

Item 7.2

AIR QUALITY PROGRESS REPORT 2012

Presentation to Board of Health

Dr. Denis Corr
Clean Air Hamilton
October 21, 2013



Clean Air Hamilton

- Clean Air Hamilton was established as an implementation committee to act on recommendations contained in 1997 HAQI Reports.
- Community-based initiatives are directed at:
 - Researching air quality and health issues related to air quality.
 - Developing policies aimed at improving air quality in Hamilton.
 - Encouraging emission reductions through adoption of best practices.
 - Educating the public on air quality issues and ways to improve air quality.
- Stakeholders come from across the community and include:
 - Citizens of Hamilton
 - Ontario MOE, Health Canada
 - ArcelorMittal Dofasco, US Steel Canada, Horizon Utilities
 - Green Venture, McMaster University, Mohawk College, Environment Hamilton
 - City Staff (Health, Planning & Public Works)
 - Hamilton Industrial Environmental Assn., Rotek Environmental.

Clean Air Hamilton

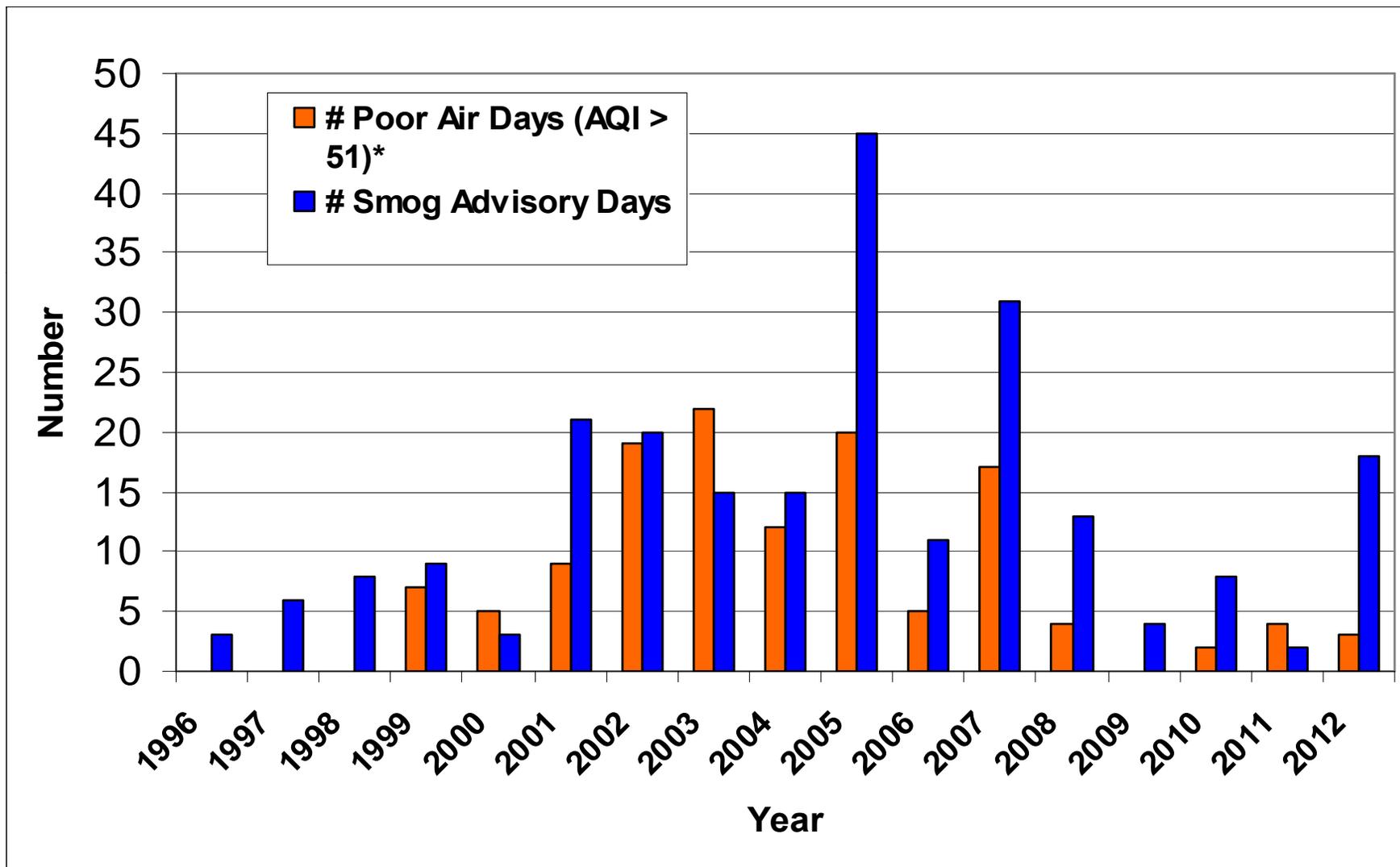
- City provides programming support of \$56,000 per year plus 0.5 FTE staff position under Public Health.
- CAH leverages expert volunteer support.
- CAH leverages funding from various sources.
- Programs include:
 - Upwind/Downwind Conference held every two years
 - Mobile monitoring of urban pollutants (neighbourhood monitoring)
 - Reporting of data from Hamilton Air Monitoring Network
 - Public health protection programs
 - Sustainable transportation solutions
 - Climate change and air quality advice
 - Energy conservation and urban planning solutions
 - Emissions reductions and land use planning



