

# Smoke-free Outdoors

**A Positive Step that the City of Ottawa can take to further protect children, hospitality workers and the community from tobacco smoke**



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for Cancer Research

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# TODAY

## Second-hand smoke in Outdoor Environments

- Air Quality Studies on Ottawa Patios
- Structured Experiments conducted in Waterloo

**The U.S. Environmental Protection Agency (EPA), the U.S. National Toxicology Program (NTP), the U.S. Surgeon General, and the International Agency for Research on Cancer (IARC) have classified second-hand smoke as a known human carcinogen (cancer-causing agent).**

National Cancer Institute, 2006  
[www.cancer.gov](http://www.cancer.gov)

**“The scientific evidence indicates that there is no risk-free level of exposure to second-hand smoke.”**

**US Surgeon General, 2006**

U.S. Department of Health and Human Services. *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General—Executive Summary*. U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2006

**Can we be exposed to second-hand smoke  
OUTDOORS?**

**“These experiments dispel the common misconception that smoking outdoors can be ignored because smoke plumes immediately dissipate into the environment.”**

J. Repace

Repac Associates Inc., 2005

**“During periods of active smoking, peak and average Outdoor Tobacco Smoke levels near smokers rivalled indoor tobacco smoke concentrations.”**

Klepeis, Ott, Switzer  
Stanford University, 2007

KLEPEIS ET AL. MAY 2007. J. AIR & WASTE MANAGEMENT ASSOCIATION, 57:522-534

# OTTAWA Air Quality Study – Outdoor Tobacco Smoke August 2010



Source- Parks Canada Website



# OTTAWA Air Quality Study – Outdoor Tobacco Smoke August 2010

Research Objective:

Measure air quality on patios in Ottawa to determine if second-hand smoke can be measured.

# OTTAWA Study – August 2010

- Visited variety of outdoor hospitality environments
- Seated where staff put us
- Paying customers in each location
- Followed a protocol outlined in Travers et al. (2008) study

# OTTAWA Study – August 2010

- Methods
- TSI SidePak used to measure Particulate Matter (PM<sub>2.5</sub>)

**TSI SidePak AM 510 –  
PM<sub>2.5</sub> air quality monitor**

Source: [tobaccofreeair.org](http://tobaccofreeair.org)



# OTTAWA Study – August 2010

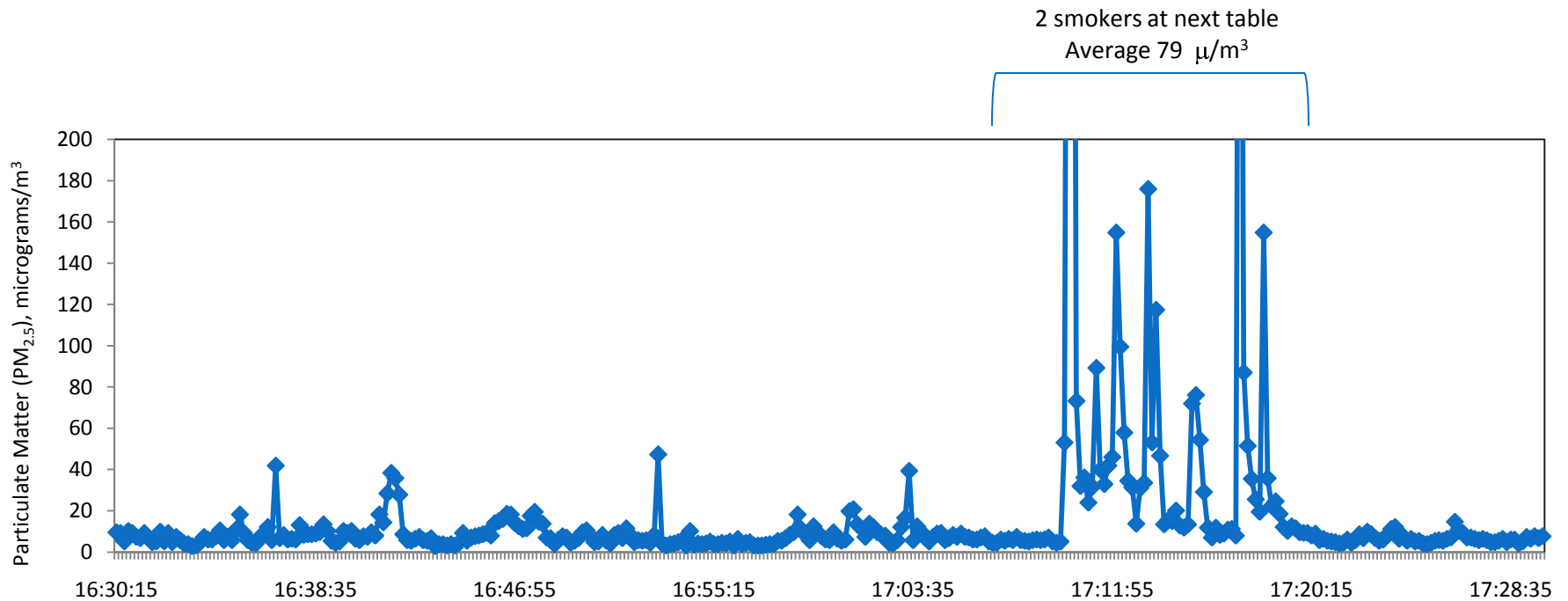
Background Air quality –  
Reported by the Ontario MOE  
([www.airqualityontario.com](http://www.airqualityontario.com))

