



# INFORMATION REPORT

<b>TO:</b>	Mayor and Members Board of Health
<b>COMMITTEE DATE:</b>	December 2, 2019
<b>SUBJECT/REPORT NO:</b>	Clean Air Hamilton 2018 Progress Report (BOH19039) (City Wide) <b>(Outstanding Business List Item)</b>
<b>WARD(S) AFFECTED:</b>	City Wide
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<b>SIGNATURE:</b>	

## COUNCIL DIRECTION

Clean Air Hamilton reports annually to Board of Health on the trends of local air quality and the actions undertaken by members of Clean Air Hamilton to address local air quality in Hamilton.

## INFORMATION

Clean Air Hamilton 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, Clean Air Hamilton works to improve air quality throughout the City of Hamilton and meet all ambient air quality criteria. The Public Health Section of the Healthy and Safe Communities Department supports the work of Clean Air Hamilton and other work related to air quality and climate change.

Clean Air Hamilton hosted a strategic visioning workshop in 2016 and has identified five strategic themes related to air quality improvements to focus on for the following two to three years. These include:

- Governance & Structure;

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OUR Vision: To be the best place to raise a child and age successfully.

OUR Mission: To provide high quality cost conscious public services that contribute to a healthy, safe and prosperous community, in a sustainable manner.

OUR Culture: Collective Ownership, Steadfast Integrity, Courageous Change, Sensational Service, Engaged Empowered Employees.

- Air Zone Management;
- Transportation;
- Air Monitoring; and,
- Dust and Particulate Matter (PM<sub>2.5</sub>) Mitigation.

Further details can be found in Appendix “A” to Report BOH19039.

### **Air Quality in Hamilton**

Many air pollutants’ annual percentages have decreased over time as measured at the Ministry of the Environment, Conservation and Parks’ (MECP) air monitoring stations. See Appendix “B” to Report BOH19039 for the 2018 Hamilton Air Quality Trends provided by the MECP.

### **2018 Air Quality Alerts**

Two different air quality alerts are issued during periods of poor air quality. A Special Air Quality Statement will be issued when the Air Quality Health Index is a high risk (>6) and is forecast to last for 1-2 hours. If the high-risk Air Quality Health Index is forecast to be a persistent duration of at least 3 hours, then a Smog and Air Health Advisory will be issued by the Province of Ontario.

In 2018, Hamilton did not experience any Special Air Quality Statements or Smog and Air Health Advisory instances. Clean Air Hamilton notes that air pollution concentrations can be different at a local neighbourhood level and some areas of Hamilton can have higher air pollution concentrations than others across the City.

### **Hamilton Airshed Modelling System**

In 2018, the Hamilton Airshed Modelling System (HAMS) was completed by Golder Associates Ltd. and funded in partnership by the Hamilton Industrial Environmental Association and the City of Hamilton Public Health Services. HAMS was presented to Board of Health at its meeting on April 16, 2018 (BOH18016) and at the 2018 Upwind Downwind Conference. The successful completion of HAMS accomplishes one of the main goals established by Clean Air Hamilton’s Air Quality Task Force Action Plan from 2013 (BOH13029).

HAMS is built on current science and uses local and transboundary emissions data, combined with meteorological modelling to establish a model of the local airshed down to a grid of 1.33km by 1.33km sections. Emission inventory sources included industrial, commercial, residential, on-road, non-road and biogenic/agricultural.

HAMS concluded that:

- Transportation related activities are significant contributors to air quality levels;

- Local industrial activities contribute less than 20% to air quality in the airshed except for Benzo[a]pyrene which is higher;
- Local industry and non-road sources contribute about 15% to SO<sub>2</sub> levels;
- ~75% of PM<sub>2.5</sub> contributions are from transboundary sources outside of Hamilton;
- Transportation sources have the highest contribution of NO<sub>2</sub>; and
- Source contribution varies seasonally with higher transboundary contribution in winter and more local source contribution in the summer.

### **Hamilton Airshed Modelling System Sub-Regional Analysis**

HAMS was used to provide air quality information in specific domain areas of Hamilton via a sub-regional analysis model. The information was presented to Clean Air Hamilton's Air Quality Task Force in the Fall of 2018. The sub-regional analysis divides the City into five domain areas: Industrial Core (IC), West Lower (WL), East Lower (EL), West Upper (WU), and East Upper (EU). Domain area source contributions were further analysed by industrial, on-road, non-road, transboundary and other.

