



Cannabis Exposure and Lung Health

Cannabis smoke and tobacco smoke are not equally carcinogenic

"Across the United States, there is increased use of cannabis products and electronic delivery systems for cannabis products and nicotine, yet little is known about their impacts on lung health. We analyzed exhaled breath condensate of 254 participants who were non-users and users who used cannabis and tobacco products. ...Untargeted screening of 403 significant metabolites found tobacco users had similar breath profiles, and that cannabis users had a similar profile that was closer to the profile of nonusers. ... Targeted measurements of oxylipin inflammatory markers found significant up-regulation among those using tobacco products relative to nonusers. Cannabis users exhibited oxylipin levels closer to and often downregulated compared to nonusers."

Impacts of vaping and marijuana use on airway health as determined by exhaled breath, Respiratory Research, 2025

"The data on marijuana contrast starkly with the consistent demonstration of injury from tobacco, the greatest legalized killer in the world today. Any possible toxicity of marijuana pales in comparison."

Marijuana and the lung: Evolving Understandings, Medical Clinics of North America, 2022

"It is increasingly clear that cannabis has different effects on lung function to tobacco and the effects of widespread cannabis use will not necessarily mirror the harms caused by tobacco smoking."

Differential effects of cannabis and tobacco on lung function in mid-life, American Journal of Respiratory and Critical Care Medicine, 2022

Unlike tobacco smoke exposure, cannabis smoke exposure – even long-term – is not positively associated with cancers of the lung or upper aerodigestive tract

"On balance, the available evidence at least thus far does not suggest that marijuana smoking poses an increased risk of lung cancer when adjustments are made for concomitant tobacco smoking."

Inhaled marijuana and the lung, The Journal of Allergy and Clinical Immunology: In Practice, 2022

"Despite the presence of carcinogens in marijuana smoke in concentrations comparable with those that are found in tobacco smoke, the weight of evidence from well-designed epidemiologic studies does not support the concept that habitual marijuana use in the manner and quantity in which it is customarily smoked, when adjusted for tobacco, is a significant risk factor for the development of lung cancer."

Marijuana and Lung Disease, Chest, 2018

Cannabis smoke exposure, even long-term, is not associated with the sort of significant adverse pulmonary effects associated with tobacco – such as COPD

"By searching the electronic medical record, we identified patients who were marijuana users who never smoked; current smokers; and non-marijuana never smokers, who underwent chest CT in our healthcare system in 2019. ... While emphysema and hyperinflation were common in smokers, they were rare in marijuana users. ... The findings of our study collectively highlight the distinct patterns of pulmonary and cardiovascular manifestations associated with smoking and marijuana use. It appears that, in general, marijuana users do not ... develop emphysema or pulmonary hyperinflation."

Quantitative and qualitative imaging in marijuana users and smokers, Current Problems in Diagnostic Radiology, 2025

"We divided ever-tobacco smoking participants in the Subpopulations and Intermediate Outcomes in COPD Study (SPIROMICS) into three groups based on self-reported marijuana use: current, former or never marijuana smokers (CMS, FMS or NMS, respectively). Longitudinal data were analyzed in participants with ≥ 2 visits over a period of ≥ 52 weeks. ... Among SPIROMICS participants with or without COPD, neither former nor current marijuana smoking of any lifetime amount was associated with evidence of COPD progression or its development."

Impact of marijuana smoking on COPD progression in a cohort of middle-aged and older persons, Chronic Obstructive Pulmonary Diseases, 2023

"Data are from a prospective cohort study of cigarette smoking, cannabis use and co-use at 21 and 30 years of age and lung function (FVC, FEV1, FEV1/FVC) measured at 30 years. ... By 30 years of age, those who have smoked cigarettes since the adolescent period already show evidence of impairment of lung function. By 30 years of age, those who have used cannabis ever since the adolescent period do not appear to have evidence of impaired lung function. Co-use of tobacco and cannabis does not appear to predict lung function beyond the effects of tobacco use alone. ... Cannabis use does not appear to be related to lung function even after years of use."

Do tobacco and cannabis use and co-use predict lung function: A longitudinal study, Respiratory Medicine, 2023

Vaporization — which heats marijuana to a point where cannabinoid vapors form — mitigates consumers exposure to potential respiratory hazards, such as the inhalation of combusive smoke or exposure to unwanted particulate matter

"This study analyzed the national longitudinal Population Assessment of Tobacco and Health Study. The sample included 5,211 young adults (aged 18-24 years) without prior respiratory or pulmonary conditions. ... Compared with no cannabis vaping or smoking, cannabis vaping only was not associated with respiratory symptoms."

Cannabis vaping, smoking, and dual use and the onset of respiratory symptoms among US young adults, American Journal of Preventive Medicine, 2026

"Combustion of cannabis plant material produces a complex aerosol containing numerous harmful byproducts generated through pyrolysis and oxidation. Under matched puffing conditions, vaporization of cannabis flower reduced exposure to these harmful compounds by up to 99 percent compared with joint smoke. These findings demonstrate that combustion is the primary source of toxic chemical exposure during cannabis smoking, and that vaporization technologies can substantially reduce formation of these byproducts."

PAX, Reduction of harmful combustion byproducts in cannabis aerosol generated by controlled vaporization compared with conventional joint combustion, 2026

"Cannabis vaporizer use can reduce the emission of carbon monoxide, chronic respiratory symptoms, and exposure to several toxins while producing similar subjective effects and blood THC concentration compared with smoking cannabis, holding potential for harm reduction among habitual cannabis smokers."

Are vaporizers a lower-risk alternative to smoking cannabis? Canadian Journal of Public Health, 2021