CleanAir HAMILTON

Clean Air Hamilton

2021 Air Quality Progress Report

March 2023

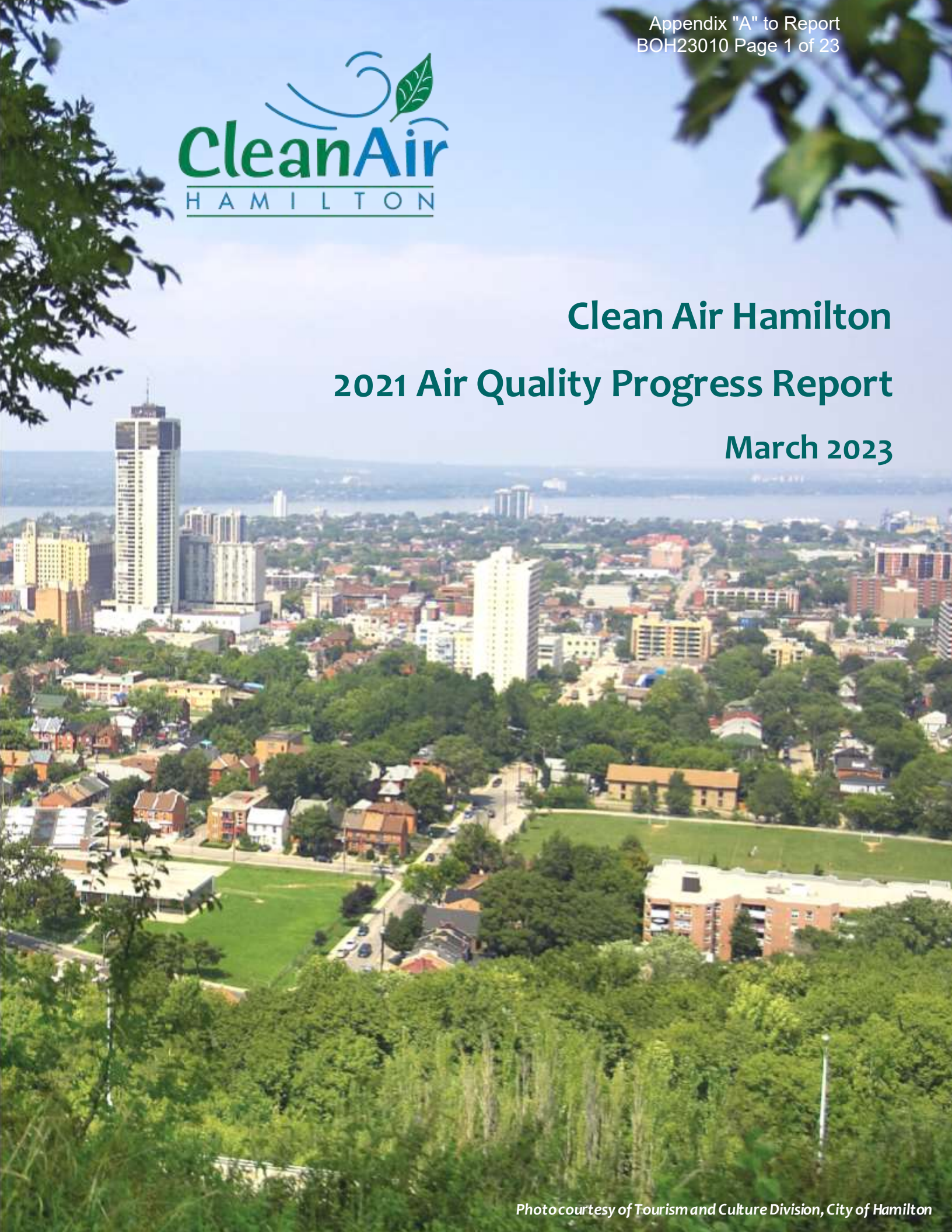

Photo courtesy of Tourism and Culture Division, City of Hamilton

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Top Row (L to R): Jahanvi Desai, Bruce Newbold (Chair), Andrew Sebestyen, Nico Strabac, Barry Duffey
Second Row (L to R): Stephen Burt, Denis Corr, Trevor Imhoff, Dan Dobrin, Geoffrey Knapper
Middle Row (L to R): George McKibbon, Heidi Levitzky, John Lundrigan, Julie Wedzinga, Kerry LeClair
Fourth Row (L to R): Lubna Hussain, Mainul Husain, Lynda Lukasik, Mark Smithson, Megan Sutton
Bottom Row (L to R): Tiffany Singh, Spencer Skidmore, Timothy Hung, Stephanie Gasko, Abigail Amponsah

For the full list of Clean Air Hamilton members, please go to https://cleanairhamilton.ca/members/

Message from the Chair

I am pleased to provide the Clean Air Hamilton Annual Report for 2021, which provides annual air quality data, along with Clean Air Hamilton's on-going work to improve air quality in Hamilton.

For previous years' activities and reports, please go to http://www.cleanairhamilton.ca.

Clean Air Hamilton remained committed to improving Hamilton's air quality in 2021. Due to the on-going impact of the COVID-19 pandemic, meetings remained virtual and we worked to engage our membership.

Clean Air Hamilton is committed to improving the health and quality of life of citizens through communication, promoting realistic, science-based decision-making and sustainable practices. In 2021, Clean Air Hamilton held two noon-hour 'Lunch and Learns' that echoed the themes of the cancelled 2020 Upwind Downwind Conference. Recordings of the presentations are available on the Clean Air Hamilton website. Clean Air Hamilton also began to plan for the 2022 Upwind Downwind conference to be held June 16, 2022.

In addition, to formalize our commitment to equity, diversity and inclusion, Clean Air Hamilton created an Equity, Diversity and Inclusion policy in 2021. We also began to document the history of Clean Air Hamilton. More information on these initiatives is included in this report.

We continue to see improvements in Hamilton's air quality, but challenges remain, with several pollutants, including particulate matter and benzo (a)pyrene, trending in the wrong direction. At the same time, we are excited about de-carbonization initiatives within the City and Clean Air partners and look forward to the benefits of cleaner air in the future. Clean Air Hamilton will continue to work with our partners to understand these trends and work to address them. Together, we can ensure healthier air for all.

We thank the Healthy and Safe Communities Department and the City Council for their on-going support of Clean Air Hamilton and its special projects. Funding has allowed us to work closely with partner groups including Environment Hamilton and Green Venture and the University of Toronto on projects that have raised awareness among local citizens about air quality issues, as well as allowing us to work towards improving local air quality.

Together, Clean Air Hamilton and its various partners are working to reduce emissions as well as our personal exposures and live healthier lives. Clean Air Hamilton's special projects and this report help us to do that.

Bruce Newbold, Ph.D.
Chair, Clean Air Hamilton

Strategic Activities

Clean Air Hamilton is dedicated to improving air quality across the City of Hamilton. This will be accomplished through sound science-based decision making, using the most up-to-date information and tools available, such as the Hamilton Airshed Modelling System (HAMS). Clean Air Hamilton plans to focus on education and outreach, air quality monitoring and to continue to update the HAMS and identify major sources of pollution to prioritize action for maximum air quality improvement and exposure reduction. Clean Air Hamilton has identified the following issues for research, communication and program activities in collaboration with our partners.

Governance & Structure:

To remain a multi-stakeholder group dedicated to improving air quality by increasing public perception and expanding Clean Air Hamilton membership while providing communication and promotion of realistic, science-based decision making and sustainable practices.

Air Zone Management:

Comply with the Ministry of the Environment, Conservation and Parks (MECP) and Canadian Ambient Air Quality Standards. This will be done through implementation of a systems level approach and future advocacy towards an industrial mandatory monitoring regulation.

Transportation:

To encourage and facilitate more use of public and active transportation through commentary on transportation related matters, supporting educational programs and localized monitoring leading to detailed information to encourage changes in behaviour.

Air Monitoring:

To improve air monitoring activities across the City of Hamilton by providing support for additional portable air monitors and fixed air monitors that provide real-time monitoring for contaminants of concern in Hamilton.

Dust & $PM_{2.5}$ Mitigation:

Lower concentrations of Particulate Matter ($PM_{2.5}$) across the City of Hamilton below Canadian Ambient Air Quality Standards by effectively utilizing the airshed model to create partnerships and pollution inventory specific to street sweeper and dust mitigation programs.

2021 Meetings	2022Meetings
January 11, 2021	January 10, 2022
February 8, 2021	February 14, 2022
March 8, 2021	March 14, 2022
April 12, 2021	April 11, 2022
May 10, 2021	May 9, 2022
June 14, 2021	July 11, 2022
August 9, 2021	August 8, 2022
September 13, 2021	September 12, 2022
October 18, 2021	October 3, 2022
November 8, 2021	November 14, 2022
December 13, 2021	December 12, 2022

Clean Air Hamilton Meetings

Clean Air Hamilton meetings are usually held virtually on the second Monday of each month using Cisco WebEx in light of the COVID-19 pandemic.

Photo courtesy of Tourism and Culture Division, City of Hamilton

Equity, Diversity and Inclusion Policy

Clean Air Hamilton is committed to the principles of equity, diversity, and inclusion (EDI) in all aspects of our community organization and partnerships. We believe we are stronger when we not only celebrate our many differences, values and voices, but include them in practice. This means that our members will actively work to understand and remove barriers to equity and inclusion, be they systematic, physical, or otherwise. In addition, we are committed to ongoing learning and development in the areas of EDI so that we can apply an "equity lens" in all areas of our activities. Further, Clean Air Hamilton will adhere to the Ontario Human Rights Code and the Accessibility for Ontarians for Disabilities Act at all times.

In 2021, Clean Air Hamilton developed and implemented the Equity, Diversity and Inclusion Policy.

The purpose of this policy is to outline our principles and expectations when it comes to EDI. At Clean Air Hamilton we strive to ensure that all people are treated equally and to be a culturally competent community organization. We value diversity and will continue to actively work to build a diverse membership which is reflective of our community and inclusive of persons of various groups in terms of age, sex, race, ethnicity, physical and intellectual ability, religion, sexual orientation, educational background and expertise.

We believe in equal treatment and opportunity for all of our members. We will ensure the right to equal treatment is upheld in participation in meetings and activities, opportunities for advocacy, enabling contributions and ideas to be fully heard and considered and assessment of grant applications. Discrimination will not be tolerated.

Every person who participates at Clean Air Hamilton has a responsibility to treat others with dignity and respect and make sure all people feel included and have access to the same opportunities to contribute. We will actively strive to create an environment where all persons are able to share their ideas, beliefs and skills.

The History of Clean Air Hamilton

In 1999 Clean Air Hamilton and Vision 2020 received United Nations Environment Program awards for best practices in municipal environment programs. In 2000, the Region of Hamilton Wentworth and its member municipalities merged to form the City of Hamilton and Clean Air Hamilton has continued to this day.

Clean Air Hamilton is drafting a paper on Clean Air Hamilton's 25 year old history. It describes what made and continues to make Clean Air Hamilton successful. It concludes with our thoughts on the challenges the next 25 years may hold for air quality in the City of Hamilton.

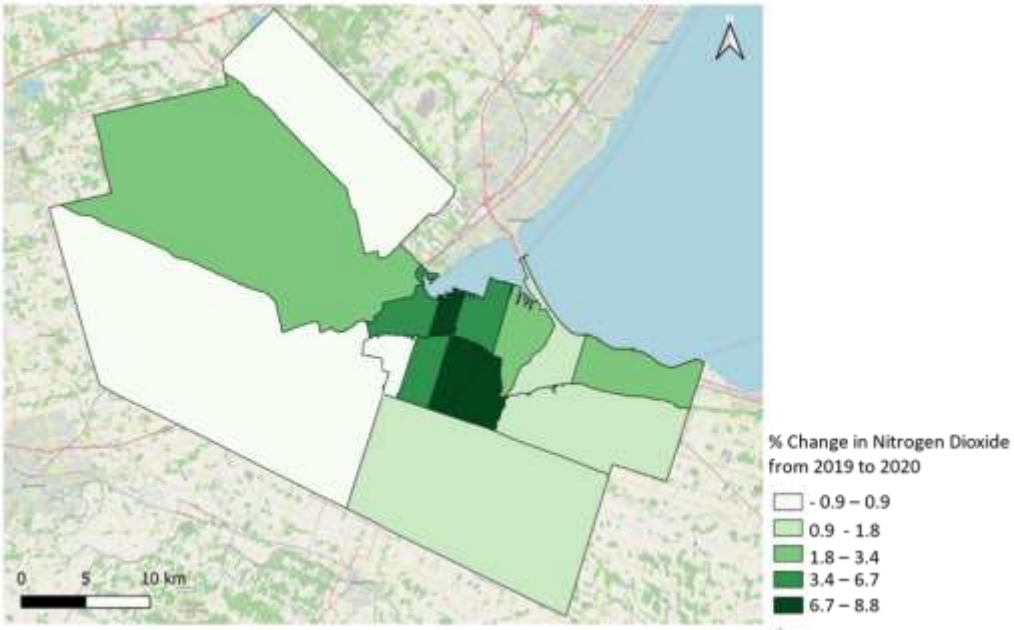
Clean Air Hamilton 2021 Funded Projects

Clean Air Hamilton is an innovative, multi-stakeholder agent of change dedicated to improving air quality in our community. In 2021, Hamilton Public Health Services provided $12,400 to fund projects resulting in air quality improvement and awareness.

These projects have reached hundreds of citizens and contribute to improving Hamilton's air quality through monitoring, promotion and spreading awareness. Clean Air Hamilton is proud to support the 2021 funded projects.

Modelling Local NO_2 Across Hamilton on a Ward Level During the COVID-19 Pandemic

Dr. Adams and Priya Patel, P.Eng completed the analysis "Modelling Local NO_2 Across Hamilton on a Ward Level During the COVID-19 Pandemic". This study was conducted to understand changes in NO_2 concentrations on a ward level from 2019 to 2020. Nitrogen dioxide was selected due to its close relationship to vehicular and industrial emissions, short atmospheric lifetime and the negative health impacts of exposure. This study found the highest concentrations of NO_2 in the downtown, centrally located wards of Hamilton. These wards have the highest densities of residential, industrial and road land uses, which likely contribute to the high NO_2 concentrations. During the 2020 COVID-19 state of emergency, the central wards had the greatest reduction in NO_2. Overall, the research team is hopeful that this study will allow policymakers, residents and other stakeholders to gain a better understanding of NO_2 air pollution across the city and potentially inform urban design decisions. Furthermore, we hope this will provide an example of how air quality may improve as more mitigation and adaptation initiatives are implemented to reduce the impact of climate change.



Lockdown 2, *May 20th – June 19th*, (negative values indicate an increase in NO_2 concentration)

Clean Air Hamilton 2021 Funded Projects Cont'd...

Fresh Air for Kids

The Fresh Air For Kids (FAFK) program had a successful 2021-2022 school year with Green Venture and Corr Research delivering the program to 14 classes ranging from grade one through eight, totalling 303 students and 15 teachers across five schools. The FAFK program consists of four components: air quality education, air quality monitoring, creating an action campaign and a wrap up celebration. During up to five visits with Green Venture team facilitators, students are introduced to the science of air pollution and its health effects and learn about tools and resources to measure air quality and then turn their knowledge into action to develop an air quality action project to make a difference in their school and community.

FAFK was delivered completely online to one school, in-person to two schools and in combination for the other two. Green Venture and Corr Research were able to stay consistent in the content of the program across delivery methods. Of the 303 students who participated in the program during the 2021-2022 school year, 162 submitted signed media consent forms and were able to complete our post program survey. In the post program survey, 100% of students reported that they or their family reduced car idling or use and 96% indicated that participating in FAFK increased their knowledge on how they can improve local air quality. All participating classes completed anti-idling education campaigns and brought the message to their broader school communities through actions such as posters, outdoor banners, videos, speeches, brochures and messages in their schools newsletters. Green Venture and Corr Research received positive feedback from students, teachers and parents alike.

Students indicated that they enjoyed all parts of the program but for the majority of students their favourite parts were the air quality monitoring walk and participating in and creating the materials for their local action campaigns.

Green Venture

Corr Research

Upwind Downwind Lunch & Learns

Due to the COVID-19 Pandemic, Clean Air Hamilton had to cancel the bi-annual 2020 Upwind Downwind Conference.

In place of the conference, Clean Air Hamilton held a series of Lunch and Learn sessions in 2020 and 2021.

In late 2021, Clean Air Hamilton members began to plan the 2022 Upwind Downwind Conference, Building Health Post-Carbon Cities.

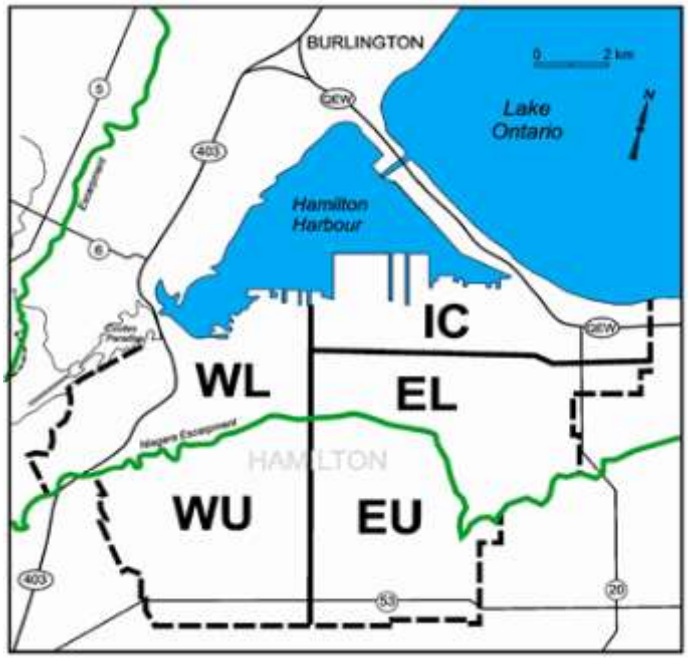
These Lunch and Learns allowed Clean Air Hamilton to educate the community about air quality issues in Hamilton while following Public Health guidance.

Video recordings can be viewed here:

https://cleanairhamilton.ca/upwind-downwind-lunch-n-learns/

In 2021, Clean Air Hamilton was joined by Dr Matthew Adams who presented and discussed "Air Pollution Sensors in Hamilton and How Can They Help?" The Lunch and Learn had more than 60 participants.

Dr. Janya Kelly of Golder Associates Ltd. also joined Clean Air Hamilton with updates *on* the *Hamilton Airshed Modelling System; Sub-Region Analysis.*

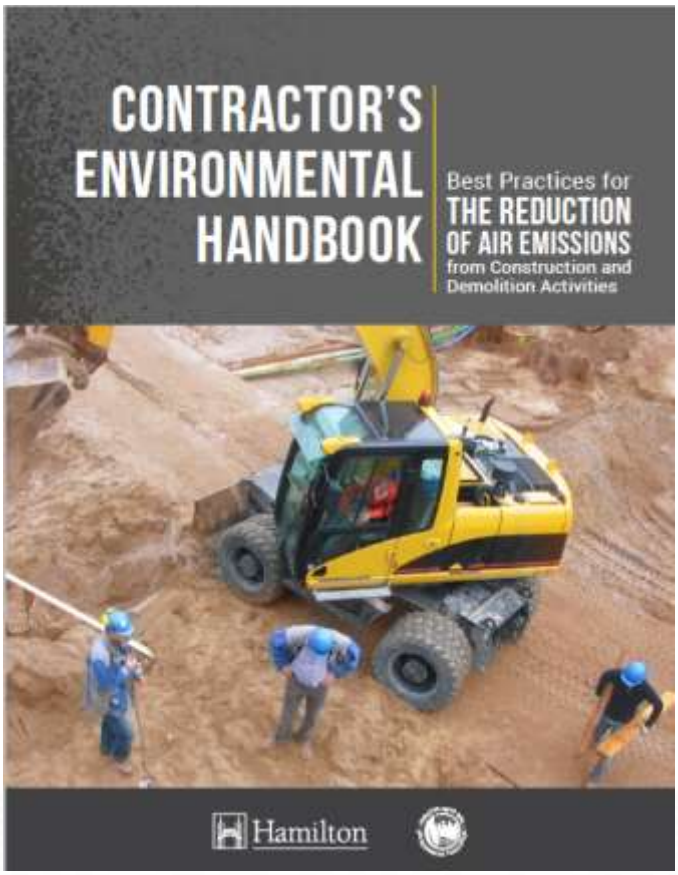


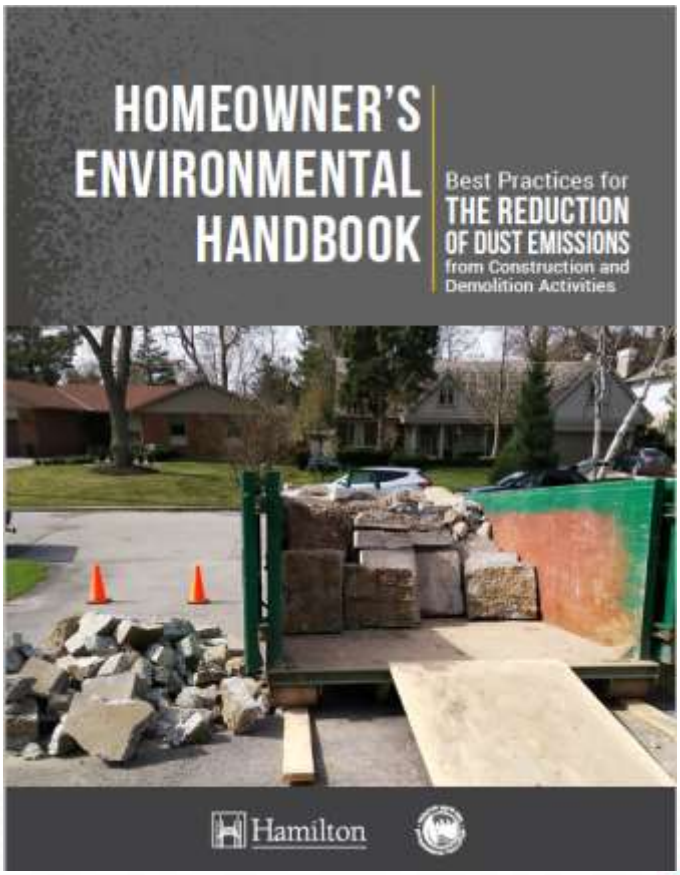
Dust Group Environmental Handbooks

There are significant health and environmental impacts associated with emissions of particulate matter (PM) and other criteria air contaminants. These emissions are often dispersed by construction and demolition projects. The Dust and Particulate Matter Working Group, a sub-committee of Clean Air Hamilton, has undertaken a number of initiatives over the last few years to attempt to address these issues.

In 2021, the Dust and Particulate Matter Woking Group distributed two handbooks on managing dust and particulate matter emissions for construction and demolition projects. The first handbook is directed towards contractors and is a comprehensive document describing many technical mitigation measures commonly applied on construction and demolition sites. The second is a smaller document meant for homeowners engaged in Do-It-Yourself construction or demolition projects and contains user-friendly directions on how to control emissions for the health of the homeowners and their neighbours.

The documents are available on the Clean Air Hamilton website (https://cleanairhamilton.ca/dust-abatement/).





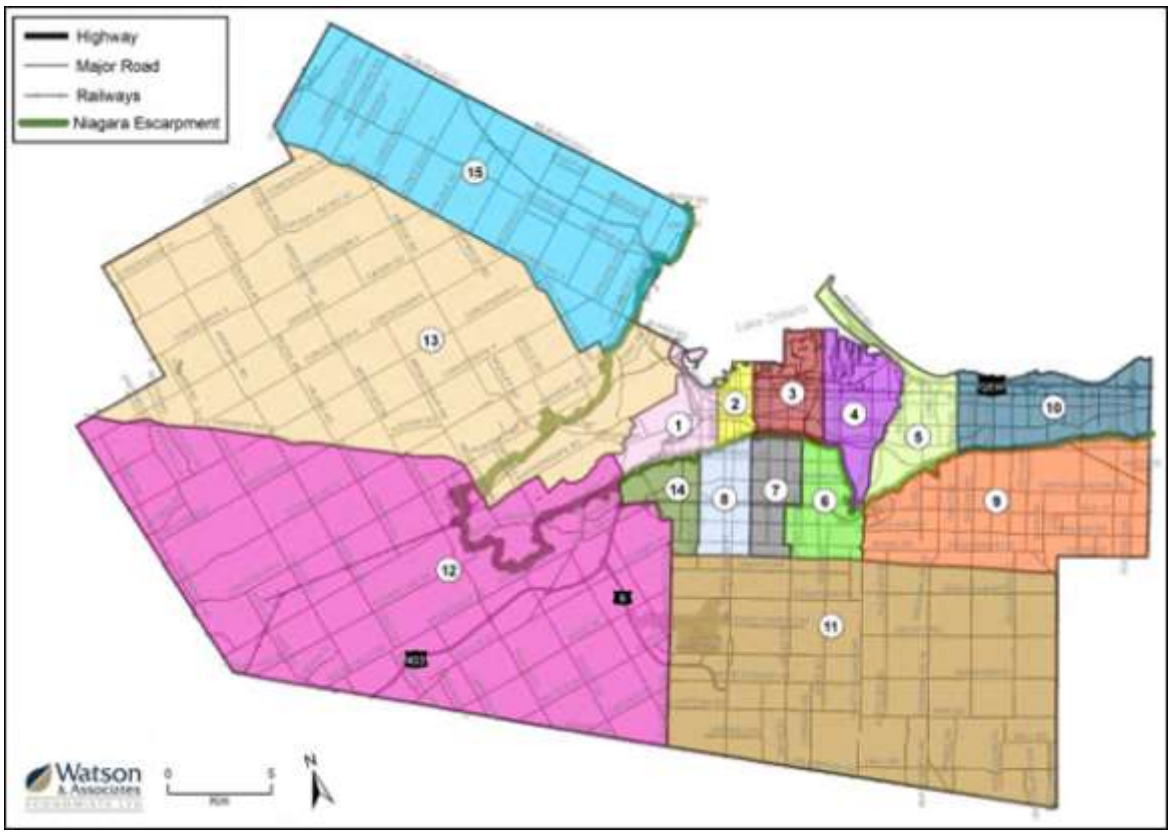
Hamilton's Ambient Air Quality Trends 2021

The City of Hamilton is a port city in Ontario. It is located 58 kilometres southwest of Toronto in the Greater Toronto and Hamilton Area (GTHA). As one of Canada's leading industrial and transportation hubs, Hamilton's industrial sector, including the iron and steel industry, accounts for major local and national Gross Domestic Product (GDP) and job creation.

