Japan Society for Tobacco Control

日本禁煙学会

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[Urgent warning] 2021/7/30

Please do not be fooled by the sophistry and lies of heated tobacco.

- Many carcinogens and harmful substances are emitted from heated tobacco devices without combusting tobacco. Some substances are emitted only from heated tobacco devices.
- Even if the amounts of harmful substances are reduced to 1/10 of the original levels, potential damage to health remains, and nicotine amounts remain elevated.
- Nicotine and other substances in heated tobacco could cause depressed immunity, respiratory diseases, heart disease, and cancer.
- Please do not be fooled by the sophistry and lies of the tobacco industry.

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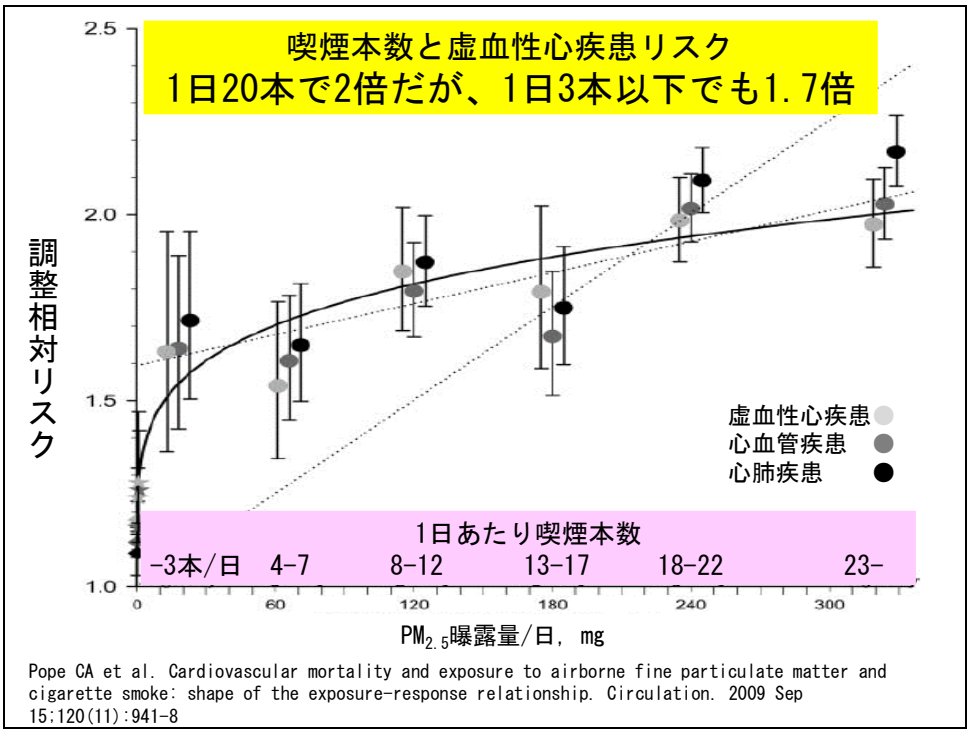
1. Nicotine, menthol, glycerin, acetaldehyde, diacetyl, acrolein, and glycidol were detected in the mainstream (exhaled) aerosol from IQOS, and 33 additional substances including benzene were identified in sidestream aerosol. Among these substances, acetaldehyde is a clear carcinogen and diacetyl is known to cause respiratory illness. Glycidol is also a carcinogen, and acrolein is otherwise highly toxic. Amounts of these substances in mainstream areosol are higher, but the sidestream aerosol of IQOS also contained significant levels of acetaldehyde, acetone, which is harmful to the respiratory tract, and 2-butanone, which is designated as a toxin.
Lucia Cancelada, et al., "Heated Tobacco Products: Volatile Emissions and Their Predicted Impact on Indoor Air Quality." Environmental Science & Technology, Vol.53, 7866-7876, 2019

2. The heated tobacco product "IQOS" manufacturer Philip Morris said that IQOS heats but does not burn its ingredients, so that the amounts of harmful substances other than nicotine is significantly reduced compared to combusted tobacco (to about 1/10 of the level). The company has published many advertisements in major newspapers stating that their new product will significantly decrease health hazards. Moreover, they stated that there is no "smoke from combustion", and implied that nicotine alone does not cause any harmful effects. This latter statement is a lie.

