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Air Quality in Ontario 2019 Report

Learn about the state of ambient air quality in 2019 and 10-year trends for key airborne pollutants affecting Ontario's air quality.

Air quality highlights

- Overall, air quality in Ontario has improved over time as both ambient concentrations of common air pollutants and emissions to air have decreased. Over the last 10 years, fine particulate matter concentrations have decreased by 20%, nitrogen dioxide concentrations by 22%, and sulphur dioxide concentrations by 63% on average across the province (see table below).
- In 2019, Ontario reported air quality in the low risk category 94.5% of the time, based on the Air Quality Health Index (AQHI).
- Ozone and fine particulate matter, the main components of smog, remain as pollutants of concern, however the maximum measured concentrations of ozone continue to decrease indicating reduced emissions in Ontario and the United States.
- In 2019, there were exceedances of the provincial [Ambient Air Quality Criteria](#) and/or [Canadian Ambient Air Quality Standard](#) for ground-level ozone, fine particulate matter, sulphur dioxide and benzene in some communities.
- Air quality in Ontario can vary from year to year due to a variety of factors including pollutant emissions, weather, natural events such as forest fires, and the long-range transport of air pollutants from the United States and elsewhere.

Trends in common air pollutants, 2010-2019

Pollutant	Concentrations	Emissions
Nitrogen dioxide/ Nitrogen oxides (NO ₂ /NO _x)	-22%	-28%
Fine particulate matter (PM _{2.5})	-20%	-15%
Ground-level ozone (O ₃)	no trend detected	N/A
Sulphur dioxide (SO ₂)	-63%	-56%

Trends in volatile organic compounds, 2010-2019

Pollutant	Concentrations
Benzene	-41%
Toluene	-54%
Ethylbenzene	-39%
m- and p-xylene	-39%
o-xylene	-34%
1,3 butadiene	-55%

Introduction

Protecting the air we breathe

The ministry is committed to protecting Ontario's air quality and ensuring we have strong environmental standards that protect human health and the environment. As part of this commitment, the ministry is working to ensure cleaner air for all Ontarians by regulating air contaminants released by certain industrial and commercial facilities, limiting emissions from commercial trucks and buses, and better understanding the transboundary flow of air pollutants into Ontario.

Since 2019 we have continued to implement the Sarnia Air Action Plan and the Hamilton Air Action Plan to improve oversight of industrial facilities, such as enhanced inspections, reactive incident response, monitoring, and communication with local stakeholders.

We also enhanced our Air Quality Health Index (AQHI) ambient and roadside air monitoring networks by establishing a new Milton AQHI air monitoring station and deploying new technology to the ministry's downtown Hamilton [AQHI](#) air monitoring station to better understand industrial and traffic related air pollution.

Overall, ambient and roadside air quality confirms Ontario's actions to reduce airborne pollutants are working and that regional air quality has been steadily improving in Ontario for many common air pollutants over the past 10 years.

[Learn more about what Ontario is doing to protect our air.](#)

About this report

This report summarizes 10-year air quality trends and the state of ambient air quality in Ontario during 2019. It reports on the major sources of emissions to

air, pollutant concentrations measured across the ministry's Air Quality Health Index monitoring network, and Ontario's performance against both provincial and federal ambient air quality criteria that were in effect in 2019. The ministry monitored ambient air quality in real time at 39 air monitoring stations in communities across Ontario in collaboration with the federal [National Air Pollutant Surveillance](#) (NAPS) program during 2019. This information was reported 24 hours a day, seven days a week, through the [ministry's public website](#).

The ministry's Air Quality Health Index monitoring stations are generally representative of ambient air quality which reflects the contribution of all sources of air contaminants to air. These air monitoring stations are sited to be representative of general population exposure and thus do not necessarily reflect air quality at locations within a community that may be influenced by nearby local sources of air contaminants such as large industrial facilities or major transportation corridors. Concentrations of some air contaminants in neighborhoods located in close proximity to local sources such as an industrial facility may be higher than those measured at the ministry's Air Quality Health Index monitoring stations.

There are local air quality monitoring networks operated by industrial associations in the communities of Hamilton ([Hamilton Air Monitoring Network](#)), Sarnia ([Clean Air Sarnia and Area](#)) and Sudbury ([Greater Sudbury Air Quality](#)) that provide additional air quality information for these communities.



Two photographs showing the exterior (left) and interior (right) of the Toronto North Air Quality Health Index Station.

Air Quality Health Index monitoring stations

This is a map depicting the 39 Air Quality Health Index monitoring stations across Ontario that were in operation during 2019.