Monitoring Air Quality

- **Air Monitors** collect outdoor air quality data.
 - Data used to compare levels of air pollutants to standards.
 - Data can be used to identify sources of air pollutants, and
 - Data can be used to evaluate the potential impacts of air emissions on human health.
- **Fixed monitor networks:** two permanent networks in Hamilton.
 1. Ontario Ministry of the Environment's network of three Air Quality Index (AQI) stations (downtown, west end, mountain).
 2. Hamilton Air Monitoring Network (HAMN) of 17 stations in the east end industrial core primarily.
 3. (Temporary) Public Health Services East End AQHI, Sam Manson Park
- **Mobile air monitoring:** uses a van outfitted with air monitors.
 - Can make measurements anywhere in City and can monitor while moving along roads.
 - Can identify local sources of air emissions.
 - Can be used to make comparisons between neighbourhoods, along streets/highways and at locations with suspected emissions.

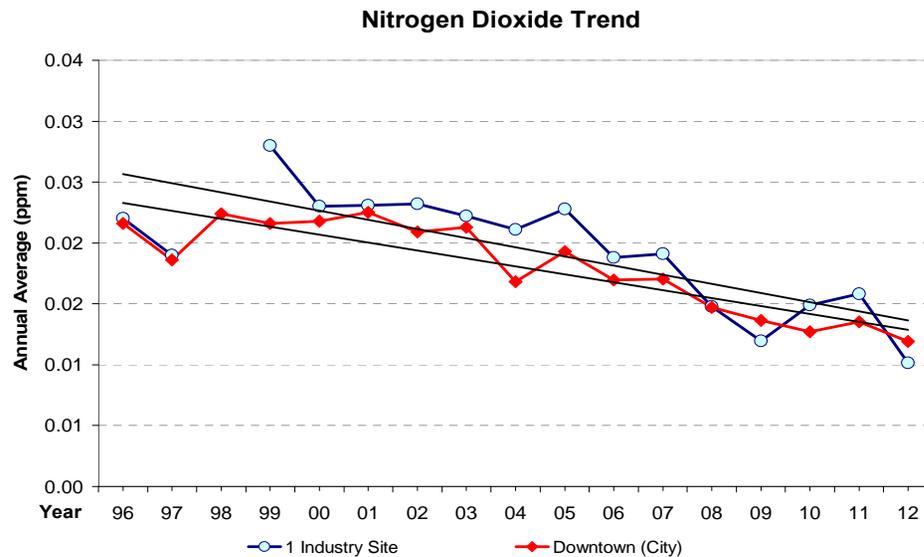
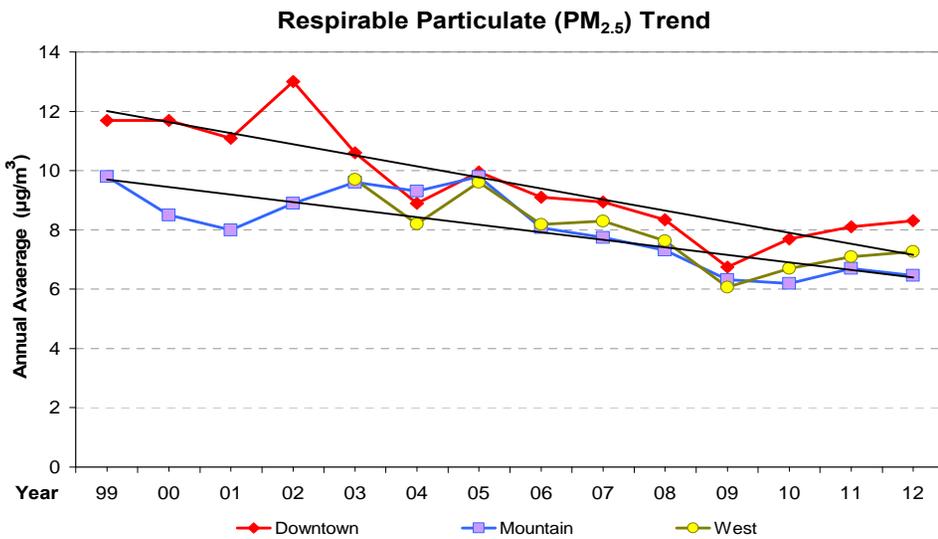
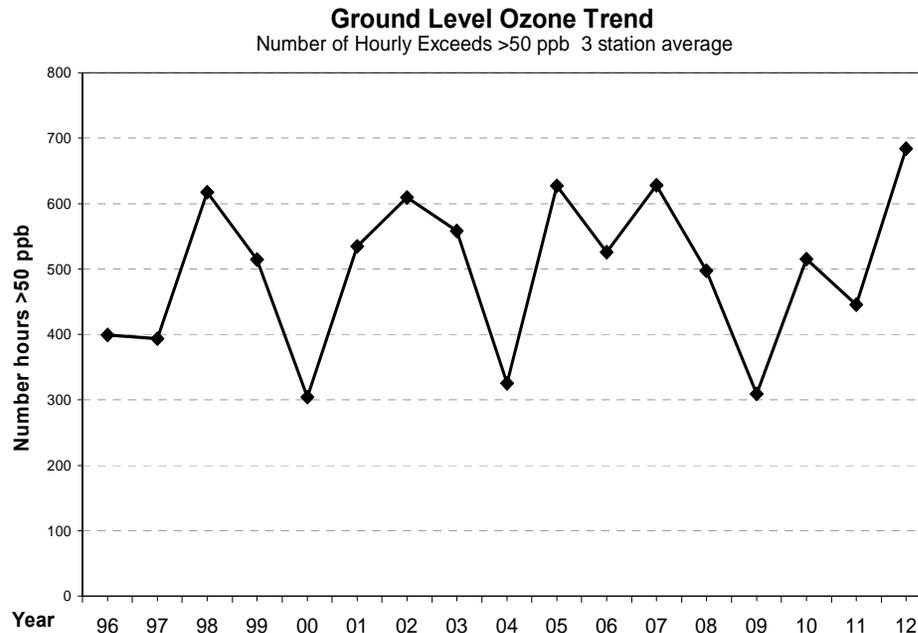
Poor Air Days and Smog Advisory Days



Air Quality Trends:

Steady Decreases in Major Air Pollutants over Past Decade

(except ground level ozone)