3. [Evidence part 1] Even if the amounts of harmful substances is said to be reduced to 1/10 of the original amount, it can not be expected that cases or risks of diseases will likewise be reduced to 1/10 of their original amounts. Likewise, even if the consumption of combustible cigarettes is reduced to 1/10 of an original amount (from 20 sticks/day to 3 sticks/day or less),

the risk of contracting heart and lung diseases was shown not to significantly decrease. （See graph below.）



The amount of smoking and the risk of ischemic heart disease

20 sticks/day has a relative risk of 2, but 3 sticks or less/day still has a relative risk of 1.7

4. [Evidence part 2] About the same amount of nicotine is released in the body when using Philip Morris's "IQOS" heated tobacco device as from combustible tobacco cigarettes. A current Philip Morris advertisement claims that one need not worry about health hazards from nicotine alone, but various research studies have shown that nicotine could be harmful to many organs in the body. Although combusted smoke has higher levels of toxins, nicotine alone could have an adverse impact on one's health.

Adverse effects of nicotine

(Reference : Mishra A, et al. Harmful effects of nicotine. Indian J Med Paediatric Oncology 2015 Jan-Mar; 36(1):24-31)

Type of illness	Effects from administering nicotine (clinical data, cell biological experiments, animal experiments, et cetera)
Nicotine addiction	Nicotine is a powerful addictive drug comparable to cocaine and heroin (US Public Health Secretary 2010). 70% of people who switched from combustible cigarettes to heated tobacco continued to smoke cigarettes, a dual habit which can be labelled "harm maintenance" instead of "harm reduction".

Nicotine and cancer	Nicotine stimulates nAChRs, leading to the generation and proliferation of cancer cells. In the body, nicotine is transformed into carcinogens such as tobacco-specific nitrosamines. It also increases blood vessels in existing cancer tissue, causing its growth and metastasis, and extends the survival of cancer cells. It has a synergistic effect with other carcinogens and shortens the time to carcinogenesis. (Human/animal cell experiments)
Nicotine and lung cancer	Nicotine administration → Lung cancer cells are generated, and their growth and metastasis are promoted. (animal experiment)
Nicotine and liver cancer	Nicotine administration → Cancerous hepatocytes (liver cells) are promoted. Effectiveness of anticancer drugs is decreased. (human liver cancer cell experiment)
Nicotine and stomach cancer	Nicotine administration → Gastric (stomach) cancer cells proliferate, metastasis of cancer is also promoted. (human gastric cancer cell experiment)
Nicotine and pancreatic cancer	Nicotine administration → Pancreatic cancer develops, metastasis of cancer is promoted, and effects of anticancer drugs are suppressed. (animal experiment)
Nicotine and breast cancer	Nicotine administration → Cancerous mammary gland cells are promoted. (human mammary gland cell experiment)
Nicotine and cardiovascular disease	Nicotine administration → Increased heart rate, increased blood pressure, decreased blood flow to the skin and myocardium, deteriorated cardiac function, lower coronary blood flow from nicotine gum, deteriorated response of vasodilation from blood flow, increased risk of angina and myocardial infarction, increased atherosclerotic plaque, accelerated arterial occlusion. (Clinical data from many sources)
Nicotine and respiratory disease	Nicotine administration → Elasticity of fibers in the lungs is diminished (pulmonary fibrosis), the onset of emphysema is facilitated, the parasympathetic nervous system is stimulated, bronchi are constricted and resistance in the respiratory tract is increased→ leading to dyspnea (labored breathing).
Nicotine and digestive organs	Nicotine administration → Increased secretion of gastric acid, decreased blood flow to mucus membranes, decreased gastrointestinal motility → leading to an increased risk of reflux esophagitis (gastroesophageal reflux disease) and gastric ulcers, and a decreased ability to eliminate Helicobacter pylori within the gastrointestinal tract.
Nicotine and immunity	Nicotine administration → signal transmission from antigens and receptors to lymphoid tissues is inhibited → leading to a decreased immune response. It also decreases the number of T cells with immunological memory and interferes with the phagocytic function of breaking down invading tuberculosis. It inhibits the accumulation of fibroblasts and inflammatory cells (ex., lymphocytes) at an inflamed site → leading to inhibited epithelialization and cell adhesion at a