The sub-regional analysis assisted Clean Air Hamilton's Air Quality Task Force to set three overarching priorities to guide future actions and they included:

1. Education and outreach;
2. Air quality monitoring; and
3. HAMS updating consistent with the best available data/evidence.

Clean Air Hamilton and the City of Hamilton continue to work together with Golder Associates Ltd. to create methodology to assess health impacts of air quality in Hamilton.

Further findings from the sub-regional analysis can be found in Appendix "C" to Report BOH19039.

### **2018 Upwind Downwind "Hands On Hamilton: Our Air Quality" Conference and Clean Air Fair**

The Upwind Downwind conference is a bi-annual two-day event hosted by Clean Air Hamilton and members of Clean Air Hamilton. The event opened with a Clean Air Fair, a free event for the general public, on Sunday, March 4, 2018 at the Cotton Factory in Hamilton. The event was hosted by the Hamilton Industrial Environmental Association and was comprised of exhibitors focusing on Air Quality and Health within Hamilton.

The Upwind Downwind conference was held on Monday, March 5, 2019 at the Sheraton Hotel in Hamilton. The conference had a total of 98 participants. Speakers represented various levels of government, academia, Public Health Ontario and the Sarnia-Lambton Environmental Association. Presentations and discussions involved topics such as the Hamilton's Airshed Modelling System, MECP's cumulative emissions modelling, Public

Health Ontario's Environmental Burden of Health report, University of Toronto's research on air quality around school drop-off locations, transboundary emissions and emerging provincial government regulations.

### **Hamilton Clean Air Summit 2018**

On September 14, 2018, the half day Hamilton Air Summit was hosted in the City of Hamilton Council Chambers. The event was moderated by Dr. Denis Corr, former Chair of Clean Air Hamilton, and panelists included Clean Air Hamilton members, and representatives from the office of the Environmental Commissioner of Ontario and Golder Associates Ltd.

Presentations were made on air quality public engagement, the Hamilton Airshed Modelling System, 2016 ambient air quality trends and comparisons, risk communication, the air quality health index and air zones. Panel discussions followed the presentations regarding cumulative effects, emerging provincial standards and fine particulate matter.

### **Clean Air Hamilton Programs 2018**

#### **A) Fresh Air For Kids:**

In 2018, Green Venture and Corr Research teamed up to provide the Fresh Air for Kids program to five Hamilton elementary schools. The focus of the project is to educate students, teachers and the public about air quality around schools and the impact of engine idling. The program was delivered to Franklin Road, Ancaster Meadows, Prince of Wales, and George L. Armstrong Public Elementary Schools and St. Marguerite D'Youville Catholic Elementary School. The program included classroom work, in-the-field air monitoring and anti-idling awareness campaigns and blitzes.

Students were educated on the importance of air quality and the Air Quality Health Index. They also gained an awareness of how their actions can impact and improve the air in their neighbourhoods. Students measured fine particulate matter (PM<sub>2.5</sub> and PM<sub>10</sub>) in their neighbourhoods. The MECP Mobile Air Monitoring van was also used to monitor air quality near the schools. This data was developed into air quality maps which students used to decide on their best ways to travel to and from their school.

In addition to the Fresh Air For Kids program, three of the participating five schools also participated in the Enhanced Fresh Air For Kids program which included anti-idling campaigns and blitzes. The program included anti-idling education where Green Venture led classrooms in the development of posters, pamphlets, key chains and other advertising material. Audits of idling vehicles were conducted before and after the anti-idling campaigns to measure the success of the program.

The initial audits took place at the beginning of the program in the Fall and follow-up audits were conducted the following Spring after the campaign was complete.

**B) Friendly Streets Hamilton:**

Friendly Streets Hamilton is a collaborative initiative between Cycle Hamilton and Environment Hamilton. The program encourages active, safe travel and aims to secure safer streets. The program piloted in 2017 with great success. In 2018, the program received Clean Air Hamilton funding to combine street-level air quality monitoring with their street audits.