The following section provides the ambient Air Quality Trends for the City of Hamilton for the year 2021. Through the completion of Hamilton's Airshed Modelling System (HAMS)[1], we are able to understand that a significant amount of transboundary (air emission sources outside of Hamilton) emissions contribute to local airshed pollution concentrations. For example, HAMS models that 91% of $PM_{2.5}$ concentrations come from transboundary sources. Local industrial, on-road and off-road transportation emissions continue to contribute to localized air pollution and downwind airsheds as well.

It is important that Hamilton continues to reduce local sources of emissions (including industrial, transportation and off-road sources), not only to improve local air quality, but also to be a good neighbour to reduce downwind transboundary emissions to other municipalities.

Clean Air Hamilton would like to sincerely thank the Ministry of Environment, Conservation and Parks (Hamilton Regional Office) for their support in providing air quality trends data.

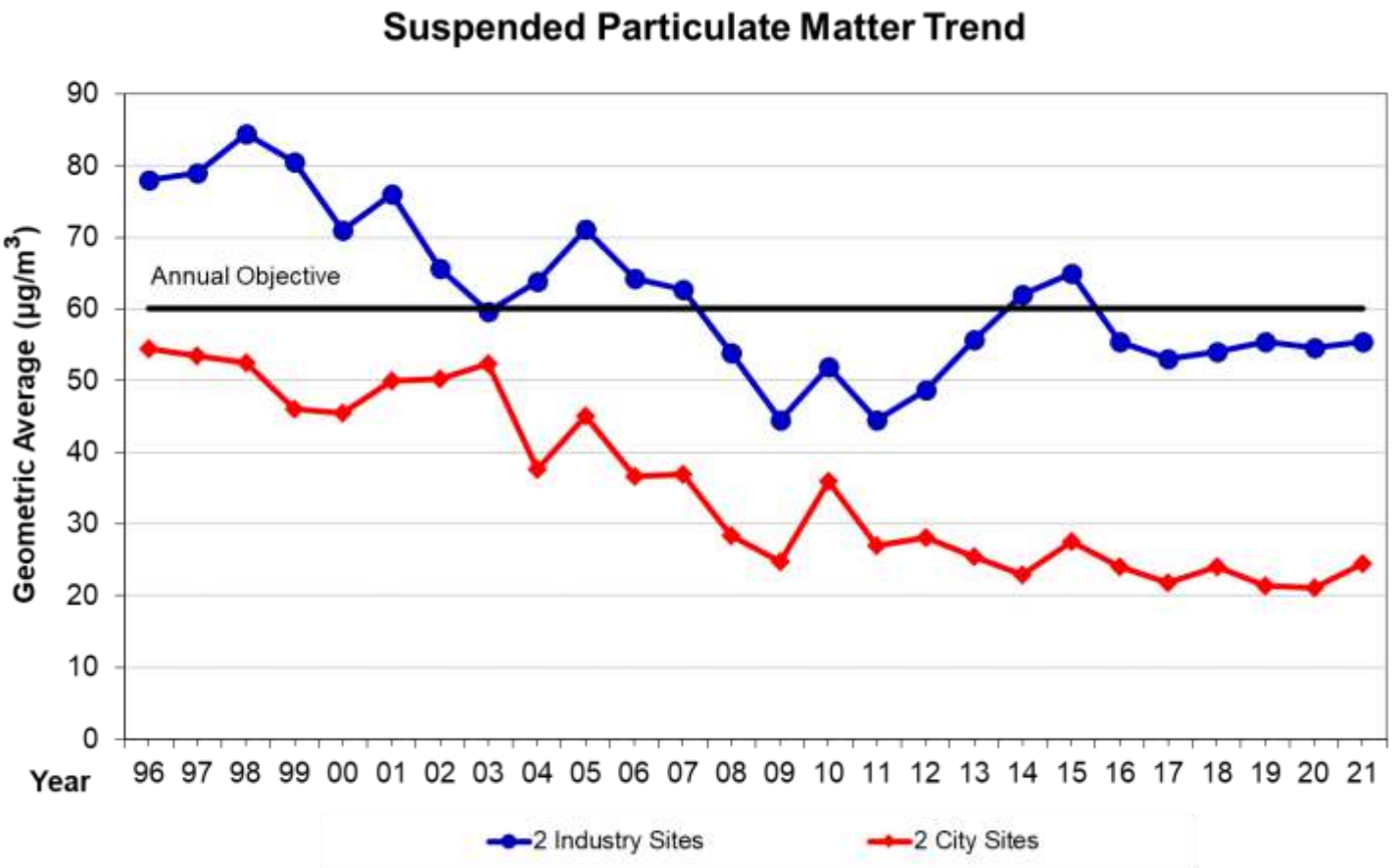


Particulate Material: Total Suspended Particulate (TSP)

Total suspended particulate (TSP) includes all particulate material with diameters less than about 45 micrometers (µm*). A substantial portion of TSP is composed of road dust, soil particles and emissions from industrial activities and transportation sources.

TSP averages have reduced at municipal and industrial sites since 1996. The 2021 concentrations at industrial sites are below the annual objective (AO). The AO is the desired concentration established by the MECP as documented in the Ontario Ambient Air Quality Criteria (AAQC).

Included in the TSP category are inhalable particulates (PM_{10}) and respirable particulates ($PM_{2.5}$).



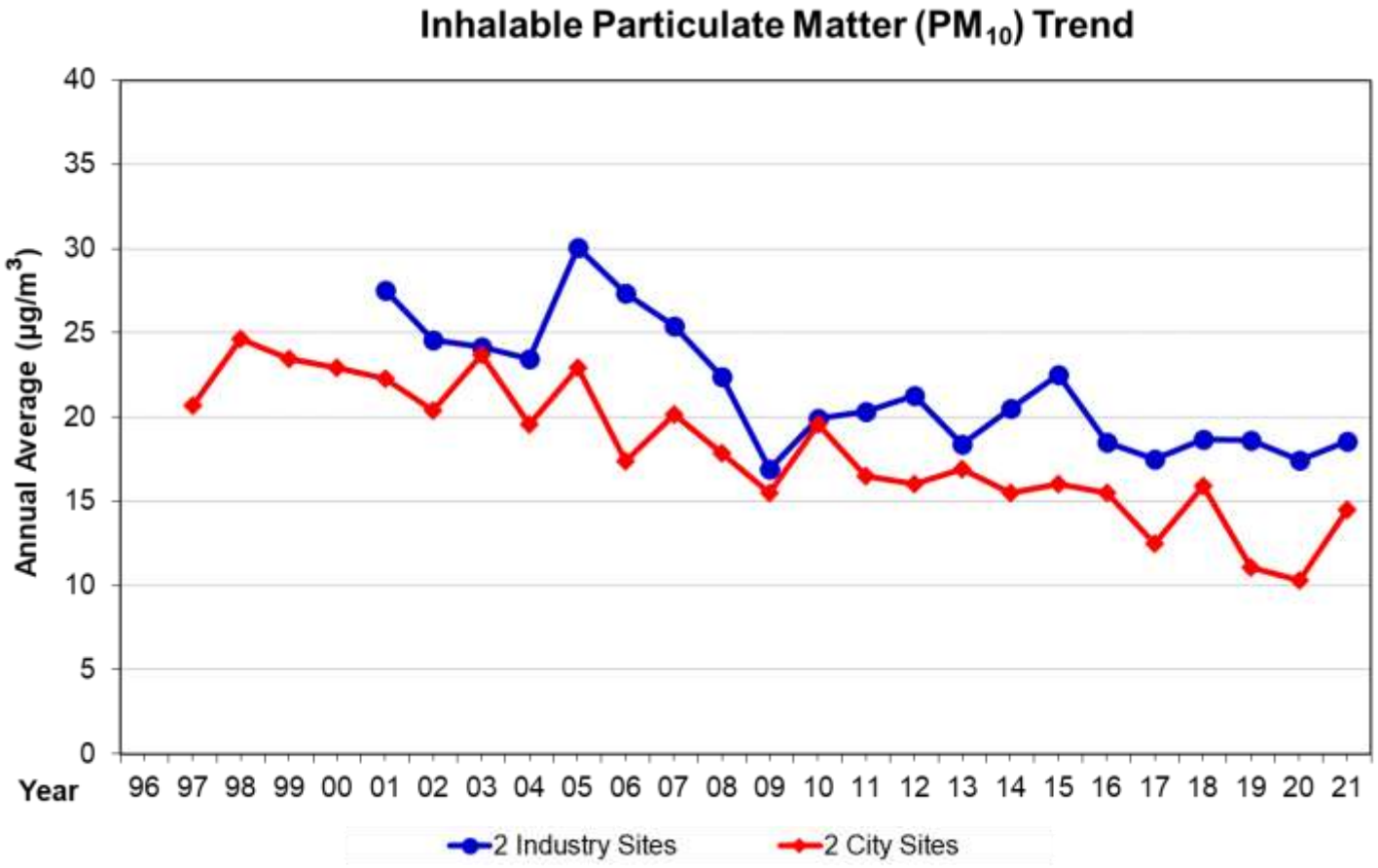
* 1 cm = 10,000 µm

Particulate Material: Inhalable Particulate Matter (PM_{10})

Inhalable particulate matter (PM_{10}) has a diameter of 10 µm* or less. PM_{10} makes up 40-50% of TSP in Hamilton.

