



INFORMATION REPORT

TO:	Mayor and Members Board of Health
COMMITTEE DATE:	July 10, 2014
SUBJECT/REPORT NO:	<i>Clean Air Hamilton</i> 2013 Progress Report - BOH14019 (City Wide)
WARD(S) AFFECTED:	City Wide
PREPARED BY:	Brian Montgomery (905) 546-2424 Ext. 1275
SUBMITTED BY:	Elizabeth Richardson Medical Officer of Health Public Health Services Department
SIGNATURE:	

Council Direction:

Not Applicable

Information:

Clean Air Hamilton (CAH) is a community initiative to improve air quality in the City of Hamilton. It has a diverse membership with representation from environmental organizations, industry, businesses, academic institutions, citizens and different levels of government (federal, provincial and municipal). Initiated in 1998, CAH works to improve air quality throughout the City of Hamilton and meet all ambient air quality criteria. The Hamilton Board of Health (BOH) supports the work of CAH through an annual budget of \$56,000. In 2013, CAH supplemented this funding with \$3,576 facilitated by Green Venture and in-kind contributions of \$88,885 in volunteer time by members.

CAH has identified ten strategic issues related to air quality improvements and climate change issues to focus on over the next two to three years. These include; public health protection, risk communication, active and sustainable transportation, smart drivers, land use planning, air monitoring, emission reduction strategies, climate change, energy conservation, and air quality education and health promotion.

In 2013, CAH formed an Air Quality Task Force (AQTF) as requested by the BOH, to investigate and make recommendations on "actions that can be taken by the City to reduce air pollution in Hamilton". The AQTF responded with an Action Plan

(BOH13029) with recommendations in the areas of air modelling and monitoring, planning, education and outreach, green infrastructure, and updating of municipal by-laws aimed at decreasing particulate matter in the environment. These recommendations were approved by BOH and Council (BOH13029).

In 2014, the AQTF and CAH received an Award of Planning Excellence for Grassroots Initiative from the Western New York Section of the Upstate Chapter of the American Planning Association for the development of the AQTF Action Plan.

The *Clean Air Hamilton Air Quality Progress Report 2013*, attached as Appendix 'A' to Report BOH14019 provides complete details on 2013 activities and measurements.

Air Quality in Hamilton

Since the mid-1990s, significant total decreases for many air pollutant levels have been measured at the downtown air monitoring site (MOE Station 29000). Some of the highlight reductions for contaminants that can impact health include:

- 55% reduction in Total Suspended Particulate (TSP)
- 32% reduction in Respirable Particulate Matter (PM_{2.5})
- 47% reduction in Nitrogen Dioxide (NO₂)
- 38% reduction in Sulphur Dioxide (SO₂)
- More than 75% reduction in both Benzene and Benzo [a] Pyrene

Hamilton is impacted by a combination of factors that do not co-occur in other communities in southern Ontario:

- The roads in and around Hamilton are heavily used by local citizens, commuters passing through Hamilton and long-distance car and truck traffic. As a consequence, the air quality is adversely impacted by the mobile emissions generated by gasoline-powered vehicles and diesel-powered transport trucks;
- Hamilton is home to many small, medium and large industries;
- Hamilton is located at the west end of Lake Ontario and is surrounded by the escarpment, a combination that brings unique meteorological features to the area. The local topography (i.e., the escarpment) and prevailing weather conditions contribute to conditions where air pollution levels are usually higher below the escarpment where there are more industries and higher density urban development than above the escarpment;
- A few times a year unusual meteorological conditions can occur that give rise to atmospheric inversion events, which may last from 2 to 12 hours or longer. During these events, pollutant levels can rise dramatically for a short time. These events are most common in the spring and fall; and