Friday August 20,  
PM2.5 levels ranged from 2-7  $\mu\text{m}/\text{m}^3$

Monday August 23  
PM2.5 levels ranged form 4-8 $\mu\text{m}/\text{m}^3$

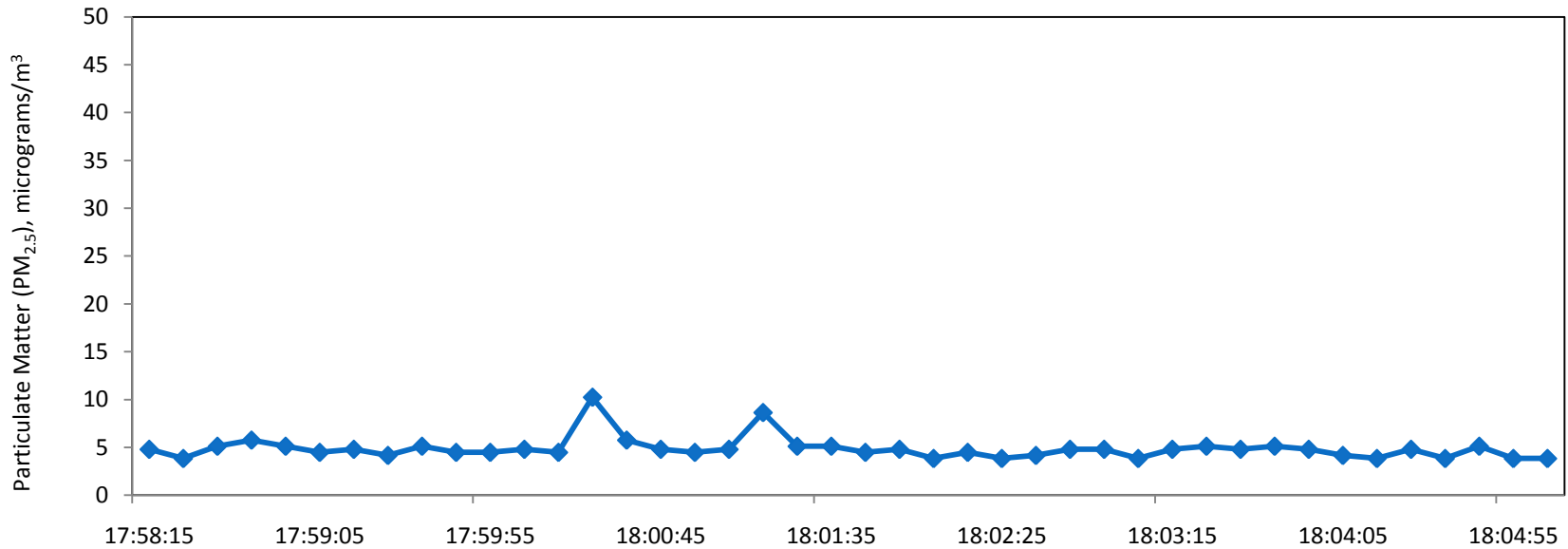
# OTTAWA Study – August 2010

## PATIO 1 - Uncovered courtyard PM2.5 readings on an Ottawa patio, August 20, 2010



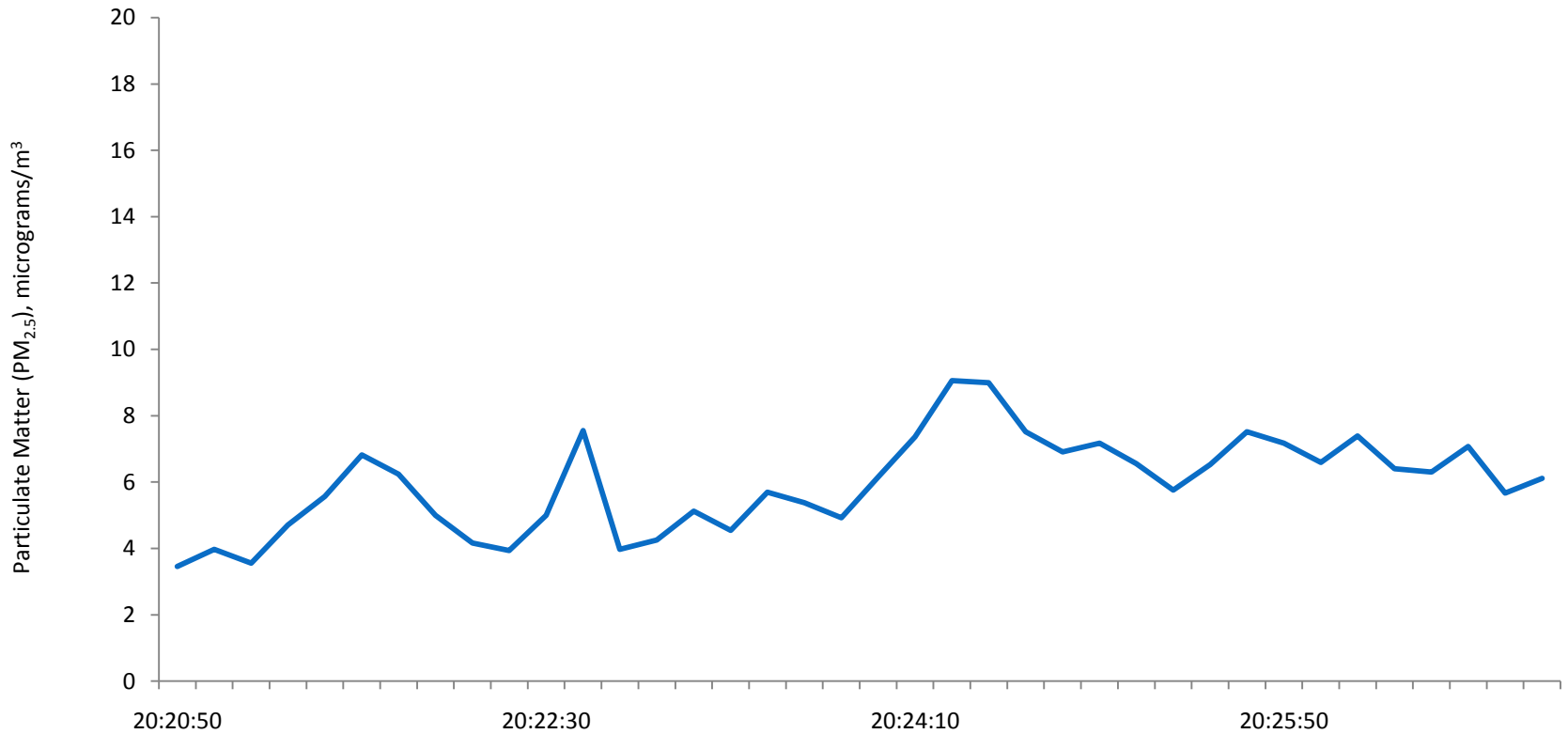
# OTTAWA Study – August 2010

## PATIO 2 – Smoke-free Covered PM2.5 Readings on Ottawa Patio, August 20, 2010



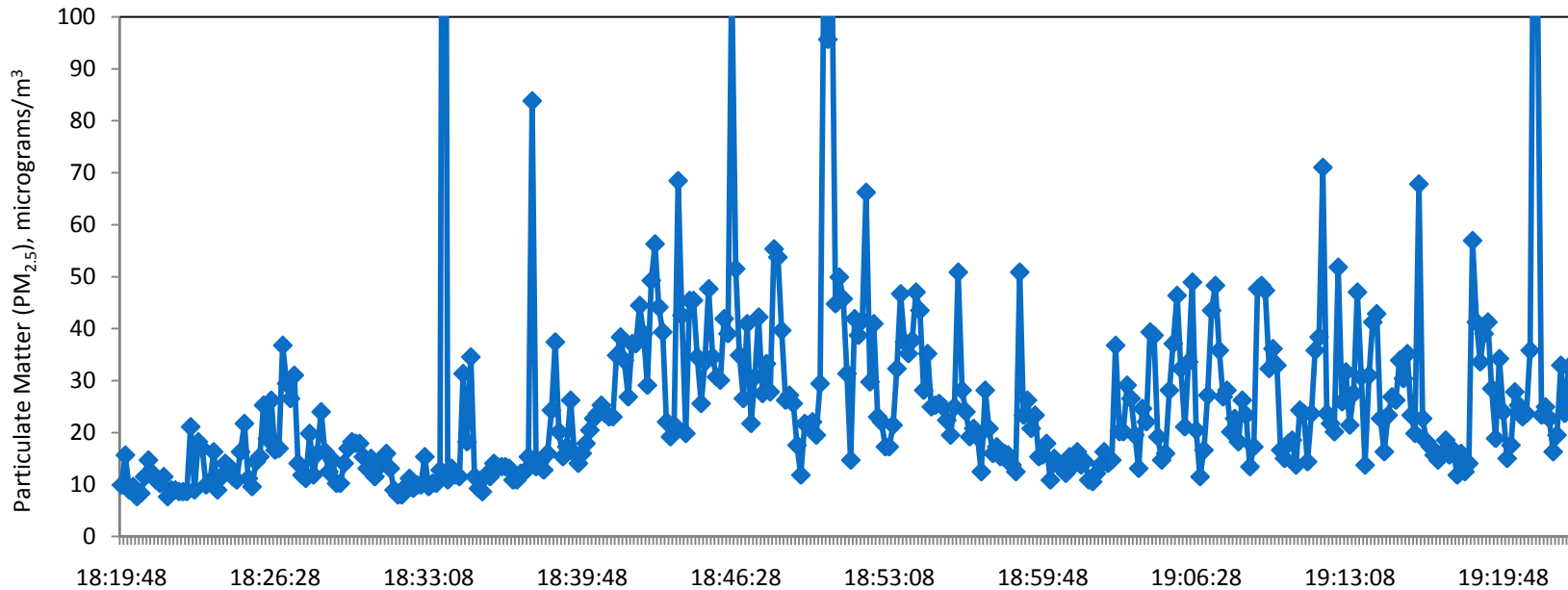
