



Tobacco Prevention and Control
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Health Risks of Nicotine for Youth

What is nicotine?

Nicotine is a chemical commonly found in cigarettes, e-cigarettes, and other tobacco products. Nicotine is highly addictive.

Products like e-cigarettes, e-hookahs and vape pens containing nicotine, are currently unregulated. Because of the lack of quality and manufacturing standards for e-cigarettes and other electronic nicotine delivery systems, it is difficult for consumers to know how much nicotine these products contain, increasing the risk of poisoning.

Is nicotine harmful?

No amount of nicotine is safe for youth and infants.

Nicotine may harm brain development during adolescence.

Animal research has found that even in small doses, nicotine exposure in adolescence causes long-lasting changes in brain development, which could have negative implications in human adolescents for learning, memory, attention, behavior problems, and future addiction.^{1,2,3,4,5}

Nicotine is harmful to fetal health during pregnancy.

Evidence shows that fetal exposure to nicotine can have negative long-term effects, including impaired fetal brain and lung development.⁶

Nicotine can be toxic, even deadly, in high doses.

Eating, drinking, or otherwise absorbing nicotine can lead to nicotine poisoning, especially in children.⁷ Symptoms of poisoning include nausea, vomiting, seizures, and respiratory depressions.^{8,9} In high enough doses nicotine can be deadly.

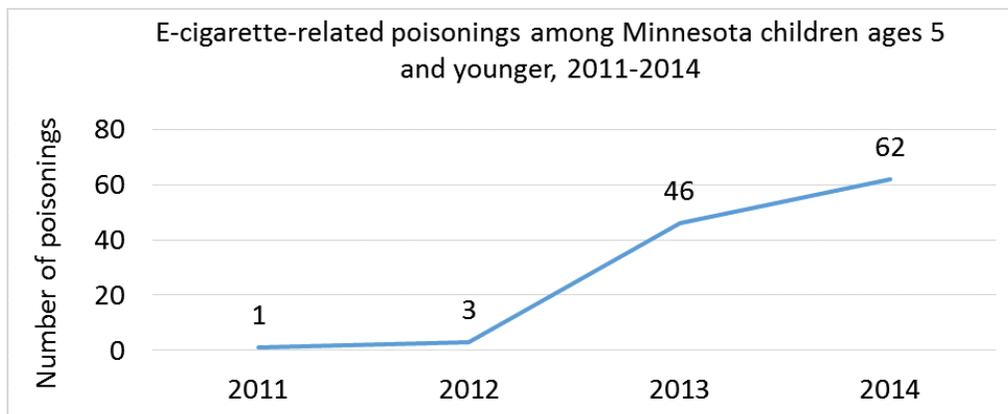
How are children and teens being exposed to nicotine?

More teens are using e-cigarettes.

Teens may be exposed to nicotine any time they use a nicotine-containing product. Results from the 2014 Minnesota Youth Tobacco Survey show youth conventional cigarette use is down, but many teens now use e-cigarettes – nearly 13 percent of high school students have used or tried them in the past 30 days.

Children and infants are ingesting nicotine products.

The Minnesota Poison Control System reported an increase in e-cigarette-related poisonings among children 0-5 years, from just 1 in 2011 to 62 in 2014.



Many cases involve children and toddlers who ingested e-cigarette liquids left unattended. Parents are reminded to keep harmful products out of reach.

What should I do if my child is exposed to nicotine?

For poison emergencies or questions call the Minnesota Poison Control System at 1-800-222-1222. Service is available 24/7, free of charge, and is confidential.



¹ Counotte et al., "Long-Lasting Cognitive Deficits Resulting from Adolescent Nicotine Exposure in Rats."

² Abreu-Villaca et al., "Short-Term Adolescent Nicotine Exposure Has Immediate and Persistent Effects on Cholinergic Systems: Critical Periods, Patterns of Exposure, Dose Thresholds."

³ Slikker et al., "Mode of Action: Disruption of Brain Cell Replication, Second Messenger, and Neurotransmitter Systems during Development Leading to Cognitive Dysfunction--Developmental Neurotoxicity of Nicotine."

⁴ Slotkin, "Nicotine and the Adolescent Brain: Insights from an Animal Model."

⁵ Gould and Leach, "Cellular, Molecular, and Genetic Substrates Underlying the Impact of Nicotine on Learning."

⁶ U.S. Department of Health and Human Services, "The Health Consequences of Smoking-50 Years of Progress: A Report of the Surgeon General."

⁷ Ibid.

⁸ Benowitz et al., "Prolonged Absorption with Development of Tolerance to Toxic Effects after Cutaneous Exposure to Nicotine."

⁹ Okamoto et al., "Tolerance to the Convulsions Induced by Daily Nicotine Treatment in Rats."