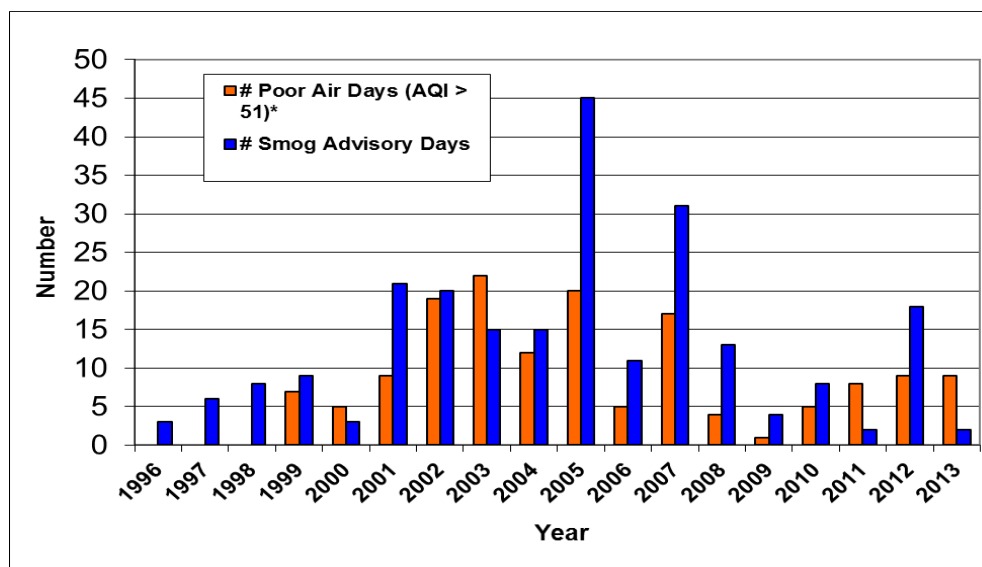
- Trans-boundary air pollution (primarily ground-level ozone and air particulates from sources in the mid-western United States). In this respect, Hamilton is no different from many other urban areas, small communities and rural areas in southwestern Ontario. It has been estimated that about 50% of the air pollution in Hamilton air comes from long-range transport; the remainder are locally generated emissions.

Smog Advisories

A smog advisory is issued by the Ontario Ministry of Environment (MOE) when the Air Quality Index (AQI) reaches or exceeds a value of 50. The advisory's purpose is to alert the public that widespread elevated levels of air pollution exist.

There are three air quality monitoring stations in Hamilton which provide data used to calculate the AQI. Poor Air Quality Days are days where the AQI actually exceeded a value of 50 for one hour. There were nine days in 2013 when the air quality was considered to be poor (i.e., an AQI of 50 or greater for at least 1 hour). In 2013, two smog advisory days were forecasted and declared by the MOE for the City of Hamilton (see Figure 1).

Figure 1: Number of Poor Air Quality Days and Smog Advisory Days in Hamilton between 1996 and 2013



Provincial Air Quality Standards

The province continues to work on improving air quality in Ontario. New standards set out in the local air pollution regulation (O.Reg. 419/05) come into effect in 2016 for a number of air pollutants, including benzo(a)pyrene and benzene. These new standards significantly tighten the current benchmarks for local air quality. CAH supports and

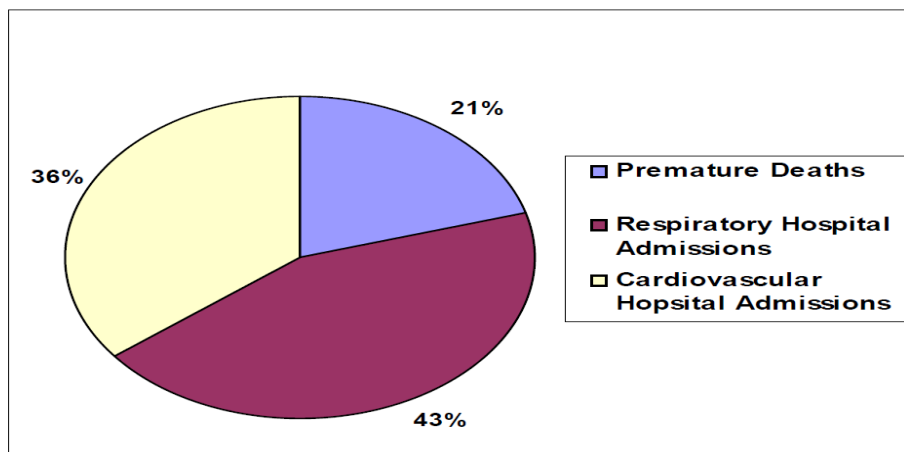
encourages the continued efforts of the MOE and local industries to reduce air borne contaminants in the City of Hamilton.