# OTTAWA Study – August 2010

**Patio 5 - Smoke-free Patio**  
**PM2.5 Readings on Patio in Ottawa, August 20, 2010**



# OTTAWA Study – August 2010

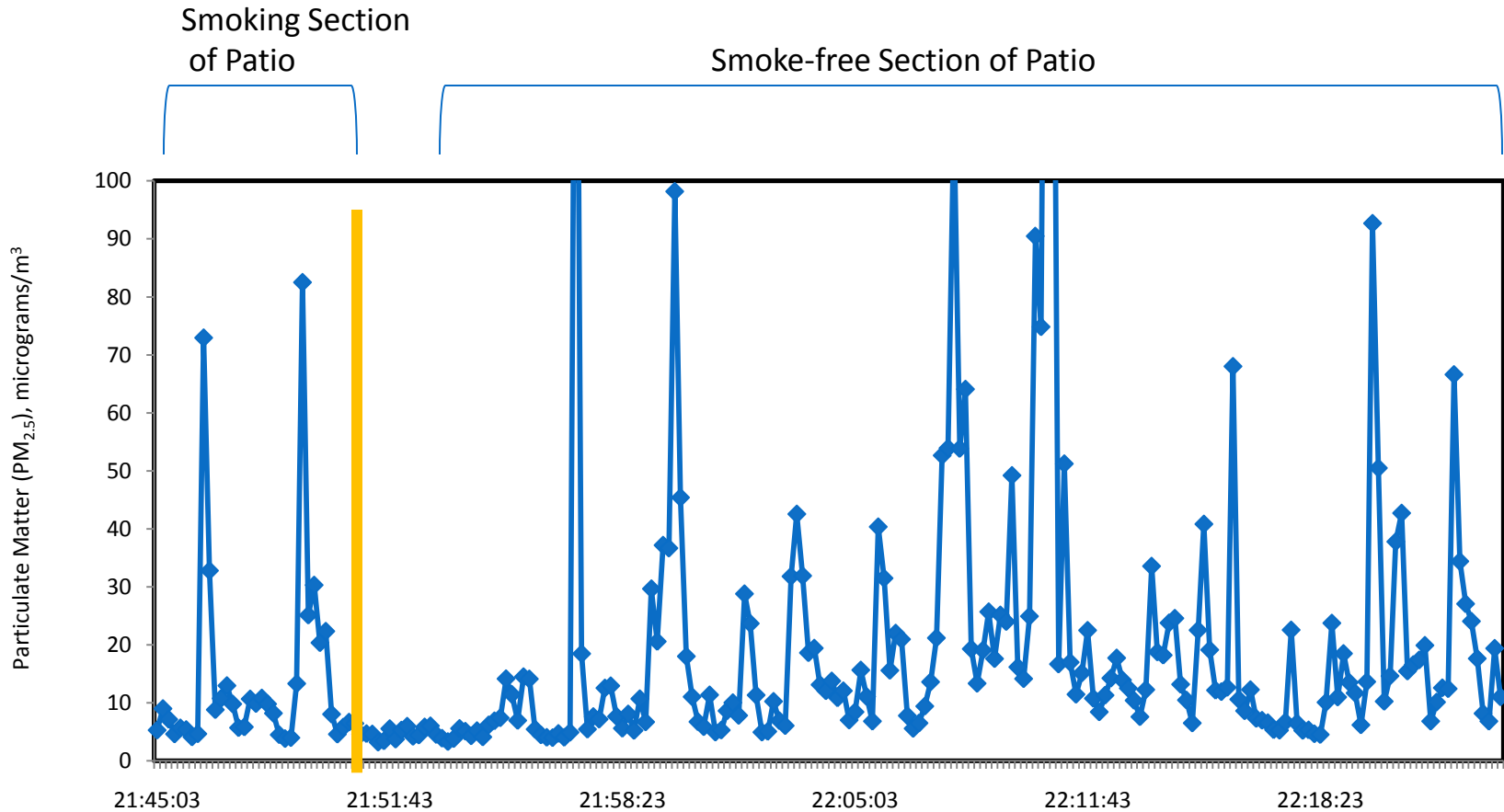
## Patio 12 – Umbrellas. Smoking Permitted PM2.5 Readings on Ottawa Patio, August 23, 2010





