

Air Quality Monitoring Study Shows Harmful Pollution Released in Air by Cigarette Smoking in Guyana

Key messages:

1. Exposure to secondhand smoke (SHS) from tobacco products is harmful to both smokers and non-smokers.
2. The only effective way to ensure that all persons are protected from SHS is to have 100% smoke-free legislation.
3. The World Health Organization's (WHO) Framework Convention on Tobacco Control (FCTC) Article 8 requires that 100% smoke-free laws be implemented to protect from SHS exposure; Guyana acceded to the FCTC on September 15, 2005.
4. Guyana does not have comprehensive smoke-free legislation requiring public places to be 100% smoke-free.
5. Air quality measurements conducted in Guyana show that harmful pollution is released in the air by cigarette smoking.
6. The pollution levels of indoor places where smoking was both observed and not observed was significantly higher than the pollution levels in countries with 100% smoke-free laws.
7. The air quality in places where smoking was observed exceeded the WHO Air Quality Guideline by 14 times and is regarded as unhealthy and harmful according to the United States Environmental Protection Agency (EPA) standards.
8. Hospitality workers are exposed to air pollution levels that are three times the EPA annual average occupational exposure standard.
9. Guyana must pass a strong smoke-free law that requires all public places to be 100% smoke-free.

This study was conducted with financial and technical support from the Campaign for Tobacco-Free Kids; technical support from the Roswell Park Cancer Institute, by Renée Franklin Peroune, University of the West Indies, as part of the Bloomberg Initiative Caribbean Tobacco Control Project administered by the Jamaica Heart and Stroke Foundation and implemented in Guyana by the Guyana Chest Society.

Exposure to SHS from tobacco products is harmful to both smokers and non-smokers. SHS is the mixture of mainstream smoke (which is exhaled by the smoker) and side stream smoke (given off by the smoldering cigarette or other smoking device) diluted with ambient air, which is a mixture of gas and particles. SHS contains 4,000 chemicals, of which at least 250 are known to be harmful and 50 of which are toxic and can cause cancer.¹ Scientific research shows that there is no safe level of exposure to SHS from burning tobacco products, which has been proven to be harmful to both smokers and non-smokers.¹ Exposure to SHS has immediate health effects such as eye irritation, dizziness and nausea and long term health effects including lung cancer, heart disease, stroke and respiratory illnesses in adults; and in children sudden infant death syndrome, ear infections, upper respiratory infections and severe asthma.¹

Article 8 of the FCTC imposes a legal obligation on all Member Parties to implement effective national smoke-free policies, including Guyana, which acceded to the FCTC on September 15, 2005. The use of smoked tobacco and exposure to SHS is one of the principal risk factors for chronic diseases, which is the country's leading cause of mortality and morbidity.² As such, Guyana reiterated its commitment to national tobacco control efforts on September 14, 2007 in the CARICOM Port of Spain Declaration *Uniting to stop the epidemic of chronic non-communicable diseases* which calls on CARICOM Member States inter alia to "support the immediate enactment of legislation to limit or eliminate smoking in public places".

As of the time of writing this report (August 31, 2011) smoke-free regulations are limited to health and education venues which are required to be smoke-free by the Health Facilities Licensing Act 2009 and a ministerial declaration, Ministry of Education, of September 2007 respectively. As such, Guyana is not considered to have 100% smoke-free legislation.³

Air quality measurements conducted in Guyana show that harmful pollution is released in the air by cigarette smoking. A study to measure air pollution using particulate matter PM_{2.5} as an indicator of SHS was conducted in the hospitality sector in Georgetown in February/March 2011. Thirty four (34) locations including 11 fast-food places, 12 bars, 7 restaurants, and 4 clubs, were sampled during peak hours of business. Twenty nine (29) venues were used for data analysis as five samples were statistically identified as outliers.

The concentration of fine particle air pollution (called PM_{2.5}) from SHS was measured using a TSI SidePak AM510 Personal Aerosol Monitor. PM_{2.5} is particulate matter in the air smaller than 2.5 microns in diameter. Particles of this size are released in significant amounts from burning cigarettes, are easily inhaled deep into the lungs, and cause a variety of adverse health effects including cardiovascular and respiratory disease and death.