Air Quality & Health

Poor air quality is associated with a range of health effects. Some segments of the population, particularly young children and the elderly, are much more susceptible to the adverse health effects of poor air quality.

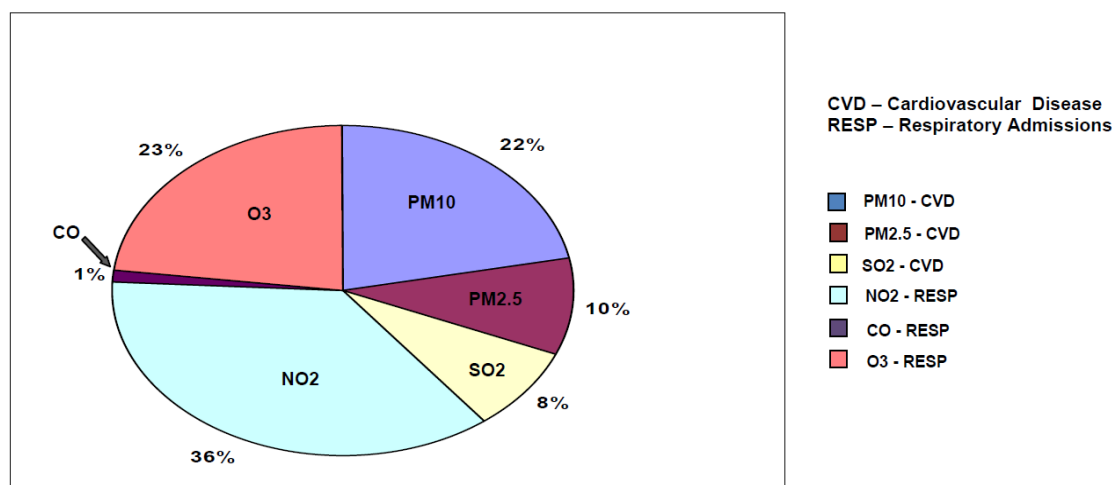
The 2011 Air Quality Health Assessment Study, undertaken by SENES Consulting on behalf of CAH and PHS, estimated that the six key air pollutants -NO₂, ground-level ozone (O₃), PM₁₀, PM_{2.5}, SO₂ and CO contribute to about 186 premature deaths, 395 respiratory hospital admissions and 322 cardiovascular hospital admissions each year in Hamilton (see Figure 2).

Figure 2: Air Pollution Health Impacts in Hamilton (%)



All of these air pollutants contribute to health effects outcomes; however, some health outcomes are specifically-linked to exposures to certain air contaminants. For example, the main air pollutants contributing to respiratory admissions to hospitals are O₃, SO₂ and nitrogen oxides (NO_x). On the other hand, particulate matter (both PM₁₀ and PM_{2.5}) and CO were major contributors to cardiovascular admissions to hospitals. Figure 3 (below) outlines the relative contributions of air pollutants to health impacts in Hamilton.

Figure 3: Contribution of Air Pollutants to Health Impacts in Hamilton (%)



Overall, with the average measured air quality for the Hamilton region improving, the number of hospital admissions associated with respiratory ailments has remained unchanged since the 2003 study. However, hospital admissions associated with cardiovascular effects have decreased significantly since 2003. Overall, deaths due to air pollution decreased from 229 in 2003 to 186 in 2012; a 19% improvement. These values were not corrected for population increases which would further improve the picture.

The Air Quality Health Index (AQHI) is a numeric tool that enables health professionals and the public to determine the health risks related to air quality at a given time. Associated with the AQHI are health messages that are directed at two distinct populations – the “at risk” population and the “general” population¹. In 2011, PHS and Clean Air Hamilton worked with the Government of Canada to report daily AQHI for Hamilton. Since 2011, PHS has worked with the public and at-risk populations in Hamilton to provide education and promotion of the use of the AQHI.

In 2013, AQHI outreach focused on the “at risk” population with pre-existing respiratory conditions. PHS worked with health professionals in the City of Hamilton including those at the Firestone Clinic, North Hamilton Community Health Centre and Hamilton Family Health to promote AQI awareness and up-take among at-risk patients.