# OTTAWA Study – August 2010

## Patio 7 - Smoke-free and Smoking Permitted

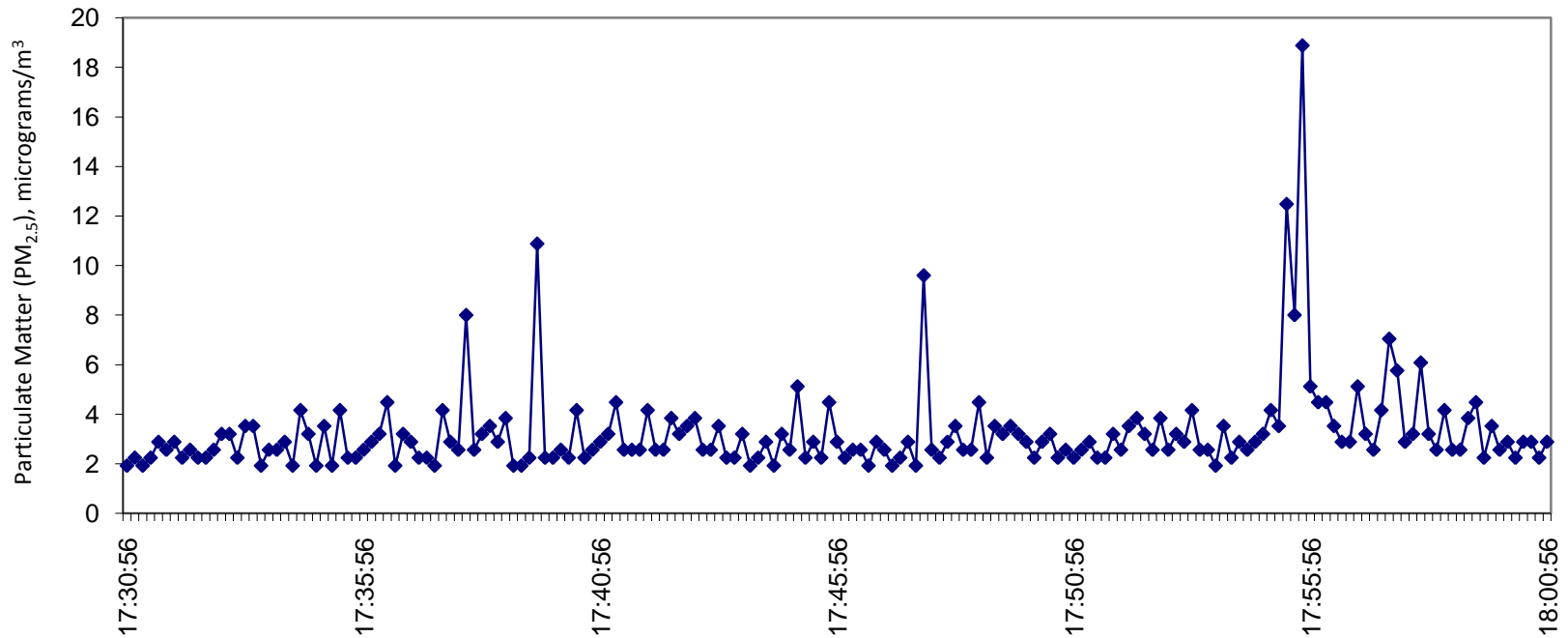


# OTTAWA Study – August 2010



# OTTAWA Study – August 2010

**Busy Urban Street During Rush Hour**  
**PM<sub>2.5</sub> Readings along Laurier Ave. in Downtown Ottawa, Aug 24, 2010**



# OTTAWA Study – August 2010

## OBSERVATIONS

- Smoking in outdoor environments immediately adjacent to indoor environments that were open (garage door style) to the patio
- Visually see smoke drifting indoors
- Patrons smoking at tables with children a few metres away