PM_{10} is primarily derived from vehicle exhaust emissions, industrial stack and fugitive dusts (non-stack) and the finer fraction of re-entrained road dust.

PM_{10} at City and Industry sites has decreased over the past two decades. This is likely a combination of better performance of vehicle fleets, improved process emissions, increased management of dust track-out by industries and the use of better street sweepers and street sweeping practices by the city. From the Hamilton Airshed Modeling System (HAMS)[1], transboundary PM_{10} levels are primarily from transportation related emissions and they amount to over 90% of the total PM_{10} emissions.



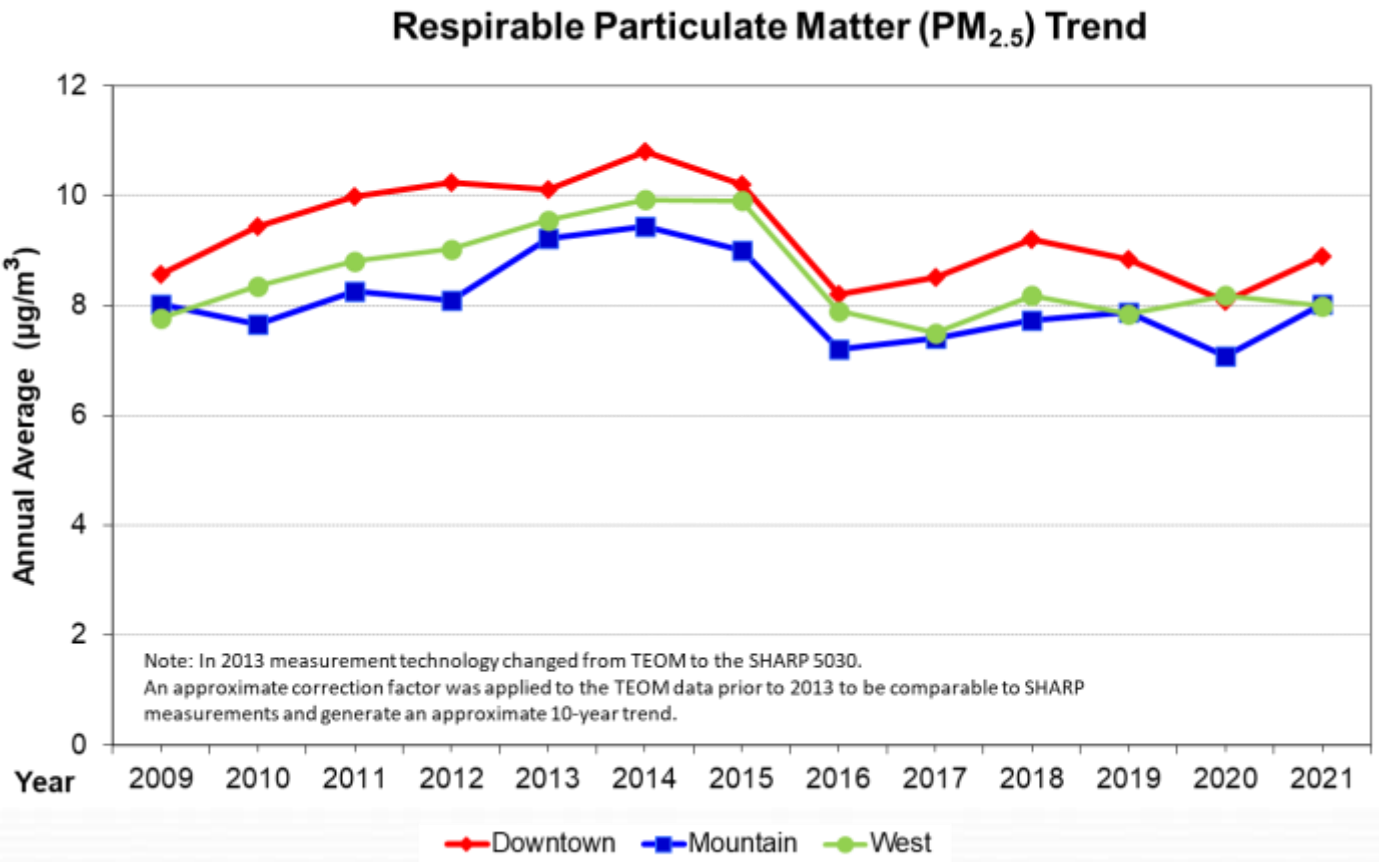
* 1 cm = 10,000 µm

Particulate Material: Respirable Particulate Matter ($PM_{2.5}$)

The Ontario government started measuring $PM_{2.5}$ across Ontario in 1999. $PM_{2.5}$ makes up about 60% of PM_{10} and in most cities is derived from residential and transportation sectors. In Hamilton, there would also be some industrial contributions. Another significant portion of $PM_{2.5}$ is regionally generated emissions that can travel hundreds of kilometers via wind from where they originated. These transboundary flows play a significant role in Ontario's air quality and according to HAMS[1], transboundary emissions in Hamilton for $PM_{2.5}$ amounted to 91%.

Exposure to fine particulate matter has been linked to respiratory, cardiovascular and other health impacts in humans[2] as well as hospital admissions and several serious health effects, including premature death[3].

Measurement technology for $PM_{2.5}$ changed in 2013. A correction factor was applied to concentrations reported prior to 2013 in order to enable a more representative comparison to concentrations measured with the new technology.



Ground Level Ozone (O_3)

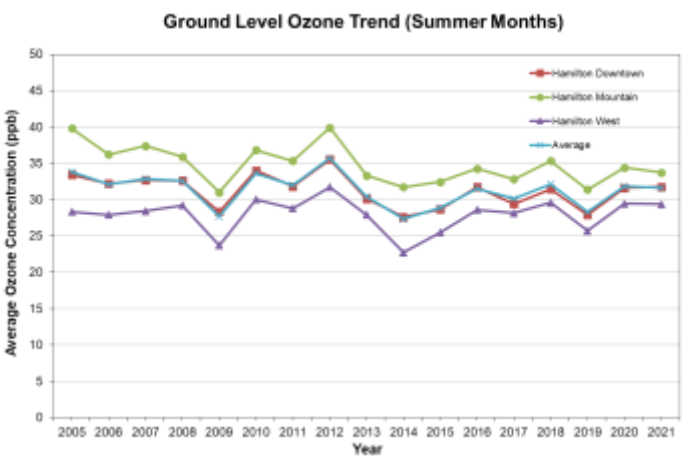
Ground-level ozone is a colourless, odourless gas not emitted directly into the atmosphere. It is a result of photochemical reactions between oxides of Nitrogen (NO_x) and Volatile Organic Compounds (VOCs) in the presence of sunlight and is a major component of smog[2]. This is why O_3 concentrations are higher during summer months, generally from May to September.

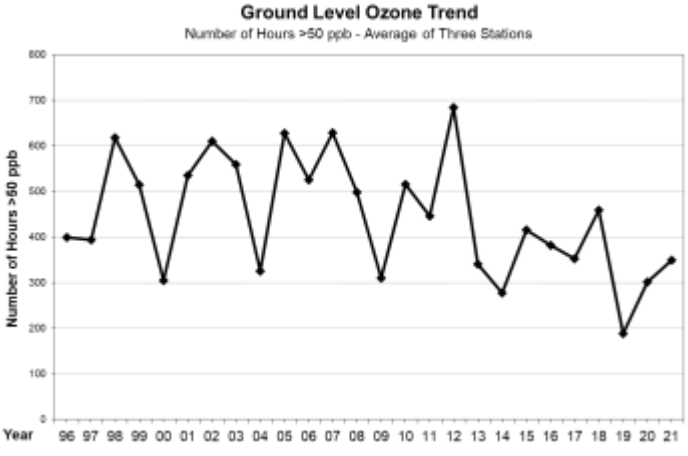
Major sources of O_3 include (but are not limited to):

- coal-fired power plants
- vehicles
- urban activities

The trend in O_3 shows that concentrations have been highly variable in the past 20+ years and showed a marked increase in 2020 for almost all seven cities (see page 19). O_3 is a main contributor for Hamilton's Special Air Health Advisories (SAHA) and Special Air Quality Statements (SAQS) and unlike other pollutants, the majority of O_3 comes from precursors emitted by sources upwind of Hamilton such as the Midwest Ohio Valley region. Sources from Hamilton contributing to O_3 pollution will affect areas downwind of Hamilton which makes lowering O_3 very important.

