

# Fact Sheet

## Nicotine

### What is Nicotine?



Nicotine is a toxic substance found in the tobacco plant (*Nicotiana tabacum*). The commercial preparation of the plant involves drying the leaves for the production of chewing tobacco, cigars, cigarettes, and snuff. Nicotine is easily isolated from the plant for use in nicotine replacement products (e-cigarettes, gum, patches, and nasal spray). It is also one of the active ingredients in some pesticides and has uses in research.

### Exposure

For immediate assistance, call the Poison Control Center Hotline: 1-800-222-1222

Anyone who uses tobacco or tobacco replacement products is exposed to nicotine. When used in this way, small amounts of nicotine are absorbed through the lungs, mouth or skin. People purposely use tobacco products because of the perceived effects and the addictive properties of the low amounts of nicotine. Occasionally, however, people are exposed to higher toxic amounts either because of intentional poisoning (for example a suicide attempt) or accidental, such as children ingesting e-liquid nicotine. Nicotine ingestion occurs when any tobacco product or nicotine preparation (chewing tobacco or spit, cigar, cigarette or butt, snuff, gum, patch, e-liquid nicotine, or pesticide) is eaten.

### Health Effects

Ingestion of nicotine can cause nicotine poisoning. The severity of symptoms and time until symptoms begin depend on the form of the nicotine and the amount ingested. If enough is ingested to cause illness, symptoms usually begin within 30 to 90 minutes. If the nicotine is in liquid or gum form symptoms may appear in 15 to 30 minutes. Symptoms of mild nicotine poisoning include dizziness, nausea or vomiting, stomach pain, weakness and increased drooling. More severe poisoning may result in abnormal blood pressure or heartbeat, or interrupted breathing, general sluggishness, seizures and coma. No long-term effects of nicotine ingestion have been identified. If the dose is large enough, death can result.

### How Does Tobacco Affect Your Brain?

Cigarettes and other forms of tobacco including cigars, pipe tobacco, snuff, and chewing tobacco contain the addictive drug nicotine. Nicotine is readily absorbed into the bloodstream when a tobacco product is chewed, inhaled, or smoked. A typical smoker will take 10 puffs on a cigarette over the period of about 5 minutes that the cigarette is lit. Thus, a person who smokes about 1 pack (25 cigarettes) daily gets 250 “hits” of nicotine each day.

Upon entering the bloodstream, nicotine immediately stimulates the adrenal glands to release the hormone epinephrine (adrenaline). Epinephrine stimulates the central nervous system and increases blood pressure, respiration, and heart rate.

Similar to other addictive drugs like cocaine and heroin, nicotine increases levels of the neurotransmitter dopamine, which affects the brain pathways that control reward and pleasure. For many tobacco users, long-term brain changes induced by continued nicotine exposure result in addiction – a condition of compulsive drug seeking and use, even in the face of negative consequences. Studies suggest that additional compounds in tobacco smoke, such as acetaldehyde, may enhance nicotine’s effects on the brain.

Infants and children are especially susceptible to nicotine. Symptoms of nicotine poisoning have been seen in children who have eaten one-half piece of nicotine gum, a cigarette, cigarette butt, or bitten into a nicotine patch.

## Diagnosis

Hospitals can screen the blood or urine for nicotine. Clinical tests are rarely run to confirm nicotine exposure because nicotine is rapidly eliminated by the body and the test results often detect nicotine exposure to second hand smoke.

## Treatment

If nicotine ingestion is suspected, contact poison control immediately. There is no antidote for nicotine poisoning. Treatment is aimed at supportive care and monitoring the patients breathing and vital signs.

## Prevention

Infants and children are especially susceptible to nicotine. Symptoms of nicotine poisoning have been seen in children who have eaten one-half piece of nicotine gum, a cigarette, cigarette butt, or bitten into a nicotine patch.

The best way to prevent nicotine poisoning is to always make sure tobacco and nicotine products are stored out of reach of children. This includes ashtrays and spit cups. Store all parts of e-cigarettes in a secure place, especially the liquid nicotine or nicotine cartridges.

Avoid using tobacco products in front of children. Children learn by imitating adults, and they will be more likely to try to touch or taste products they see an adult use. Be especially careful if a child is visiting the home of someone who uses these products. Ask them to follow the same precautions.



### ***For more sources of information on this topic visit:***

ST. CLAIR COUNTY HEALTH DEPARTMENT [www.scchealth.co](http://www.scchealth.co)

MICHIGAN DEPARTMENT OF HEALTH AND HUMAN SERVICES [www.michigan.gov/mdhhs](http://www.michigan.gov/mdhhs)

CENTERS FOR DISEASE CONTROL AND PREVENTION [www.cdc.gov](http://www.cdc.gov)

NATIONAL INSTITUTE OF DRUG ABUSE (NIDA) [www.drugabuse.gov](http://www.drugabuse.gov)