Notes:

- T: telemetry
- NO₂: nitrogen dioxide
- PM_{2.5}: fine particulate matter
- O₃: ground-level ozone
- SO₂: sulphur dioxide
- CO: carbon monoxide
- TRS: total reduced sulphur
- *Toronto Downtown was relocated on two occasions in 2019 and should be counted as one station.

Key air contaminants

Ontario monitors levels of common air pollutants associated with smog formation across the ambient air monitoring network. These pollutants have numerous, diverse and widespread sources, and can have adverse effects on human health, the environment, and property. More information on the key air contaminants, their impacts to health and environment, and their sources is available below.

Nitrogen dioxide

Nitrogen dioxide (NO₂) is a reddish-brown gas with a pungent odour, which transforms in the atmosphere to form gaseous nitric acid and nitrates.

NO₂ plays a major role in atmospheric reactions that produce ground-level ozone, a major component of smog.

NO₂ also reacts with other gaseous contaminants in the air (e.g. sulphur dioxide, ammonia and volatile organic compounds) leading to the formation of PM_{2.5}.

Impacts to health and environment

NO₂ can irritate the lungs and lower resistance to respiratory infection. People with asthma and bronchitis have increased sensitivity to NO₂.

NO₂ chemically transforms into nitric acid in the atmosphere and, when deposited, contributes to the acidification of lakes and soils in Ontario. Nitric acid can also corrode metals, fade fabrics, degrade rubber, and damage trees and crops.

Sources of nitrogen oxides

Combustion or burning of carbon-based materials (e.g., wood, gasoline etc.) in air produces nitrogen oxides (NO_x), of which NO₂ is a component. The transportation sector is the main source of nitrogen dioxide in Ontario.

Fine particulate matter

Airborne particulate is the general term used to describe a mixture of microscopic solid particles and liquid droplets suspended in air. Particulate matter (PM) includes aerosols, smoke, fumes, dust, fly ash and pollen.

Fine particulate matter, denoted as PM_{2.5}, is less than 2.5 micrometres in diameter, approximately 30 times smaller than the average diameter of a human hair.

Impacts to health and environment

Fine particulate matter can have various negative health effects, especially on the respiratory and cardiovascular systems.

Exposure to fine particulate matter is associated with increased hospital admissions and emergency room visits—and even to death from heart or lung diseases. Both long- and short-term particle exposures have been linked to health problems.

People with heart or lung disease, children and older adults are particularly sensitive to this pollutant.

Sources of fine particulate matter

Fine particulate matter consists of primary and secondary PM_{2.5}. Primary PM_{2.5} is emitted directly to the atmosphere. Major sources of primary PM_{2.5} include residential fireplaces and wood stoves, motor vehicles, smelters, power plants, industrial facilities, and agricultural burning and forest fires. Secondary PM_{2.5} is formed indirectly in the atmosphere through a series of complex chemical reactions of gaseous precursors such as nitrogen dioxide and sulphur dioxide.

Ground-level ozone

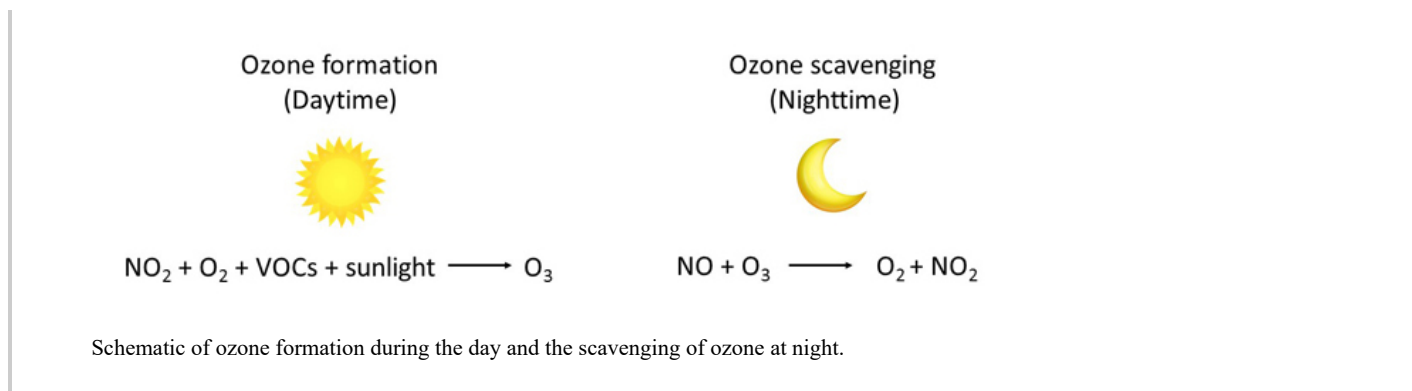
Ground-level ozone (O₃) is a colourless, odourless gas at typical ambient concentrations, and is a major component of smog.