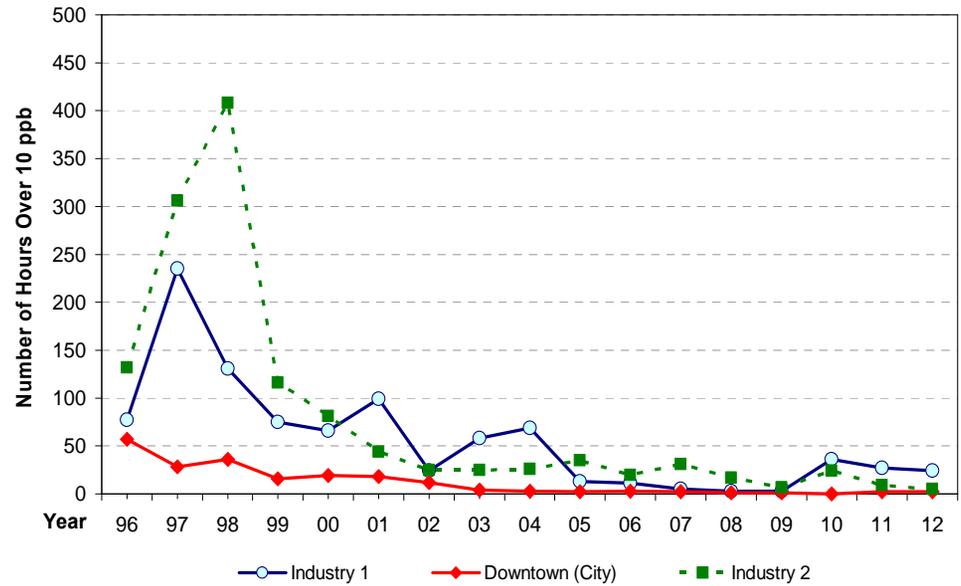


Air Quality Trends:

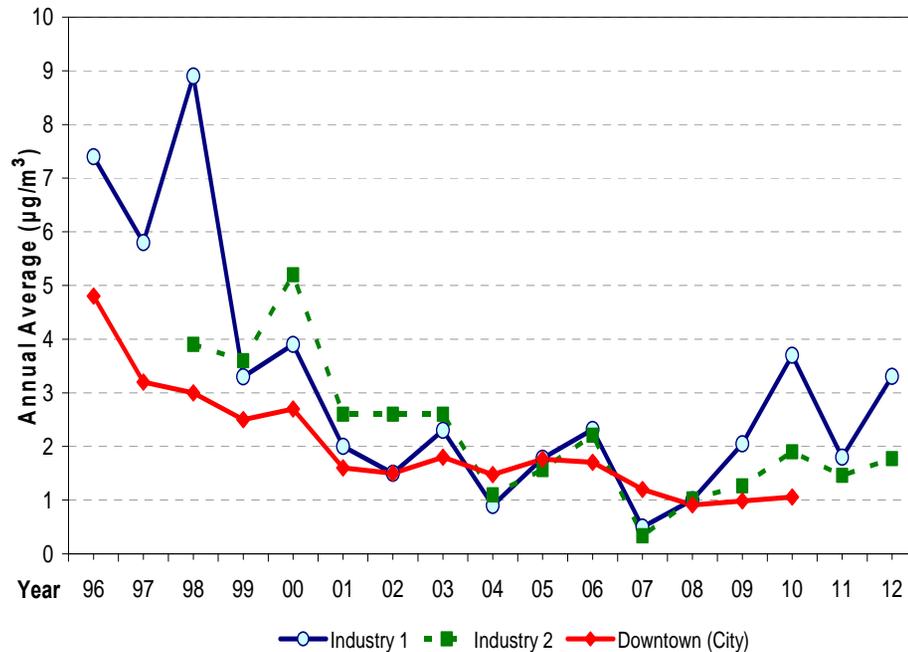
Total Reduced Sulphur, Benzene and Benzo[a]pyrene

