Baltimore hookah bars contain elevated levels of carbon monoxide and air nicotine

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Smoking waterpipes, or hookahs, creates hazardous concentrations of indoor air pollution and poses increased risk from diminished air quality for both employees and patrons of waterpipe bars, according to a new study from the Institute for Global Tobacco Control at the Johns Hopkins Bloomberg School of Public Health. In an analysis of air quality in seven Baltimore waterpipe bars, researchers found that airborne particulate matter and carbon monoxide exceeded concentrations previously measured in public places that allowed cigarette smoking and that air nicotine was markedly higher than in smoke-free establishments. The study appeared in the April 16, 2014 online edition of the *Journal of Exposure Science and Environmental Epidemiology*.

Tobacco-related research and tobacco control efforts in the United States have generally focused on cigarettes, but other forms of tobacco products and tobacco use are common in many countries, including the U.S. Waterpipe cafes–also known as hookah bars–have grown in popularity in the U.S. and worldwide, particularly among young adults. For their study, researchers surveyed seven waterpipe cafes in Baltimore, Maryland, from December 2011 to August 2012. They measured carbon monoxide levels, airborne nicotine content and respirable particulate matter with a mean particle diameter of less than 2.5 microns (PM2.5). A micron is approximately 1/30th the width of a strand of human hair.

"There is a mistaken notion that tobacco smoking in a water pipe is safer than cigarettes," said Patrick Breysse, PhD, professor in the Department of Environmental Health Sciences and the study's senior author. "Our results suggest that this is not the case. Our study found that waterpipe smoking creates higher levels of indoor air pollution than cigarette smoking, placing patrons and employees at increased health risk from secondhand smoke exposure."

Indoor airborne concentrations of $PM_{2.5}$ and carbon monoxide were markedly elevated in Baltimore waterpipe cafes, confirming that waterpipe smoking severely affects indoor air quality. Air nicotine concentrations, although not as high as in hospitality venues that allow cigarette smoking, were also elevated and markedly higher than levels previously found in smoke-free bars and restaurants. Some of these measurements consistently exceeded air quality standards set by the U.S. Environmental Protection Agency and the World Health Organization.

"Public education efforts need to be developed to educate users about the hazards of water pipe use and tobacco control policies need to be strengthened to include water pipes," said Christine Torrey, BA, senior research specialist in the Department of Environmental Health Sciences and the study's lead author.

More information: "Waterpipe cafes in Baltimore, Maryland: Carbon monoxide, particulate matter, and nicotine exposure" was written by Christine M. Torrey, Katherine A. Moon, D'Ann L. Williams, Tim Green, Joanna E. Cohen, Ana Navas-Acien and Patrick N. Breysse.
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