Locations in the hospitality sector were sampled as it is one of the largest employment industries in the Caribbean region and is often times left out of smoke-free legislation. As a result, employees in this sector suffer a greater burden of health consequences from exposure to SHS.

This study was conducted in four other major Caribbean cities: Christ Church - Barbados, Kingston/St. Andrew - Jamaica, Paramaribo - Suriname and Port of Spain - Trinidad. The data were analyzed in collaboration with the Roswell Park Cancer Institute in New York, USA.

Air quality monitoring (AQM) studies have been conducted internationally to measure the levels of exposure to indoor SHS to provide the empirical evidence for the establishment of 100% comprehensive smoke-free legislation and to monitor compliance after the enactment of smoke-free laws.

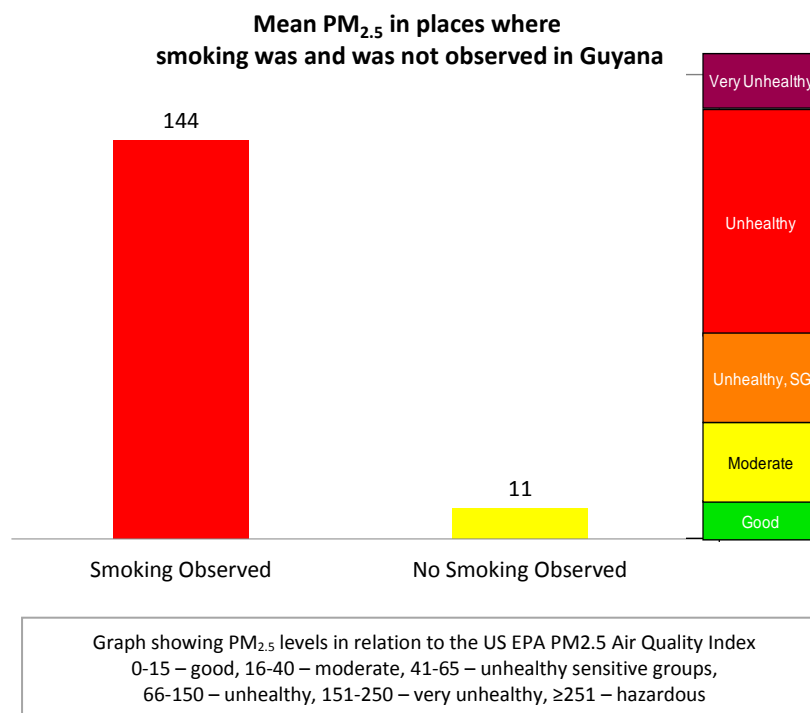
¹ World Health Organization. WHO Report on the global tobacco epidemic, 2009: Implementing smoke-free environments. WHO; 2009

² Ministry of Health Statistical Bulletin 2008. Guyana.

³ World Health Organization. WHO Report on the global tobacco epidemic, 2011: Warning about the dangers of tobacco smoke. WHO; 2011.

Results of the study:

- Smoking was observed in 9 (31%) locations: 5 (50%) bars, 1 (25%) club and 3 (43%) restaurants; which recorded an average fine particle air pollution $PM_{2.5}$ level of $144\mu\text{g}/\text{m}^3$.
- No smoking was observed in 20 (69%) by locations: 5 (50%) bars, 3 (75%) clubs, 4 (57%) restaurants and 8 (100%) fast-food locations; which recorded an average fine particle air pollution $PM_{2.5}$ level of $11\mu\text{g}/\text{m}^3$.
- Air pollution was 13 times higher in locations where smoking was observed than in the locations where no indoor smoking was observed.
- WHO sets an air quality $PM_{2.5}$ guideline annual target mean of $10\mu\text{g}/\text{m}^3$ to maintain good health. The air quality in places where smoking was observed exceeded the WHO annual mean by 14 times.