Comparisons of 'Downtown' site and 'Industry' sites

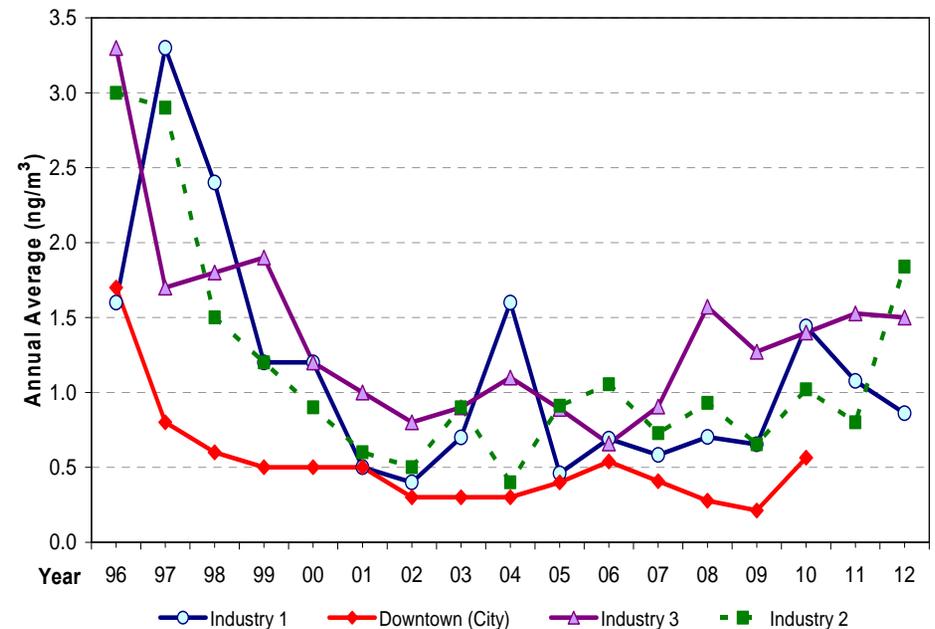
Total Reduced Sulphur Trend
Hours Over 10 ppb Odour Threshold



