporize a nicotine-containing liquid, scientifically engineered to give a consistent use experience, without the limitations of a coil and wick system.



Platform Development

The platform development process follows the principle of 'Quality By Design'. This means the platforms are specifically designed with the aim of eliminating or reducing the levels of Harmful and Potentially Harmful Constituents (HPHCs) found in their aerosol compared to those found in cigarette smoke.

Toxicological Assessment

This aims to confirm whether the reduced formation of HPHCs leads to reduced toxicity and reduced risk of smoking-related diseases in laboratory-based models.

Clinical Assessment

These studies help provide human data on the use and acceptance of our smoke-free products, as well as their potential to 1) reduce exposure to harmful chemicals and 2) reduce the risk of smoking-related diseases as compared to continued smoking.

Perception and Behavior

These studies help us understand how our smoke-free products will be perceived and actually used.

Long-Term Assessment

We run long-term studies and monitor events linked to consumer use in order to track the long-term effects of smokers switching to our products.

- ▶ Levels of harmful chemicals are reduced on average by 95% in Platform 1 aerosol compared to those in cigarette smoke.
- ▶ When Platform 1 was used indoors, out of 24 measured compounds, only nicotine, acetaldehyde and glycerin were measured at levels higher than the background, although well below the exposure limits established in air quality guidelines.

- ▶ Studies show a substantial reduction in toxicity of the Platform 1 aerosol compared to cigarette smoke.
- ▶ Switching to Platform 1 led to reduced impact on biological mechanisms and disease endpoints associated with COPD and CVD compared to continued smoking.
- ▶ Unlike cigarette smoke, Platform 1 aerosol does not lead to increased lung tumor incidence and multiplicity in a mouse model.

- ▶ When switching to Platform 1, the nicotine uptake and urge-to-smoke scores were comparable to those measured in subjects who continued smoking. This suggests that switchers do not seek to use Platform 1 more frequently than smokers seek to use cigarettes and that switchers can find Platform 1 acceptable and satisfying.
- ▶ Smokers switching completely to Platform 1 were exposed to significantly lower levels of harmful chemicals compared to those who continued smoking during the study.
- ▶ Clinical findings indicate that switching to Platform 1 may have a positive impact on smokers' health.

- ▶ Our studies showed a low intent to use Platform 1 among non-smokers.
- ▶ Smokers should understand that quitting is the best way to reduce smoking-related health risks.

- ▶ There are approximately 12.4 million Platform 1 users globally, of which 71% (approximately 8.8 million) have stopped smoking and switched to Platform 1.