



[cancer.org](https://www.cancer.org) | 1.800.227.2345

Harmful Chemicals in Tobacco Products

- [Tobacco smoke](#)
- [Smokeless tobacco products](#)
- [E-cigarettes and similar devices](#)

All types of tobacco products contain chemicals that can be harmful to your health.

Tobacco smoke

Cigarettes, cigars, and pipe tobacco are made from dried tobacco leaves. Other substances are often added for flavor and to make smoking more pleasant. The smoke from these products is a complex mixture of chemicals produced by burning tobacco and its additives.

Tobacco smoke is made up of thousands of chemicals, including at least 70 known to

Smokeless tobacco products contain a variety of potentially harmful chemicals, including high levels of TSNA. There are also other cancer-causing agents in smokeless tobacco, such as polonium-210 (a radioactive element) and other polycyclic aromatic hydrocarbons (PAHs). These carcinogens are absorbed through the mouth and may be why [several types of cancer](#)⁵ are linked to the use of smokeless tobacco.

Snus (pronounced 'snoose') is a type of moist snuff that does not require spitting. It was first used in Sweden and Norway, but it is now available in the United States as well. Snus generally has lower levels of nicotine and TSNA than traditional moist snuff brands, but it can still be addictive and has been linked to some types of cancer.

Dissolvable products are forms of smokeless tobacco that come in different shapes and sizes, such as lozenges, orbs, pellets, thin strips, and sticks. Depending on the type, they are held in the mouth, chewed, or sucked until they dissolve. Like other tobacco products, dissolvable tobacco products contain nicotine and other harmful and potentially harmful chemicals.

Heated tobacco products (sometimes called "heat-not-burn" products) typically use an electronic heating element, which heats specially designed sticks, plugs, or capsules containing tobacco. The heat releases nicotine (and other chemicals) that can then be inhaled into the lungs, but the tobacco doesn't get hot enough to burn. These devices are not the same as e-cigarettes (see below). Like other tobacco products, heated tobacco products give off nicotine and other harmful and potentially harmful chemicals. Although the levels of these chemicals are generally lower than in the smoke from regular cigarettes, this doesn't mean these products are completely safe.

On average, smokeless tobacco products kill fewer people than cigarettes. But while they're often promoted as a less harmful alternative to smoking, some types have still been linked with cancer. Some products may expose users to lower levels of harmful chemicals than regular cigarettes, but this doesn't mean they are safe.

No smokeless tobacco product has been proven to help people who smoke quit.

To learn more, see [Health Risks of Smokeless Tobacco](#)⁶.

E-cigarettes and similar devices

E-cigarettes and other electronic nicotine delivery systems (ENDS) have become very popular in recent years, especially among younger people. They are sometimes used as substitutes for cigarettes or other tobacco products, but for many people, they are the first tobacco product used.

Makers of e-cigarettes and other ENDS often claim the ingredients are safe. But the aerosols (mixtures of very small particles) that these products produce can contain addictive nicotine, flavorings, and a variety of other chemicals, some known to be toxic or to cause cancer. The levels of many of these substances appear to be lower than in traditional cigarettes, but the amounts of nicotine and other substances in these products can vary widely because they are not standardized. The long-term health effects of these devices aren't yet known.

To learn more, see [What Do We Know About E-cigarettes?](#)⁷

Hyperlinks

1. www.cancer.org/cancer/risk-prevention/chemicals/formaldehyde.html
2. www.cancer.org/cancer/risk-prevention/chemicals/arsenic.html
3. www.cancer.org/cancer/risk-prevention/chemicals/benzene.html
4. www.cancer.org/cancer/risk-prevention/tobacco/health-risks-of-tobacco/health-risks-of-smoking-tobacco.html
5. www.cancer.org/cancer/risk-prevention/tobacco/health-risks-of-tobacco/smokeless-tobacco.html
6. www.cancer.org/cancer/risk-prevention/tobacco/health-risks-of-tobacco/smokeless-tobacco.html
7. www.cancer.org/cancer/risk-prevention/tobacco/e-cigarettes-vaping/what-do-we-know-about-e-cigarettes.html

References

Baker F, Ainsworth SR, Dye JT, et al. Health risks associated with cigar smoking. *JAMA*. 2000;284:735-740.

Drope J, Cahn Z, Kennedy R, et al. Key issues surrounding the health impacts of electronic nicotine delivery systems (ENDS) and other sources of nicotine. *CA Cancer J Clin*. 2017;87(6):449-471.

Herrington JS, Myers C. Electronic cigarette solutions and resultant aerosol profiles. *J Chromatogr A*. 2015;1418:192-199.

Karagueuzian HS, White C, Sayre J, Norman A. Cigarette smoke radioactivity and lung cancer risk. *Nicotine Tob Res*. 2012;14:79-90.

National Cancer Institute. Smokeless Tobacco and Cancer. 2010. Accessed at <https://www.cancer.gov/about-cancer/causes-prevention/risk/tobacco/smokeless-fact-sheet> on October 2, 2020.

Shousha HA, Ahmad F. Natural radioactivity contents in tobacco and radiation dose induced from smoking. *Radiat Prot Dosimetry*. 2012;150:91-95.

Simonavicius E, McNeill A, Shahab L, et al. Heat-not-burn tobacco products: A systematic literature review. *Tob Control*. 2019;28:582-594.

Stepanov I, Jensen J, Hatsukami D, Hecht SS. New and traditional smokeless tobacco: Comparison of toxicant and carcinogen levels. *Nicotine Tob Res*. 2008;10:1773-1782.

US Centers for Disease Control and Prevention. Cigarette Smoking and Radiation. 2015. Accessed at <https://www.cdc.gov/nceh/radiation/smoking.htm> on October 2, 2020.

US Centers for Disease Control and Prevention. Heated Tobacco Products. 2020. Accessed at https://www.cdc.gov/tobacco/basic_information/heated-tobacco-products/index.html on October 2, 2020.

US Department of Health and Human Services. *How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease: A Report of the Surgeon General*. 2010. Accessed at <https://www.ncbi.nlm.nih.gov/books/NBK53017/> on October 5, 2020.

US Department of Health and Human Services. *The Health Consequences of Smoking--50 Years of Progress: A Report of the Surgeon General*. 2014. Accessed at <https://www.ncbi.nlm.nih.gov/books/NBK179276/> on October 5, 2020.

US Department of Health and Human Services. *Preventing Tobacco Use Among Youth and Young Adults: A Report of the Surgeon General*. 2012. Accessed at <https://www.ncbi.nlm.nih.gov/books/NBK99237/> on October 5, 2020.

US Food and Drug Administration. Dissolvable Tobacco Products. 2018. Accessed at <https://www.fda.gov/tobacco-products/products-ingredients-components/dissolvable-tobacco-products> on October 2, 2020.

US Food and Drug Administration. Harmful and Potentially Harmful Constituents in Tobacco Products and Tobacco Smoke: Established List. 2019. Accessed at <https://www.fda.gov/tobacco-products/rules-regulations-and-guidance/harmful-and->

potentially-harmful-constituents-tobacco-products-and-tobacco-smoke-established-list
on September 30, 2020.

Last Revised: