

Particulate Matter Concentration in Baltimore Bars

Background: Small particle pollution, also called particulate matter, is a complex mixture of extremely small particles and liquid droplets in the air. Tobacco smoke is the main source of small particle pollution in indoor environments where active smoking occurs.

Objective: The objective of the study was to measure particulate matter concentrations in Baltimore bars as an indication of the level of secondhand smoke exposure taking place. The concentration of particulate matter was assessed using active air sampling monitors. This study was conducted by the Institute of Global Tobacco Control and the Department of Environmental Health Sciences at the Johns Hopkins Bloomberg School of Public Health with support from the American Cancer Society.

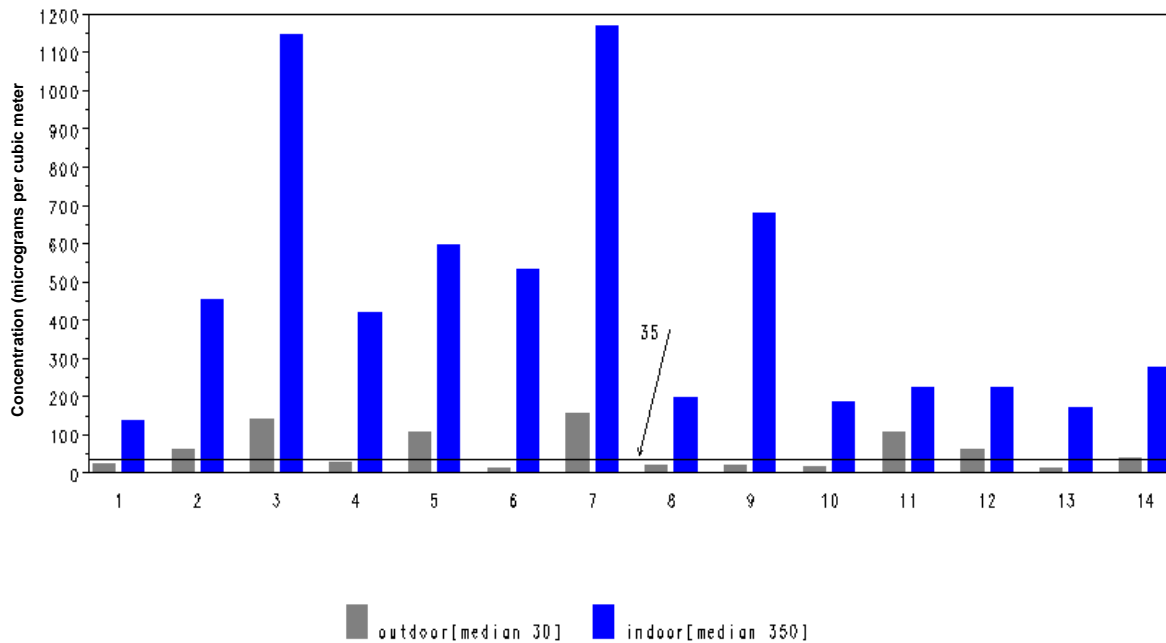
Methods: The study was carried out on January 26 and January 27, 2007. Six individuals visited fourteen bars in Baltimore following a common protocol for all bars. They carried with them small monitors measuring the concentration of small particles in the air. These monitors continuously record changes in the levels of particles and are capable of storing records into a data file that is then downloaded. In each bar, active air monitoring was conducted for approximately 30 minutes. Additionally, the total number of people and the total number of people smoking in the bar were recorded. After leaving the bar, the air monitors collected the concentration of small particulate matter in the outdoor environment. The data was then averaged for the time spent inside and outside the bar, respectively. These two average levels were then compared. The bars were selected based on convenience and were visited without prior knowledge of the extent of smoking that was taking place.

Results: The study found increased particulate matter concentrations inside all bars that were surveyed compared to outside. The average concentration of particulate matter inside the bars was 11 times higher than outside (30 micrograms per cubic meter vs. 350 micrograms per cubic meter). The average concentration of particulate matter in the air in bars was 10 times higher than the EPA's outdoor air safety level (35 micrograms per

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cubic meter). Indeed, particulate matter concentration was higher than the EPA's outdoor safety level in all the bars. In all bars a small percentage of the patrons were smokers. In one small bar with only one smoking patron, the indoor concentration of small particles was 19.5 times higher than the outdoor concentration of particulate matter (bar 9 in graph).

Particulate Matter Concentration Measured in Bars in Baltimore



Conclusions: In Baltimore, most bars have very high concentrations of particulate matter in the air indicating that bar employees and patrons are exposed to secondhand smoke. Smoke-free initiatives are needed to substantially improve indoor air quality in bars in Baltimore, MD and to protect the workers and patrons from the health effects of exposure to involuntary tobacco smoke.