# OTTAWA Study – August 2010



# OTTAWA Study – August 2010

## OBSERVATIONS

- Majority of servers were young and most were women

# OTTAWA Study – August 2010

## OBSERVATIONS

- Witnessed people who smoke leaving a crowded patio to have a cigarette away from venue (even when smoking was permitted)

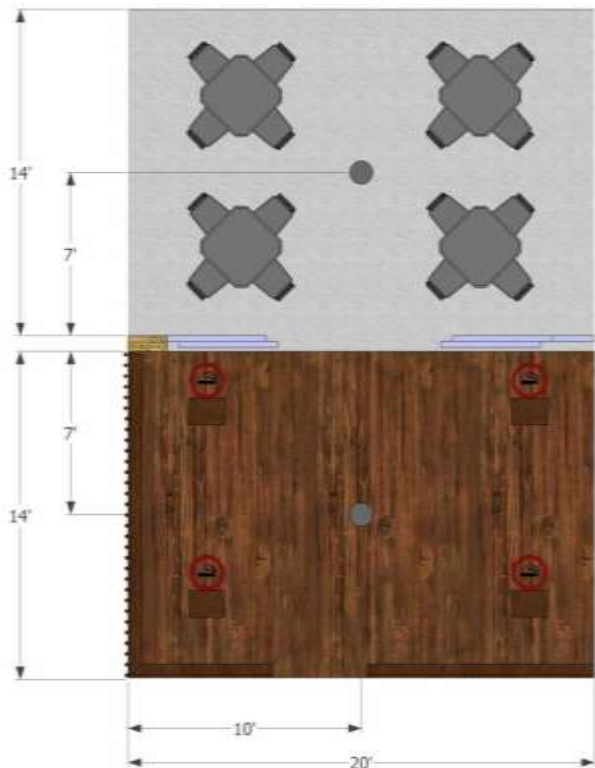
# OTTAWA Study – August 2010

## OBSERVATIONS

- Results of PM<sub>2.5</sub> monitoring on Ottawa patios mirrors the work we did in Waterloo in highly controlled experiments