¹ The “at risk” population includes individuals at increased risk due to age or a variety of health conditions; the “at risk” population includes young children, the elderly, people with existing respiratory conditions (e.g., asthma, chronic obstructive pulmonary disease (COPD), including bronchitis, emphysema and lung cancer) and people with existing cardiovascular conditions (e.g., angina, previous history of heart attack, congestive heart failure, heart arrhythmia or irregular heartbeat). The ‘general population’ includes all other individuals who do not fall under the “at risk” population (Environment Canada, 2013).

Air Quality Programs in 2013

CAH sponsored a number of air quality programs in 2013 designed to improve local air quality through research, education and communication. Several of these were supported and assisted by partnerships with the City and other organizations such as the MOE and Green Venture. Some examples of the 2013 initiatives are:

- *2014 Upwind/Downwind Conference* - Approximately 166 participants, including citizens and representatives from the private and public sector attended the one-day conference, which aimed to provide a forum for understanding the connections between health, built form, transportation, air quality and climate change.
- *Air Quality Task Force* - CAH convened an AQTF as requested by the BOH to investigate and make recommendations on “actions that can be taken by the City to reduce air pollution in Hamilton”. In December 2013, the AQTF brought forward an Action Plan to BOH and were carried (BOH13029). The ten recommendations - built upon air monitoring and modelling, planning, education and outreach, green infrastructure and municipal action – are expected to work synergistically to achieve air pollution reductions in the City of Hamilton.
- *Fresh Air Kids* – This is a new school-based air quality program that aims to raise awareness of AQHI and air quality issues among school-age children. The program will assist them to identify walking routes to school that would have the lowest pollutant exposures and encourage them to use active modes of transportation. Three Hamilton schools participated in 2013: Holy Name of Jesus, St. Lawrence and St. Marguerite d’Youville Catholic Elementary Schools.
- *Totally Transit* - This unique bus education program teaches Hamilton elementary-aged students and senior citizens how to properly utilize the HSR while making the connection between air quality, climate change and transportation. Through hands-on experience, this one-of-a-kind program empowers individuals to feel confident about choosing transit and other forms of sustainable and active transportation.
- *Climate Change* - Recognizing the linkages between air quality and climate change, CAH has begun to examine and expand work in this area. In 2013, CAH established a climate change working group to educate and engage local partners to address climate change locally and support Hamilton’s undertaking of a Community Climate Change Plan in 2014 (BOH13024).

Continuous Improvement of Air Quality

Air quality improvements and reductions of greenhouse gas emissions in the City of Hamilton continue to be incremental and require actions on many fronts from individuals, organizations, industries, the City of Hamilton and other levels of government.

The Clean Air Hamilton 2013 Progress Report contains the following recommendations for the City toward managing and improving air quality in Hamilton:

- Implement recommendations identified by the AQTF in the areas of air modelling and monitoring, planning, education and outreach, green infrastructure, and updating of municipal by-laws aimed at decreasing particulate matter in the environment (BOH13029).
- Work with local industries and the MOE to control both point sources and area sources of air particulate pollution, specifically, road dusts, as well as reducing NO_x, SO₂, benzene and B(a)P emissions, from stationary and mobile sources.
- Continue to support the expansion of air monitoring efforts to capture new emission sources currently not under surveillance so as to take remedial actions as necessary in the future. The funding of a permanent East End Air Monitor by Council and the continuation of mobile air monitoring are examples of the expansion of air monitoring.
- Continue to support and encourage Hamiltonians to reduce their transportation-based emissions through the use of active transportation (public transit, bicycles, walking, hybrid vehicles, etc.) and in supportive policies such as complete streets and transportation demand management (PW10062).
- Begin to examine and measure the benefits and costs associated with green infrastructure in Hamilton with the intent of providing policy and program incentives (PW11037).
- Continue to encourage the reduction of greenhouse gas emissions in Hamilton, and consider the implications and risks of climate change to improve the quality of life in Hamilton through climate adaptation policies and planning (BOH13024).

Summary

CAH continues to provide an opportunity to share scientific and technical information to increase the level of dialogue within the community on the health impacts of poor air quality and the best industrial, business and personal actions that will lead to reduced emissions and health improvements for all citizens.

Appendices/Schedules Attached

Appendix A to BOH14019 – Clean Air Hamilton 2013 Progress Report