Benzene Trend



Benzo(a)pyrene Trend

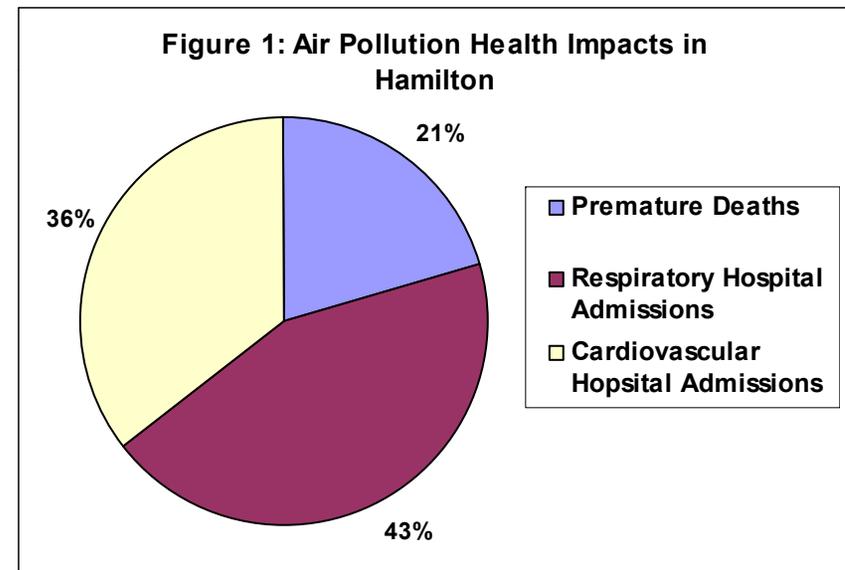


Hamilton Air Quality and Public Health

SENES Health Assessment Report, 2011

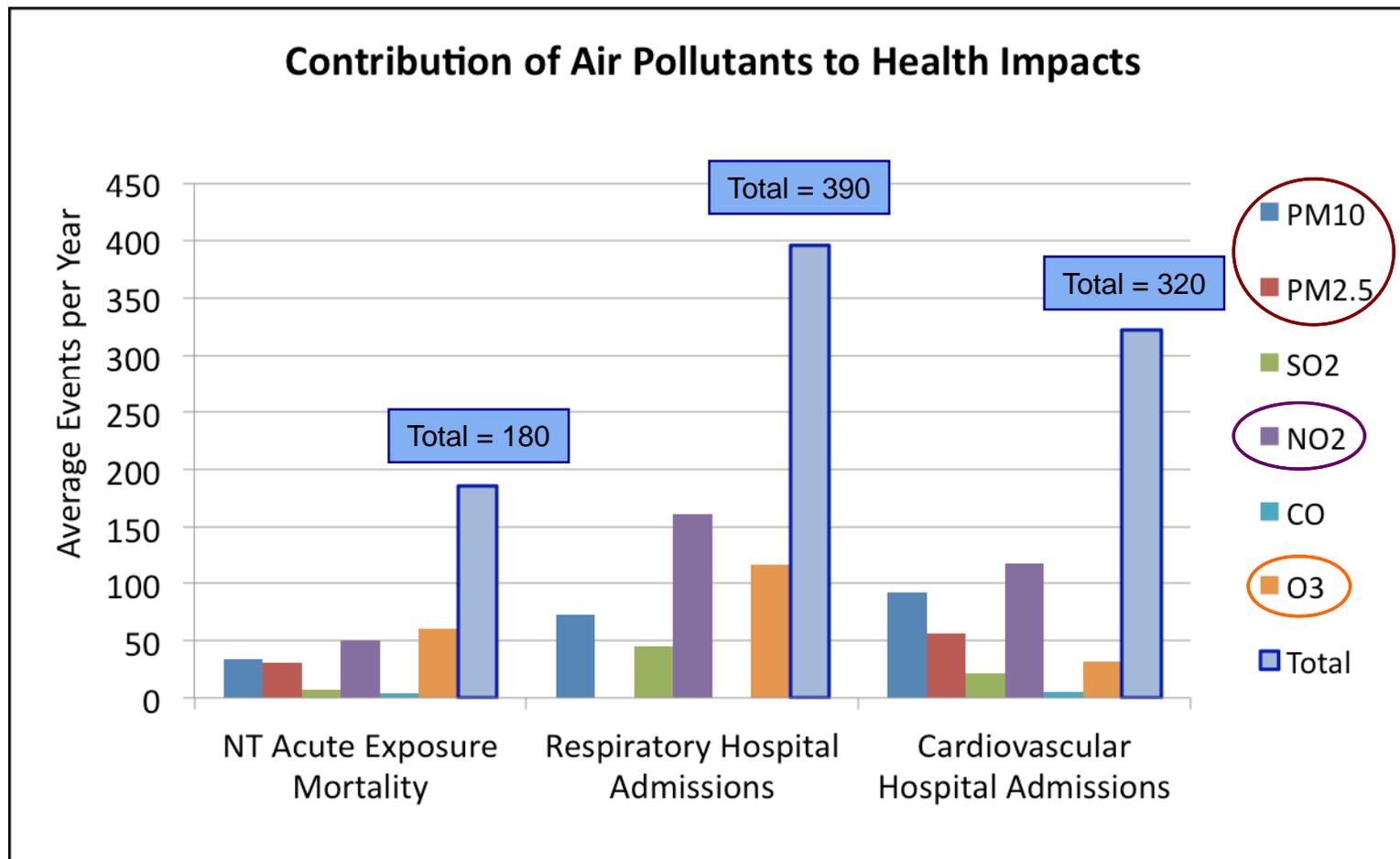
5 Key Air Pollutants have the following health effects outcomes in Hamilton **each year**:

- > 180 premature deaths
- > 710 respiratory and cardiovascular hospital admissions
- Most current review of scientific literature on air quality and public health.
- Primary focus remains as reduction of human exposures to:
 1. Particulate Material (PM₁₀ and PM_{2.5})
 2. Nitrogen Oxides (NO_x)
 3. Ground Level Ozone (O₃)



Hamilton Air Quality and Public Health

SENES Health Assessment Report, 2011



Most health impacts are due to **PM**, **NO₂** and **ozone**

AQI (Air Quality Index) vs. AQHI (Air Quality Health Index)

The **AQI** is an air pollution scale developed by the Ontario MOE while the **AQHI** is a health-driven metric developed by Health Canada.