	wound site and delayed wound healing. It inhibits ACTH secretion → leading to a decreased immune response. (Human/animal cell experiments, clinical data, et cetera)
Nicotine and eyes	Nicotine administration → age-related macular degeneration is promoted (human clinical data and animal experiments) and risk of cataracts for diabetics is increased. (animal experiments)
Nicotine and kidneys	Nicotine administration → cyclooxygenase-2 (COX-2) is induced → causing inflammation of the glomerulus and obstruction of the urethra. The ability of protecting kidney tissue from fluctuations in blood pressure is reduced. (human/animal cell experiments, et cetera)
Nicotine and male reproductive function	Nicotine inhibits nitric oxide production → arterial blood flow to the corpus cavernosum of the penis is inhibited → leading to an increased risk of impotence. It also causes atrophy of the seminiferous tubules and decreases sperm volume, and it inhibits the synthesis of testosterone. (clinical data/experimental data)
Nicotine and female reproductive function	Nicotine administration → risks of deformed ova, impaired maturation of ova and infertility are increased. It reduces estrogen → leading to a decreased frequency of ovulation, irregular menstruation, abnormal bleeding, and increased production of follicle-stimulating hormone. It inhibits fetal growth and increases the risk of low birth weight when administered during pregnancy. (clinical data, animal experiments)

5. [What happens twice will happen thrice] Traditionally, tobacco companies tried to hook nicotine-addicted consumers by advertising that "filtered tobacco is less harmful than unfiltered tobacco" and "low tar tobacco is less harmful than high tar tobacco". But these statements have since been proven to be false. The advertised statement that "heated tobacco (IQOS) is less harmful than combusted tobacco (manufactured cigarettes)" is now a third claim to encourage nicotine-addicted customers to continue to use tobacco products.

Tobacco industry claims	Results of scientific research
Filtered tobacco is much safer than unfiltered tobacco	Lie
Low tar tobacco is much less harmful than high tar tobacco	Lie
Heated tobacco (IQOS, Plume Tech, and others) is much less harmful than combusted tobacco	Not proven

6. [Dual use] Philip Morris has "encouraged" its customers to switch to "safer" heated tobacco devices such as IQOS by quitting the use of combusted tobacco. But, in reality a majority of people use both products concurrently, contrary to the "better option" proposed by Philip Morris of using only heated tobacco.

72% of users of heated tobacco and nicotine vaporizers also smoke combustible tobacco.

And dual-use has been shown to be more harmful than smoking only combustible tobacco.
https://pubmed.ncbi.nlm.nih.gov/33857396/
http://www.jstc.or.jp/uploads/uploads/files/essay/20210426.pdf
"For young people, a "gateway effect" might have occurred in that they first started to use nicotine vaporizers and then also tried to smoke combustible tobacco. Adults switched to nicotine vaporizers to quit smoking, but then perhaps could not stop using both. (Krisha Lady et al., American Journal of Respiratory and Critical Care Medicine)

7. The tobacco industry is advised to stop fraudulent advertising and to encourage smokers to quit smoking by advertising the truth about the harms of active smoking and passive smoking. It should even state that "people who don't smoke should not start smoking, and the best choice is for people who smoke to quit smoking."