The audits engaged 65 residents in the Beasley and Gibson-Landsdale neighbourhoods who measured PM<sub>2.5</sub> levels using Dylos air quality monitors along arterial roads and residential streets. The collected data showed that PM<sub>2.5</sub> levels were higher along arterial roads and that citizens should consider using residential streets when using active transportation.

The program identified the top three concerns related to air quality in the Beasley area to be:

1. Improving localized air quality;
2. Industrial trucks shortcutting through the downtown core; and
3. Enhancing tree canopy along arterial roads to improve shade and air quality.

Friendly Streets Hamilton partnered with the MacChangers program at McMaster University to increase engagement with students and is acting in a mentorship capacity for projects involving green transportation and truck routes.

**C) Bus Brains:**

The Bus Brains project by Green Venture aimed to increase uptake in electric school buses by testing air quality on school and HSR buses. In 2018, Green Venture worked with Fessenden Public and St. Marguerite D'Youville Catholic Elementary schools to collect air quality data from regular school buses, and Delta Public Secondary School to collect air quality data from Hamilton Street Railway buses. Students who do not take the bus were given the opportunity to use the air quality monitors to measure levels in their school building.

The main goals of the project were to teach students about air quality, how it can be affected by temporary events, the potential impacts to environmental and human health, to gather baseline data about air quality on school buses and to provide students with real-world experience gathering data in a manner consistent with standard quantitative research techniques.

Data was collected over a two-week period using Dylos air quality monitors and sent to Dr. Matthew Adams with the University of Toronto for future research and conclusions.

The initial data was discussed as a class and led by Green Venture. In total, 120 students were directly involved in the monitoring.

### **Air Quality Programs in 2019**

Clean Air Hamilton identified three programs to improve air quality in 2019, with funding approved by the Board of Health (BOH19021):

1. Cycle Hamilton Coalition Inc. Friendly Streets Hamilton (\$12,000);
2. Green Venture and Corr Research Inc. Fresh Air for Kids (\$10,580); and,
3. Environment Hamilton and The Hamilton Naturalists Club – Trees Please (\$12,420).

The results of these programs will be reported in the Clean Air Hamilton 2019 Air Quality Progress Report and presented to the Board of Health in 2020.

### **Future Actions**

There has been substantial improvement in Hamilton's air quality since the 1970s; however, air pollution continues to create adverse health impacts to Hamilton residents. Continued, concerted actions are imperative to further improve air quality in the City of Hamilton. Collaboration from individuals, organizations, industries, the City of Hamilton and other levels of government are required to reach our goals. In the future, Clean Air Hamilton will:

- Continue to support and undertake all the recommendations of the Air Quality Task Force (BOH13029) and BOH report (BOH18016) in the areas of air modelling and monitoring, planning education and outreach, green infrastructure and updating of municipal policies that encourage and facilitates behavioural change to active and sustainable transportation and alternative forms of renewable and efficient energy for buildings;
- Continue to support and encourage Hamiltonians to reduce their transportation emissions through the use of alternatives including: public transit, bicycles, walking, hybrid or electric vehicles, etc. and support policies such as complete streets and transportation demand management; and,
- Encourage the continued efforts of the MECP and industry to reduce air borne contaminants in the City of Hamilton and the Province of Ontario.

**APPENDICES AND SCHEDULES ATTACHED**

Appendix "A" to Report BOH19039:	Clean Air Hamilton 2018 Air Quality Progress Report
Appendix "B" to Report BOH19039:	2018 Hamilton's Air Quality Trends
Appendix "C" to Report BOH19039:	Hamilton Airshed Modelling System Sub-Regional Analysis

**References**

<sup>1</sup> Government of Ontario, Ministry of the Environment, Conservation and Parks (2017). What is the Air Quality Health Index? Retrieved from: ([http://www.airqualityontario.com/science/aqhi\\_description.php](http://www.airqualityontario.com/science/aqhi_description.php)).

<sup>2</sup>Government of Ontario. (2017). Environmental Registry. Retrieved from: (<https://www.ebr.gov.on.ca/ERS-WEB-External/displaynoticecontent.do?noticeId=MTMzODAx&statusId=MjA1MDU4>