# Patios – Open Air (Ontario)



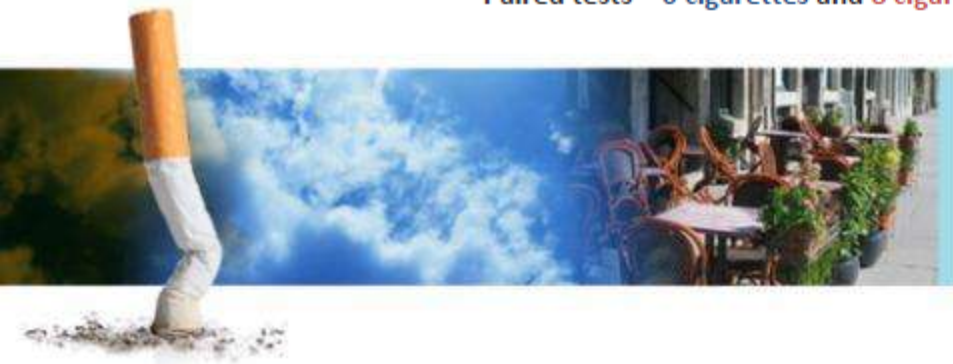
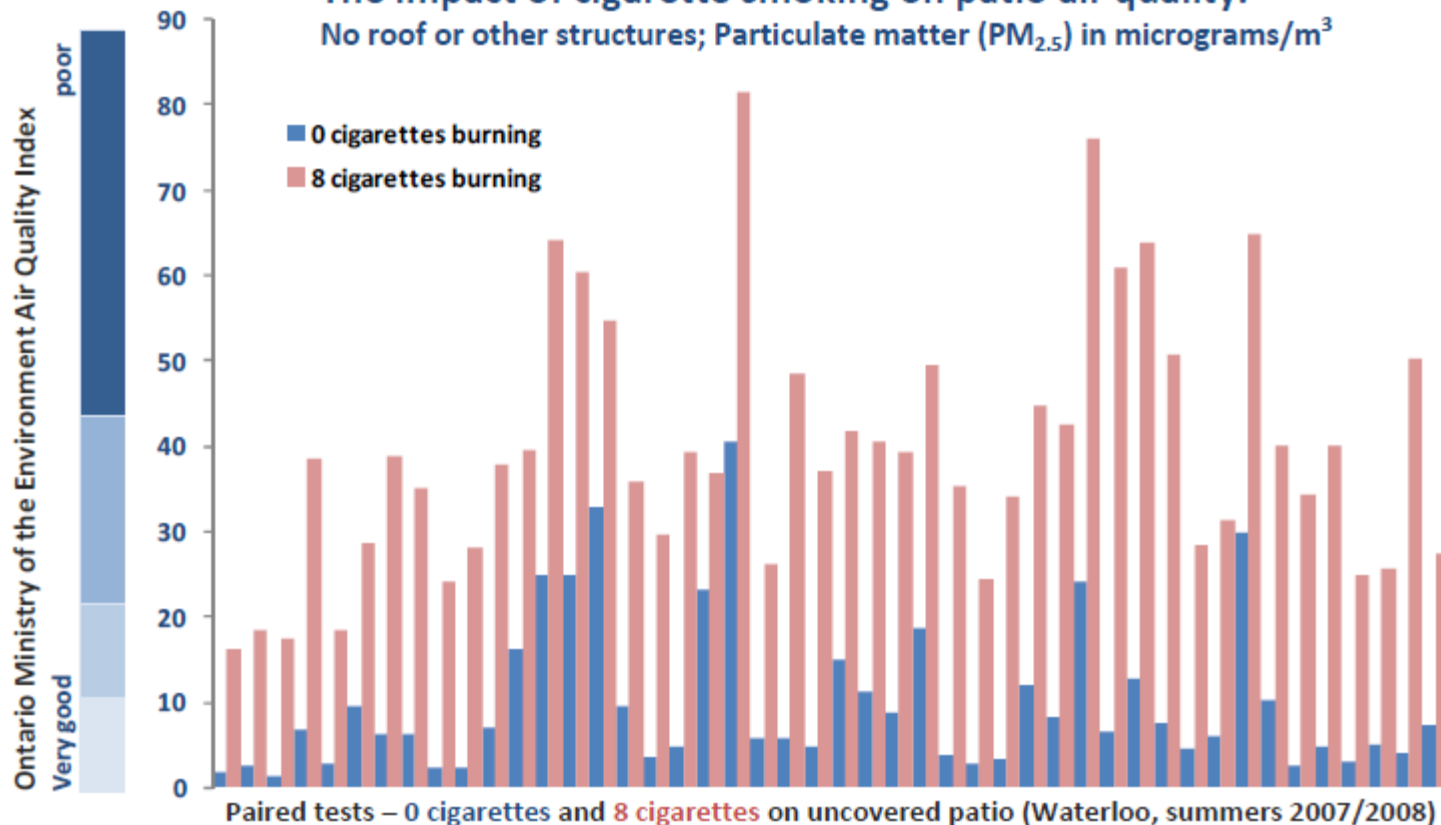
## OUTDOOR SECOND-HAND SMOKE

An experimental evaluation of smoke levels on patios, in doorways, and transit environments

# Patios – Open Air (Ontario)

The impact of cigarette smoking on patio air quality.

