



Shaping Tomorrow's Global
Built Environment Today

ENVIRONMENTAL TOBACCO SMOKE AND ELECTRONIC NICOTINE DELIVERY SYSTEMS

THE ISSUE

While indoor smoking has become less common in many countries, the use of Electronic Nicotine Delivery Systems (ENDS) has significantly increased and policies that respond to these increases are still being developed. Both smoking and the use of ENDS negatively affect indoor air quality, and each has inherent health risks.

Exposure to Environmental Tobacco Smoke (ETS) continues to have considerable health and cost impacts. Researchers have investigated the health and irritant effects among non-smokers exposed to tobacco smoke in indoor environments. Such exposure is also known as passive smoking or exposure to secondhand smoke. Exposure of non-smokers to tobacco smoke causes specific diseases and other adverse effects to human health, most significantly cardiovascular disease and lung cancer.¹ No cognizant authorities have identified an acceptable level of ETS exposure to non-smokers, or expect that further research will identify such a level.

Simultaneously with the decline of tobacco smoking, the use of Electronic Nicotine Delivery Systems (ENDS) including vape pens, electronic cigarettes, and other devices that convert nicotine into an inhalable aerosol without combustion has rapidly increased. The aerosol emitted from these devices contains varying amounts of nicotine dissolved in propylene glycol, or glycerol along with volatile organic compounds (VOCs).²³ Unique to the use of ENDS are the concentration and type of compounds that may deposit and remain on indoor surfaces. These deposits represent a unique source of contamination in buildings that varies depending on indoor climate, airflow and surface area and may require specialized cleaning, HVAC maintenance, and other operational practices.⁴ In addition, limited studies have been performed to evaluate the chemical reactions and health interactions that may occur between ENDS emissions and other airborne contaminants commonly found indoors. Effects of secondhand exposure to ENDS have not been thoroughly studied by the scientific community, in part because these devices are new, evolving, diverse and customizable. However, because ENDS have become so prevalent, indoor building components and occupants are being passively exposed to their emissions

Despite the well-documented benefits of smoking bans, many locations worldwide still lack laws and policies that provide complete protection within buildings. Still fewer prohibit the use of ENDS indoors. In many locations, laws and policies are only partially protective, permitting smoking and ENDS usage in certain areas of buildings or specific building types

¹ Centers for Disease Control and Prevention. Health Problems Caused by Secondhand Smoke. Updated Jan. 31, 2025. <https://www.cdc.gov/tobacco/secondhand-smoke/health.html>

² Offermann 2015. F.J. Offermann, "Chemical Emissions from E-Cigarettes: Direct and Indirect Passive Exposures," *Building and Environment*, Vol. 93, Part 1, 101-105, November, 2015.

³ Cooke 2015. Cooke, Andrew, MDa, et. al., "The Electronic Cigarette: The Good, the Bad, and the Ugly," *J Allergy Clin Immunol Practice*, 2015, Vol. 3, 498-505.

⁴ Schripp 2013. Schripp, et. Al., "Does e-cigarette consumption cause passive vaping?" *Indoor Air* 2013; 23: 25–31

including casino, entertainment and multifamily housing.

ASHRAE's ROLE

Providing healthy and comfortable indoor environments through the management of indoor air quality is a fundamental goal of building and HVAC design and operation. ASHRAE has long been active in providing engineering technology, standards and design guidance in support of this goal. For example, ANSI/ASHRAE Standards 62.1-2025, *Ventilation and Acceptable Indoor Air Quality* and 62.2-2025, *Ventilation and Acceptable Indoor Air Quality in Residential Buildings* are standards that specify minimum ventilation rates and other measures to manage indoor air quality.

ASHRAE's VIEW

Exposure to ETS can be reduced through a variety of strategies, but they do not completely eliminate exposure. Only indoor smoking bans, leading to near zero exposure, have been recognized by health authorities as providing effective control. Numerous recognized public health organizations advise caution in all situations of human exposure when limited data is available about health impacts. Applying this principle to ENDS argues that involuntary exposure should be banned to keep exposure to airborne emissions as low as possible.

ASHRAE's mission to act for the benefit of the public encourages lawmakers, policymakers and others who exercise control over buildings, to effectively limit secondary exposure caused by smoking and ends from smoking and ENDS use inside and near buildings. ASHRAE also recommends:

- For buildings in which smoking and ENDS use is permitted, design practitioners work with their clients to define their goals for addressing exposure and that they educate them on the limits of engineering controls for both ETS and ENDS. Multifamily buildings have complete bans on tobacco smoking and ENDS inside and nearby to protect nonsmoking adults and children.
- Further research be conducted by recognized health authorities on the health effects of involuntary exposure in the indoor environment from smoking cannabis, using hookahs and ENDS. Pending the outcome of that research, cannabis and hookah smoking should be managed as recommended for ETS and ENDS.