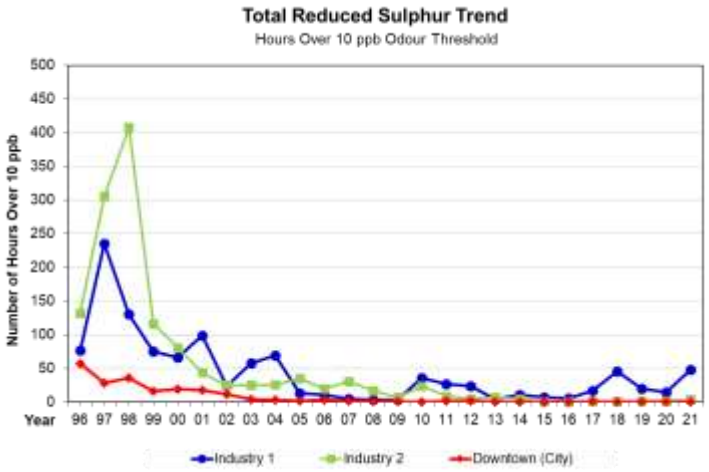
The number of hourly exceedances greater than 50 ppb increased in 2021 in comparison to 2020. The Government of Ontario has been dedicated to lowering O_3 precursor emissions by eliminating all coal fired power plants in Ontario, the last having been decommissioned in 2014.





Total Reduced Sulphur (TRS)

Total Reduced Sulphur (TRS) is a measure of the volatile, sulphur-containing compounds that are the basis of many of the odour complaints related to steel mill operations. TRS compounds are not normally considered a health hazard. An odour threshold has been set at 10 parts per billion (ppb) TRS because at this level about one-half of any group of people can detect an odour similar to the smell of rotten eggs.

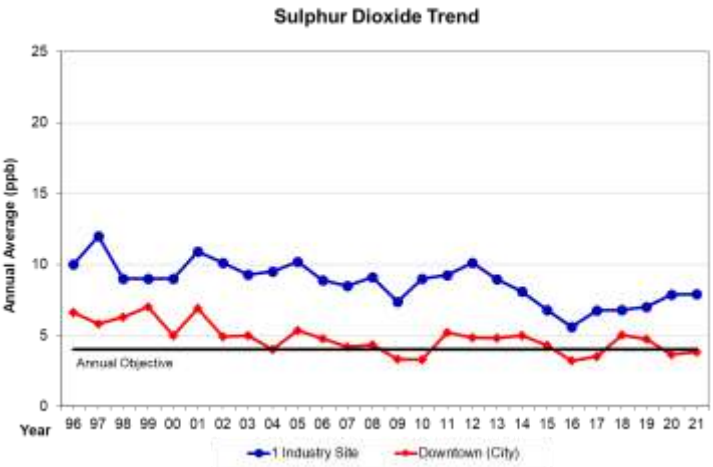


The number of hours per year in which measurements exceeded 10 ppb have reduced significantly since the mid-1990s. This is due to significant changes in the management and operation of the coke ovens, blast furnaces and slag quenching operations associated with steel mill operations.

Sulphur Dioxide (SO_2)

Sulphur Dioxide (SO_2), a by-product of industrial activity, is not only a respiratory irritant but is also converted in the atmosphere over several hours to sulphuric acid ($H2SO_4$), which is then converted to sulphate particles. These particles are acidic in nature and high levels of exposure can cause respiratory illness[4].

Significant reductions in air levels of SO_2 were made in the 1970s and 1980s. There has been a gradual decline in air levels of SO_2 since 1998. However, concentrations since 2016 have shown a slight increase for Industrial Site 1.

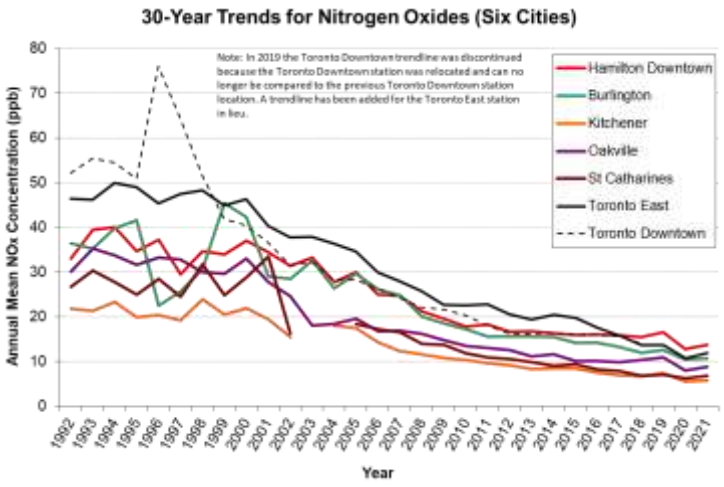


Transboundary emissions represent about 69% of the annual contribution to SO_2 levels within Hamilton of which 97% are from industrial sources[1].

Nitrogen Oxides (NO_x)

Nitrogen Oxides (NO_x) are the collective term and combined total of Nitrogen Monoxide (NO) and Nitrogen Dioxide (NO_2). NO and NO_2 are routinely measured and their sum reported as NO_x to reflect the presence of both species in urban areas.

This chart displays the steadily decreasing trend of NO_x in six cities in Ontario, including Hamilton. Since the 1990s downtown Toronto has seen reductions in NO_x levels of approximately 60%. Hamilton's NO_x levels have decreased by approximately 46% since 1990.

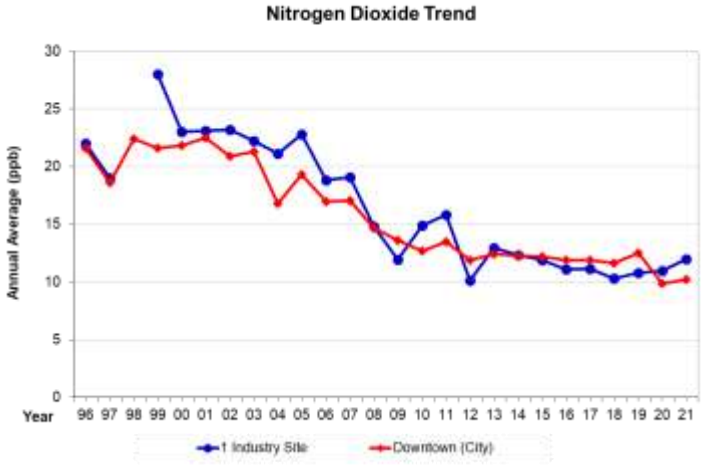


Overall, the decrease in NO_x levels is a reflection of improvements in emission performance of the vehicle fleets in Ontario over the past decade as well as industrial process improvements.

Nitrogen Dioxide (NO_2)

NO_2 is formed in the atmosphere from NO which is produced during combustion of fuels (i.e. gasoline, diesel, coal, wood, oil and natural gas). The leading sectors producing these emissions are transportation and industry. The level of vehicle use across Hamilton has increased slightly during the past decade, however overall NO_2 levels have decreased most likely due to improved engine technologies.