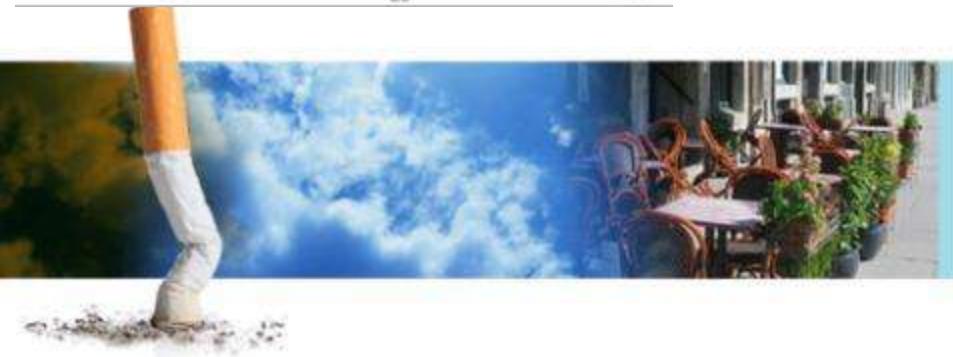
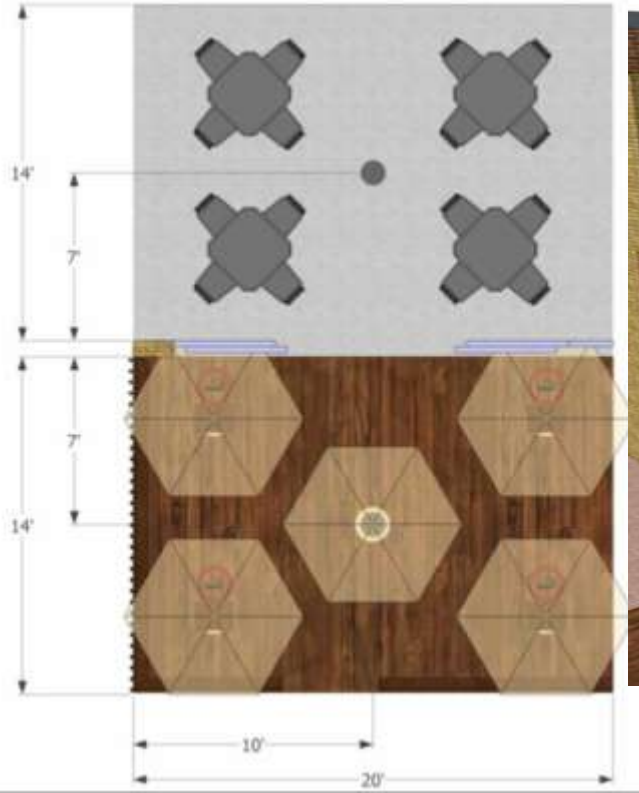
No roof or other structures; Particulate matter (PM<sub>2.5</sub>) in micrograms/m<sup>3</sup>



## OUTDOOR SECOND-HAND SMOKE

An experimental evaluation of smoke levels on patios, in doorways, and transit environments

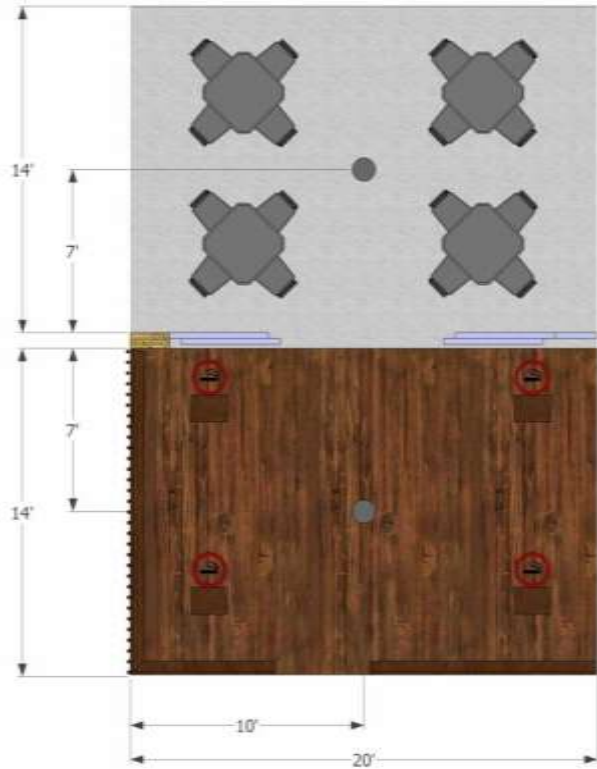
# Patios – Umbrellas not touching



## OUTDOOR SECOND-HAND SMOKE

An experimental evaluation of smoke levels on patios, in doorways, and transit environments

# Patios – Half Walls



## OUTDOOR SECOND-HAND SMOKE

An experimental evaluation of smoke levels on patios, in doorways, and transit environments

# OTTAWA Study – August 2010

## Conclusions

It is possible to be exposed to SHS on patios, even under windy conditions

Non-smoking sections of a patio or indoors do not necessarily protect people from being exposed to SHS if adjacent spaces permit smoking

PM<sub>2.5</sub> levels on a smoky patio are much higher than a busy road