

Air Quality Monitoring Study Shows Good Compliance with Smoke-Free Air Law in Barbados

Key messages:

1. Exposure to secondhand smoke (SHS) from tobacco products is harmful to both smokers and non-smokers.
2. The WHO Framework Convention on Tobacco Control (FCTC) Article 8 requires that 100% smoke-free laws be implemented to protect from exposure to SHS.
3. Barbados ratified the FCTC on November 3, 2005.
4. Barbados implemented a 100% smoke-free law on October 1, 2010.
5. No smoking was observed during the air quality monitoring (AQM) tests conducted in Christ Church, Barbados.
6. The pollution levels of indoor places in Barbados were significantly lower than the pollution levels of indoor places in Guyana, Jamaica and Suriname - countries without 100% smoke-free laws.
7. The only effective way to ensure that all persons are protected from SHS is to have 100% smoke-free legislation.
8. Barbados must continue to enforce its 100% smoke-free legislation and measure the impact of smoke-free indoor public places on the health of its population.

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 Renee 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.

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 Barbados, which ratified the World Health Organization FCTC on November 3, 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, Barbados 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".

100% smoke-free air legislation³ in Barbados came into force on 1 October 2010 by way of the Health Services Act Cap.44 (Prohibition of Tobacco Smoking in Public Places) Regulations, 2010 S.I. 2010. The regulation prohibits smoking in all substantially enclosed (indoor) public places. The law also requires the display of at least two "no smoking" signs (with "No Smoking Permitted" written in red on white background size 35cm x 35cm), outlines the power of public health inspectors to monitor implementation of the regulations, and stipulates consequences, fines and or imprisonment for contraventions to the regulations.

No smoking was observed during the AQM tests conducted in Barbados. A study to measure air pollution using particulate matter PM_{2.5} as an indicator of SHS was conducted in the hospitality sector in Christ Church Randall Phillips Polly Clinic catchment area in May 2011. Thirty two (32) locations including 12 fast-food places, 10 bars, 7 restaurants and 3 clubs, were sampled during peak hours of business. Thirty (30) venues were used for data analysis as two 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: Georgetown – Guyana, 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. 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.

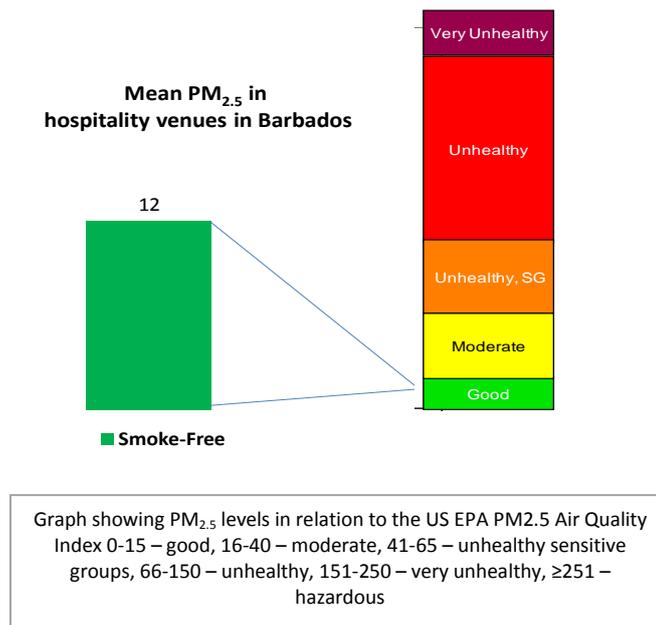
¹ World Health Organization. WHO Report on the global tobacco epidemic, 2009: Implementing smoke-free environments. WHO; 2009

² PAHO. Health in the Americas: Barbados, 2007. PAHO, Washington DC.

³ 100% smoke free law – prohibiting smoking in any enclosed area and do not make provisions/permit designated smoking rooms or areas as per WHO Article 8 Guidelines

Results of the study:

- Smoking was not observed in any of the hospitality locations: 10 bars, 10 fast-food places, 7 restaurants, 3 clubs, indicating 100% compliance with the Barbados Prohibition of Tobacco Smoking in Public Places Regulation.
- The average fine particle pollution level across locations was $12\mu\text{g}/\text{m}^3$.
- The World Health Organization (WHO) sets an air quality $\text{PM}_{2.5}$ guideline annual target mean of $10\mu\text{g}/\text{m}^3$ to maintain good health. The air quality in hospitality venues was just over the WHO target guideline.



- According to the US EPA Air Quality Index, a $\text{PM}_{2.5}$ reading of $12\mu\text{g}/\text{m}^3$ falls within the 1st index of “good” air quality.
- Mandatory no smoking signs according to the regulations were present in 83% (25 of the 30) locations. 17% (5) locations did not have the required signage and 30% (9) places had no smoking signs that did not conform to the specifications of the regulations. These included locations with only one sign or no smoking signs designed in place of, or in addition to, the specified sign.
- Ashtrays were only observed in 7% of the locations visited, specifically 2 bars. The presence of ashtrays indicates that these establishments may be facilitating indoor smoking. These bars could either be unclear about, or ignoring, the smoke-free air law.
- While not banned by the current regulation, the advertisement of cigarettes by point of sale displays and posters were observed in 3 (10%) of the locations visited, specifically bars. Cigarettes were being sold in 17 (57%) of the locations: all bars and clubs, 2 fast-food venues and 1 restaurant.

Conclusions from the study:

This study is consistent with the findings of other AQM studies, and validates the expectations that 100% smoke-free environments will reduce exposure to harmful levels of air pollution.

There was 100% compliance with regard to the observance of the Barbados Prohibition of Tobacco Smoking in Public Places Regulations of 2010. However, there is room for improvement in relation to compliance with regard to the no smoking signage both in terms of their presence in locations and compliance with the specifications set out in the Regulation.

The observation of ashtrays on indoor tables, although in only 2 (7%) of the locations visited, suggests the need for a second wave of information, education and communication (IEC) specifically targeting managers of the business venues to ensure that all aspects of the law are fully understood and followed. There is also an opportunity to strengthen monitoring of the regulation by public health inspectors. These inspectors as empowered by Section 5 *Power of public health inspectors* of the Regulation could be required as part of their routine public health inspections to conduct air quality tests, checks for the required signage, or checks for any other indication of smoking activities (e.g. the presence of ashtrays) to determine the application of stipulated penalties as per the law or the granting of continuing operational licenses.

Barbados is one of two countries in the Caribbean with 100% smoke-free legislation to protect its people from exposure to SHS. The effective implementation and enforcement of 100% smoke-free laws protects workers and the public from the harmful effects of SHS.

This study illustrates that only 100% smoke-free legislation will reduce significantly the level of indoor air pollution as demonstrated in the Caribbean study (Figure below).

The national efforts of the health authorities in Barbados are commendable and they are encouraged to strengthen ongoing monitoring activities to maintain 100% smoke-free indoor public places.

Indoor Air Pollution and Amount of Smoking by Country