AQI Scale:
based on highest single air parameter.

<u>Air Quality Index (AQI) Categories</u>	
AQI Ranges and Categories	Colour
0-15 Very Good	
16-31 Good	
32-49 Moderate	
50-99 Poor	
100+ Very Poor	

Air pollution impacts increase uniformly, not in 'steps'.

AQHI conveys continuous nature of impacts better than AQI.

AQHI Scale:
based on three air parameters.



Mobile Air Monitoring

Van outfitted with a range of real-time monitors for:

CO
NO
NO₂
PM₁₀, PM_{2.5}, PM₁
SO₂

A GPS system



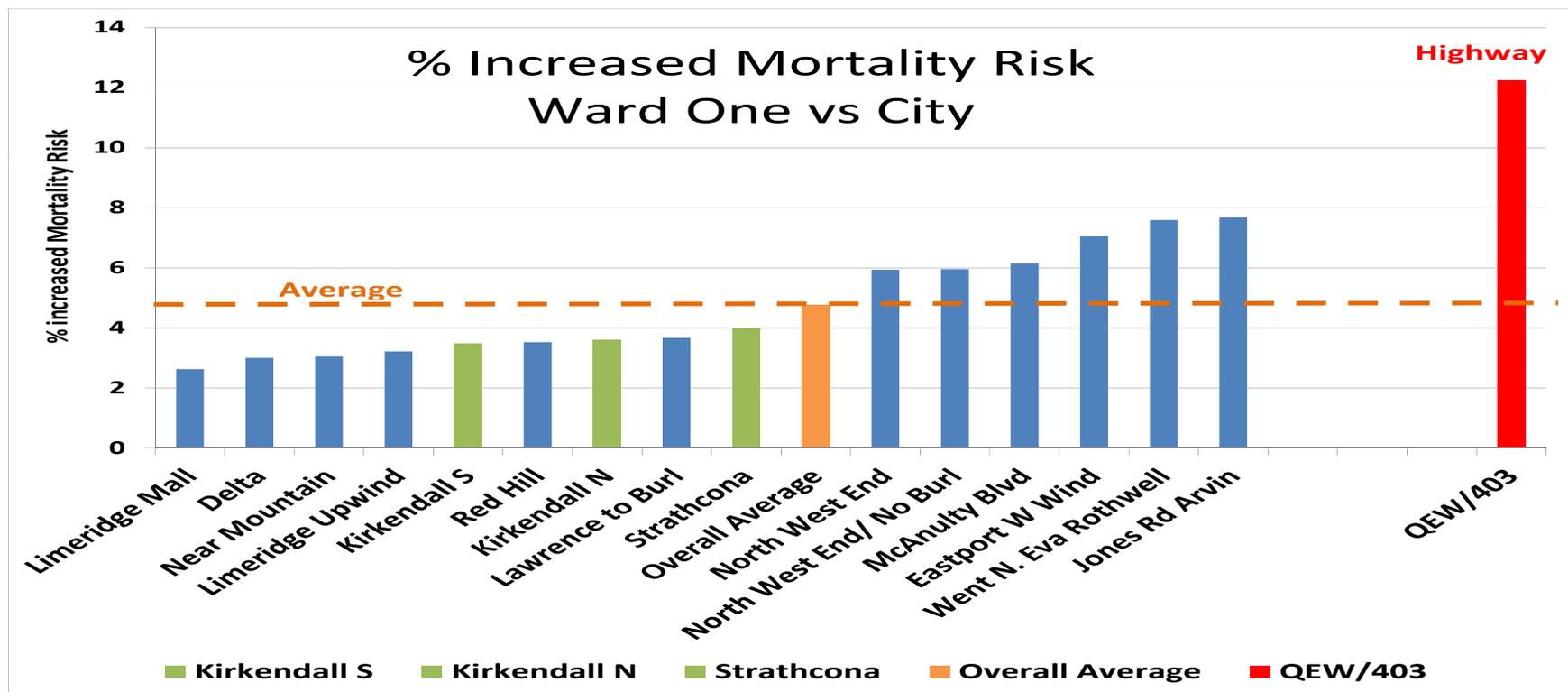
Neighbourhood of Holy Name of Jesus School, Hamilton