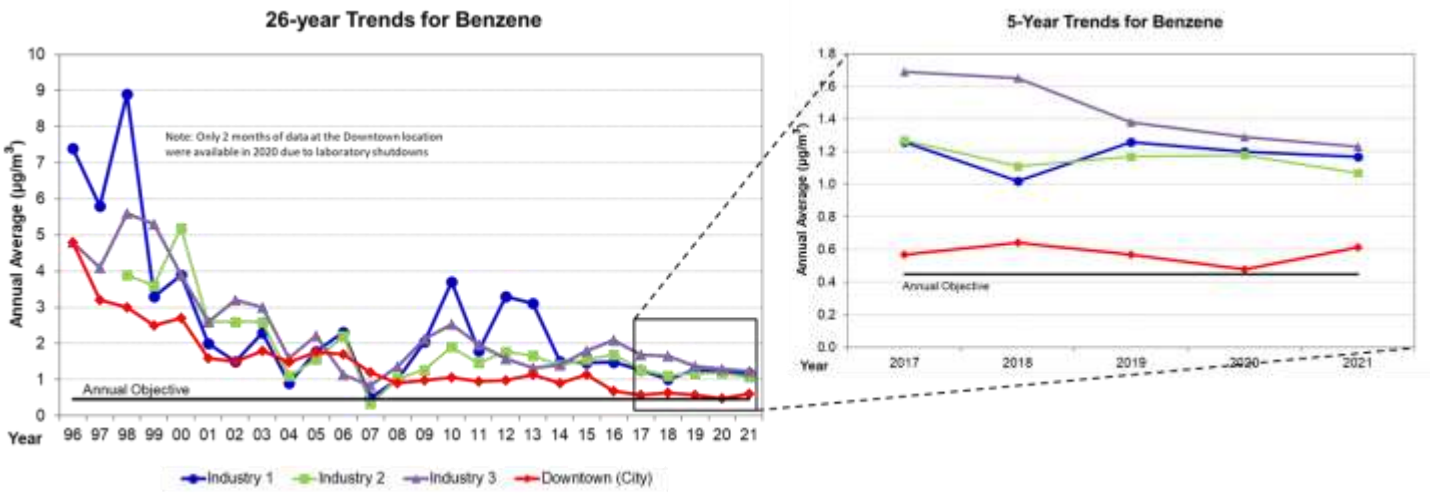
Based on HAMS[1], local emissions are highest for on-road transport at 34% and transboundary emissions contribute to 44% of NO_2 sources in Hamilton.



Benzene

Benzene is a carcinogenic (cancer causing) volatile organic compound (VOC) that is emitted from some operations within the steel industry, specifically coke ovens and coke oven by-product plant operations. Gasoline can also be up to 5% benzene. Vapours containing benzene may be released during pumping at gasoline stations.

Air levels of benzene have reduced dramatically since the 1990s, due to significant upgrading of coking plant operations, improved operating procedures and improved control of release of benzene vapours from the coke by-products. Transboundary benzene levels amount to 70% (HAMS[1]) and more work remains to be done to achieve the Annual Objective and reduce exposures to benzene from all sources.

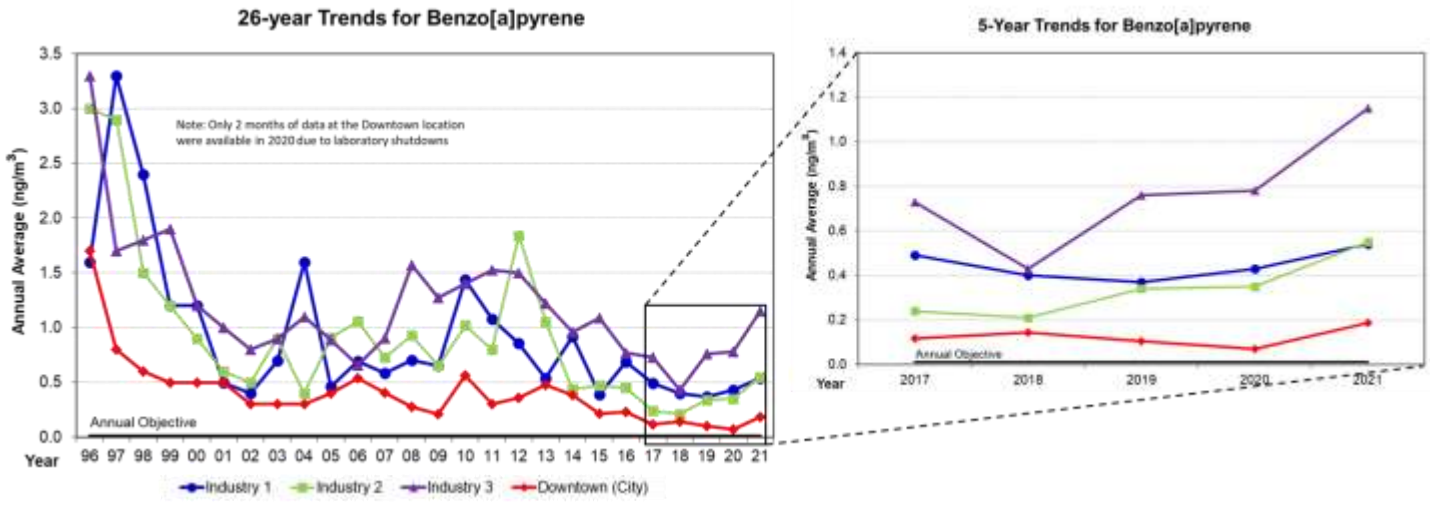


Please note that only two months of data at the Downtown location where available for benzene in 2020 due to laboratory shutdowns.

Benzo[a]pyrene

Benzo[a]pyrene (BaP) is also a carcinogen. BaP is a member of a larger class of chemical compounds called polycyclic aromatic hydrocarbons (PAHs), which are emitted when carbon-based fuels such as coke, oil, wood, coal and diesel fuel are burned. BaP generating activities include coke oven operations within the steel industry, incomplete combustion producing smoke such as vehicle traffic, burning of refuse, cooking, tobacco smoking and wood burning.

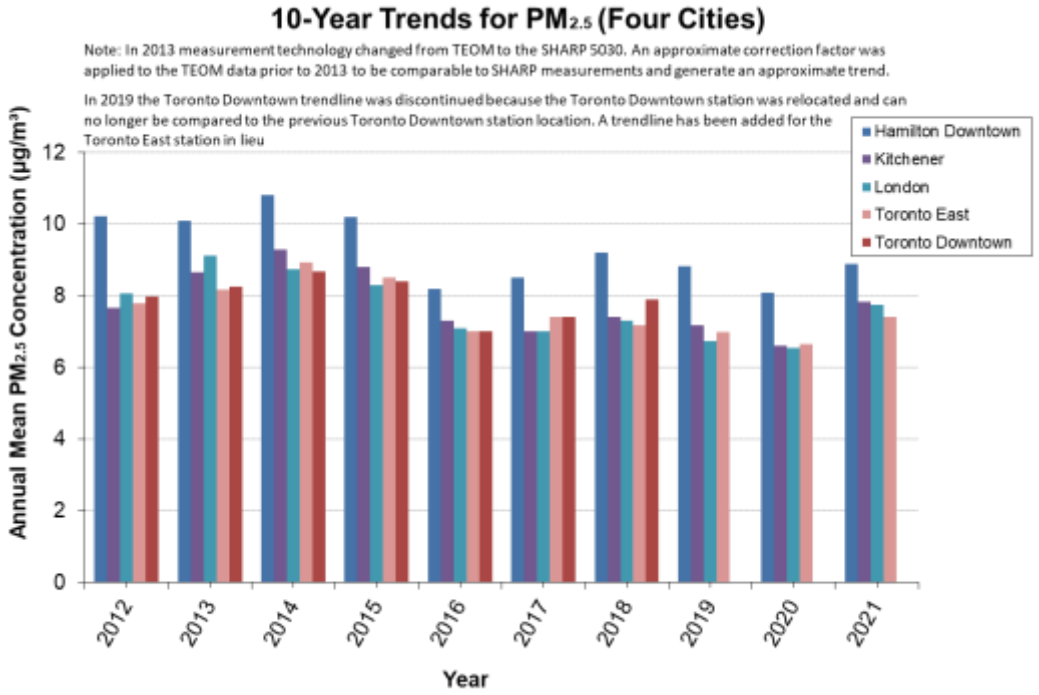
There have been significant decreases in BaP levels since the late 1990s and further decreases since 2013 with increases at Industrial sites since 2018. Source apportionment for BaP from HAMS[1] shows that industrial sources amount to 47% emissions, while transboundary emissions contribute to 29% of BaP emissions in the City of Hamilton.

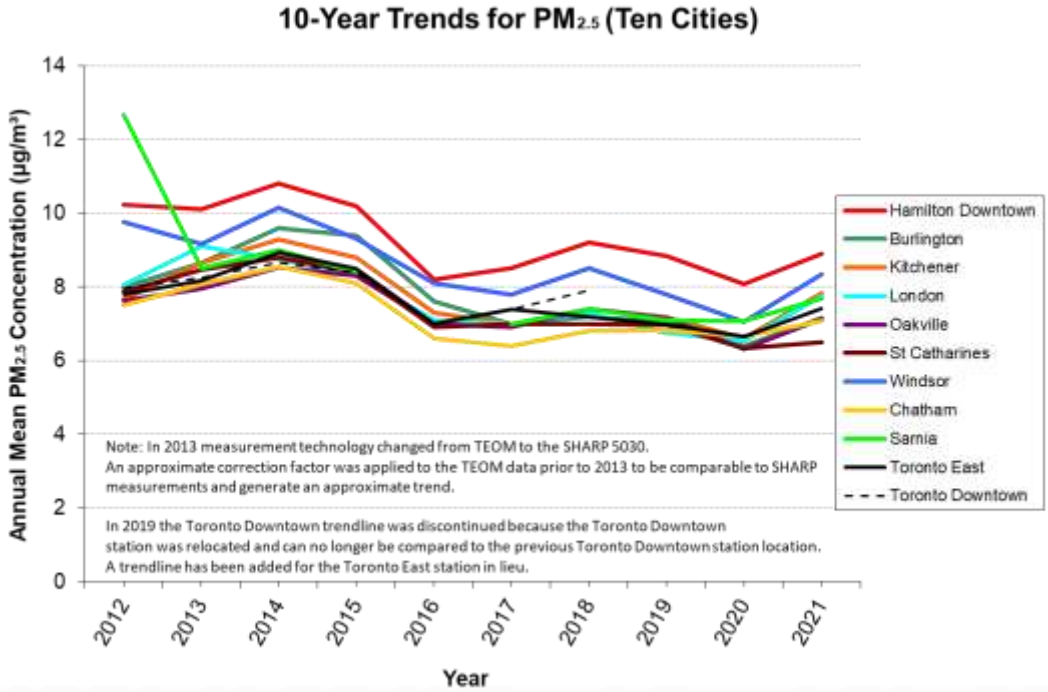


Please note that only two months of data at the Downtown location where available for benzo[a]pyrene in 2020 due to laboratory shutdowns.