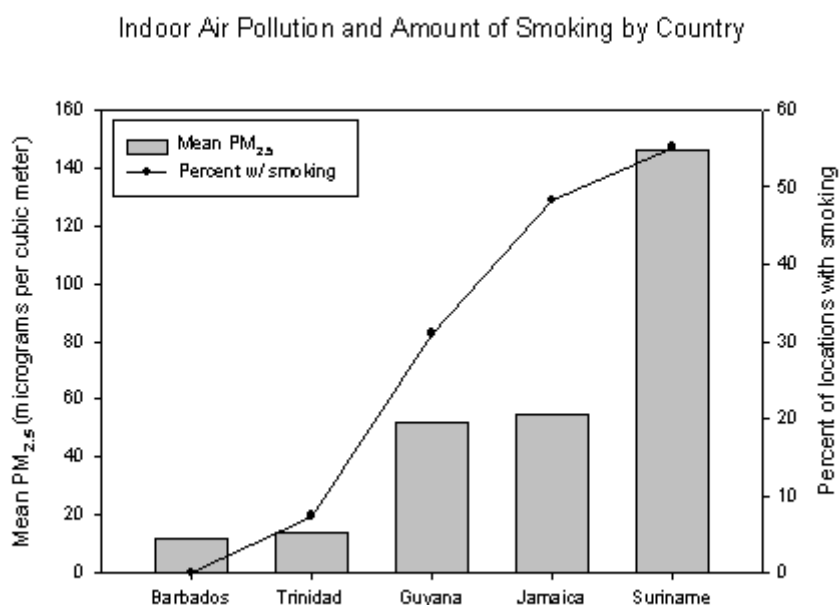
- According to the EPA Air Quality Index, a $PM_{2.5}$ reading of $144\mu\text{g}/\text{m}^3$, as recorded in places where smoking was observed indoors, is 'unhealthy' and harmful to health.
- There was an average of 3 cigarettes being smoked per venue during visits which translates to an average of 1 burning cigarettes per 100 cubic meters of air in these places.
- The calculated annual average occupational exposure of employees due to their occupational exposure to tobacco smoke pollution was $33\mu\text{g}/\text{m}^3$, which is 3 times higher than annual levels established by the EPA.
- Cigarettes were advertised in 14 (44%) of the locations visited and available for sale in 15 (47%) locations. Of the 20 locations where no smoking was observed, cigarettes were both advertised and sold in 8 (40%) locations. 10 (34%) of the locations visited had no smoking signs.

Conclusions from the study:

This study is consistent with the findings of other AQM studies, and provides further evidence that indoor smoking causes exposure to harmful levels of air pollution.

This study demonstrates that employees and patrons are exposed to harmful levels of indoor air pollution resulting from indoor smoking, increasing their risk of a wide range of adverse health effects including heart attack, lung cancer and respiratory illnesses.

This study further illustrates that voluntary smoke-free arrangements do not provide the necessary protection from exposure to SHS. Only 100% smoke-free legislation will reduce significantly the level of indoor air pollution as demonstrated in the Caribbean study (Figure below). As such, this study provides the empirical evidence for the establishment of 100% smoke-free spaces in Guyana.



Article 8 of the FCTC imposes a legal obligation to all Member Parties under international law to implement effective smoke-free legislation; it is one of a series of Articles outlined in the FCTC which collectively offer a comprehensive approach to tobacco control. To protect the health and well being of its people, Guyana must develop and pass a strong comprehensive smoke-free law that requires 100% smoke-free public places. That is, it must include all indoor public places, is not voluntary, does not permit designated smoking areas or room, and details enforcement measures to ensure that all individuals are well protected from the dangers of SHS. Such a law can also be extended to include mandatory 'no smoking' signage, and restrictions which prohibit the display and advertisement of tobacco products as per FCTC Article 13 for example.

In addition, there is sufficient scientific evidence, from studies conducted around the world, which demonstrate that smoke-free laws do not have a negative impact on the hospitality sector. Studies also document both the health and economic benefits of 100% smoke-free laws for example reduced cases of myocardial infarctions and associated medical expenditure and improved Quality-Adjusted Life Years (QALYs).

The only effective way to ensure that all persons are protected from SHS is to have 100% smoke-free legislation.