0 0.175 0.35 0.7 Kilometers

Mobile Air Monitoring: Neighbourhoods Study

Air quality measurements were performed in 16 neighbourhoods and along QEW and Hwy. 403; 26 neighbourhoods requested measurements.



Mobile air monitoring data was converted into % increased risk of mortality using SENES report values.

SENES Report and Neighbourhoods Study

- SENES Report is the most comprehensive, up-to-date review of the scientific literature on health impacts of poor air quality that we are aware of. *Clean Air Hamilton* remains at the forefront of air quality-health analysis.
- Data in the SENES Report was used to revise our health risk factors for individual air pollutants for specific health outcomes, i.e., increased mortality and hospital admissions due to respiratory and cardiovascular impacts.
- Neighbourhood mobile air monitoring study is the first comprehensive, health-based examination of air quality at the neighbourhood level ever conducted in North America.
- Health outcomes in this study used a combination of air pollutant measurements made in each neighbourhood together with health risk factors associated with each pollutant (from the SENES Report).
- We see great need and value in continuing to perform similar analyses in other neighbourhoods across Hamilton. These outcomes will inform management decisions on air quality improvement strategies.

Air Quality, Transportation and Land Use Planning

- *Clean Air Hamilton* recognizes that strong linkages exist between urban planning and development decisions in cities, the resulting transportation network and air quality within the city.
- Urban planning and transportation decisions have long-term consequences affecting urban form, walkability, sustainability and ultimately, public health.
- *Clean Air Hamilton* submitted comments to the Province with regards to provincial planning policy (Appendix E of the Report)
- *Clean Air Hamilton* is a strong proponent of public policies that encourage active transportation (walking, cycling, etc.) and promote increased use of public transit.
- *Clean Air Hamilton* is a strong proponent of land use policies that address air quality concerns in the built urban form and land use compatibility.

Actions Needed within City

1. Consider developing a strategy for adopting the principles, approaches and standards for distance separation outlined in the Ontario Ministry of Environment's D-Series Guidelines
2. Work with local industries and the Ministry of the Environment to control both point sources and area sources of air particulate pollution, particularly road dusts, as well as reducing NO_x and SO₂ emissions, from stationary and mobile sources.
3. Continue to support and encourage Hamiltonians to reduce their transportation-based emissions through the use of transportation alternatives including carpooling, public transit, bicycles, walking, hybrid vehicles, electric vehicles, etc.
4. Examine the benefits of using existing green corridors for active commuting or recreational transportation in Hamilton as a means to encourage improved health and air quality.

Actions Needed within City

5. Take measures to educate and encourage the community to reduce their energy consumption at home, business and on the road through energy conservation and demand measures.
6. Continue to take measures as a city to reduce greenhouse gas emissions and encourage citizens to reduce their greenhouse gas emissions.
7. Consider the implications and risks of climate change to improve the quality of life in Hamilton through climate adaptation policies and planning.
8. Continue to take a broad suite of actions to improve local air quality and combat climate change.
9. Increase the level of dialogue with community groups on the health impacts of poor air quality and the actions and lifestyle changes citizens can undertake that will lead to air quality improvements for all citizens.

What Next !

1. Air Quality Task Force
2. More Focused information
3. Personal Empowerment as well as Emission Controls



On behalf of ***Clean Air Hamilton***



St. Lawrence School Fresh Air Kids Program (2013)

<http://www.youtube.com/watch?v=ZD7sBkQ9PsY>