Multi-City Air Quality Comparisons

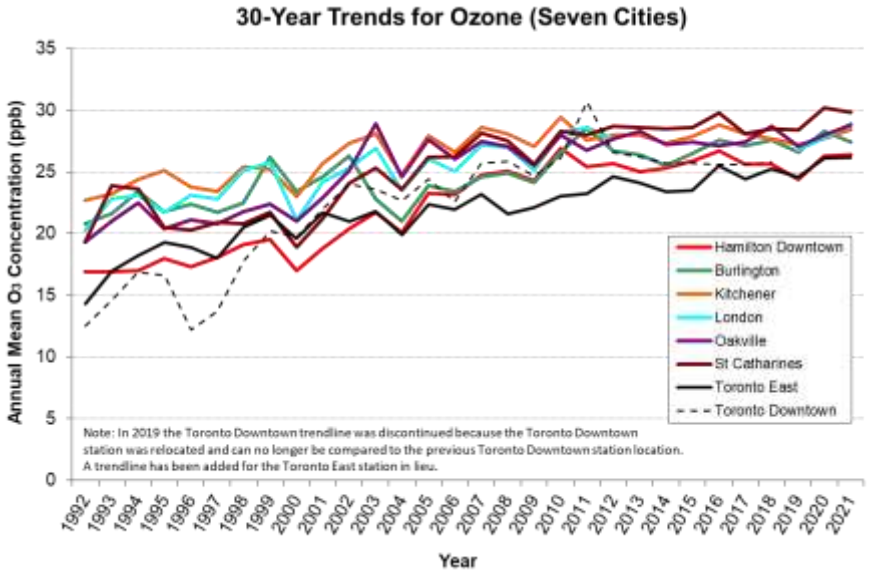
Particulate Material: Respirable Particulate Matter ($PM_{2.5}$)





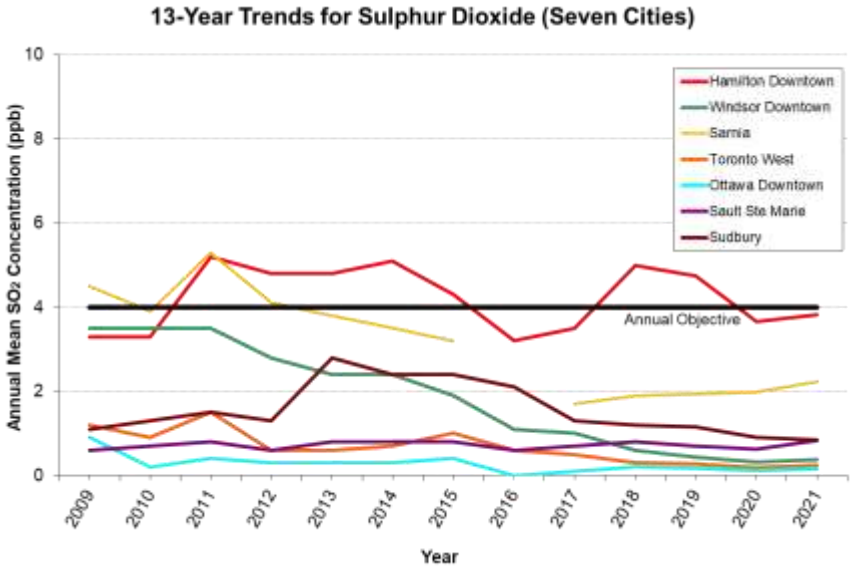
Ozone (O_3)

Hamilton's 30-year ozone trend is comparable to many other municipalities. Recent 2021 concentrations show Hamilton having one of the lowest concentrations of O_3. Air pollution from Hamilton can cause increased O_3 concentrations downwind and so reducing air pollutants such as Nitrogen Oxides (NO_x) and Volatile Organic Compounds (VOCs) is very important.



Sulphur Dioxide (So_2)

While Sulphur Dioxide (SO_2) concentrations in Hamilton are achieving the Annual Objective of 4 parts per billion (ppb), this is much higher compared to other municipalities. HAMS Sub-Regional Analysis[1] predicts higher levels for SO_2 concentration in the industrial core and West-lower areas of Hamilton from transboundary, industrial and non-road sources.



Acknowledgements

In 2021, the City of Hamilton provided financial and in-kind support to Clean Air Hamilton and its activities. Descriptions of some of the programs supported by Clean Air Hamilton can be found on pages 6 - 7 in this report.

This annual funding is leveraged significantly in two ways: first, Clean Air Hamilton uses these funds in partnership with funds provided by other agencies and institutions to develop programs related to air quality; second, since all of the members of Clean Air Hamilton donate their time and expertise, there is a significant amount of in-kind support provided. It is estimated that Clean Air Hamilton's partners provide well over $200,000 of in-kind support.

Bruce Newbold, Ph.D.
Chair, Clean Air Hamilton

Hamilton Air Monitoring Network
Beach Strip Station 29102

Public Health Services Airpointer

For more information contact Public Health Services (905) 546-2424 ext. 1275

[1] *Golder Associates. 2018, February. "Hamilton Airshed Monitoring System Results". November 1, 2021.*

[2] *Ministry of the Environment, Conservation and Parks. 2010. "Key air contaminants". September 28, 2022. <https://www.ontario.ca/document/air-quality-ontario-2018-report/key-air-contaminants>.*

[3] *Ministry of the Environment, Conservation and Parks. "Fine Particulate Matter". September 28, 2022. <http://www.airqualityontario.com/science/pollutants/particulates.php>.*

[4] *Ministry of the Environment, Conservation and Parks. 2010. "Sulphur Dioxide (SO_2)". September 19, 2021. <http://www.airqualityontario.com/science/pollutants/sulphur.php>.*

Air Quality - Additional Resources

To learn more about Clean Air Hamilton and our work visit www.cleanairhamilton.ca.
For annual air quality trends provided by the Ministry of the Environment, Conservation and Parks, please see pages 13 to 21.

Air Quality and Health

To learn about how to protect your health visit: www.airhealth.ca

To learn about Hamilton Public Health Services and actions on air quality visit: http://preview.hamilton.ca/public-health/health-topics/air-quality-pollution-smog

Government Actions on Air Quality

To learn about the Province of Ontario's actions on air quality visit: www.airqualityontario.com/

To learn about the Government of Canada's actions on air quality visit: http://www.ec.gc.ca/Air/default.asp?lang=En&n=14F71451-1

Air Quality Monitoring

For a detailed model of hourly concentrations for a variety of pollutants across Hamilton visit: http://www.hamiltonaqhi.com

To check our air pollution levels in Hamilton and Ministry run air monitors visit: http://www.airqualityontario.com/

To check out the Hamilton Air Monitoring Network visit: http://www.hamnair.ca/

To check out Hamilton Air Quality Health Index website visit: http://www.hamiltonaqhi.com

Who we are:

"Clean Air Hamilton is an innovative, multi-stakeholder agent of change dedicated to improving air quality in our community. We are committed to improving the health and quality of life of citizens through communication and promoting realistic, science-based decision-making and sustainable practices."

2021 Members

Bruce Newbold, *Chair -McMaster University*

ArcelorMittal Dofasco

Citizens

City of Hamilton - *Various Departments*

Corr Research

Environment & Climate Change Canada

Environment Hamilton

Green Venture

Hamilton Conservation Authority

Hamilton Industrial Environmental Association

Hamilton Port Authority

Hamilton Public Health Services

Health Canada

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McMaster Institute for Health Equity

Ministry of Environment Conservation and Parks (MECP) - *Hamilton Regional Office*

Mohawk College

Stelco

CleanAir HAMILTON

Clean Air Hamilton, November 2022

Production: Public Health Services
City of Hamilton

For further information, please contact:

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Healthy Environments Division,
Healthy & Safe Communities Department
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