Ground-level ozone is a gas formed when NO_x and volatile organic compounds (VOCs) react in the presence of sunlight. NO₂ breaks down in the presence of sunlight to form oxygen atoms (O) and NO. These oxygen atoms then react rapidly with molecular oxygen (O₂) in the atmosphere to produce ground-level ozone.

The formation and transport of ozone is strongly dependent on weather conditions and emissions of chemicals that contribute to the formation of ozone, such as NO_x and VOCs (also known as ozone precursors).

Schematic formation and scavenging of ozone

Ground-level ozone is a gas formed when nitrogen oxides (NO_x) and volatile organic compounds (VOCs) react in the presence of sunlight. NO_x is comprised of NO₂ and nitric oxide (NO). NO₂ breaks down in the presence of sunlight to form oxygen atoms (O) and NO. These oxygen atoms then react rapidly with molecular oxygen (O₂) in the atmosphere to produce ground-level ozone. This series of reactions, however, can be influenced by the presence of other chemicals, such as VOCs. Ground-level ozone is depleted when it reacts with nitric oxide to form NO₂ (a process known as scavenging) decreasing ozone concentrations



In large urban centres, ozone concentrations are generally lower, because ozone is depleted by reacting with NO emitted by vehicles and other local combustion sources to form NO₂. The NO₂ reacts with volatile organic compounds in the presence of sunlight to form ozone in downwind suburban and rural areas, resulting in higher ozone levels.

Impacts to health and environment

Ozone irritates the respiratory tract and eyes. Exposure to ozone in sensitive people can result in chest tightness, coughing and wheezing. Children who are active outdoors during the summer, when ozone levels are highest, are particularly at risk. Individuals with pre-existing respiratory disorders, such as asthma and chronic obstructive pulmonary disease, are also at risk. Ozone is associated with increased hospital admissions and premature deaths.

Sources of ground-level ozone

Major sources of ozone precursors, NO_x and VOCs, include the transportation and industrial sectors and general solvent use.

Sulphur dioxide

Sulphur dioxide (SO₂) is a colourless gas that smells like burnt matches. It can also be oxidized in the atmosphere to form sulphuric acid aerosols. In addition, SO₂ is a precursor to sulphates, one of the main components of airborne secondary PM_{2.5}.

Impacts to health and environment

Health effects caused by exposure to high levels of SO₂ include breathing problems, respiratory illness, and the exacerbation of respiratory and cardiovascular disease.

People with asthma, chronic lung disease or heart disease are the most sensitive to SO₂.

Sulphur dioxide damages trees and crops and reduces visibility.

Sources of sulphur dioxide

Major sources of SO₂ include smelters, industrial processes and coal-fired electric power generation from outside Ontario.

Volatile organic compounds

Volatile organic compounds (VOCs) are organic chemical compounds that may evaporate under normal ambient conditions of temperature and pressure, such as benzene and toluene. VOCs are precursors of ground-level ozone and PM_{2.5}. VOCs are emitted into the atmosphere from a variety of sources, including vehicles, fossil fuel combustion, steel-making, petroleum refining, fuel-refilling, industrial and residential solvent use, paint application, manufacturing of synthetic materials (e.g., plastics, carpets), food processing, agricultural activities and wood processing and burning.

Benzene

Benzene is primarily used in the production of plastics and other chemical products. Large quantities of benzene are produced from petroleum-related processes, either by direct extraction from certain types of crude oils or by chemical treatment of gasoline. Benzene is classified as a human carcinogen (USEPA, 2016).

Toluene

Toluene is used to make chemicals, explosives, dyes and many other compounds. It is also applied as a solvent for inks, paints, lacquers, resins, cleaners, glues and adhesives. Toluene is found in gasoline and aviation fuel. Studies indicate that toluene affects the central nervous system of humans and animals; however, there is little evidence to classify it as a carcinogen (USEPA, 2016).

Ethylbenzene

Ethylbenzene is a colourless liquid that smells like gasoline and is mainly used in the manufacture of styrene. Exposure to ethylbenzene occurs from the use of consumer products, fuel, pesticides, solvents, carpet glues, varnishes and paints. In humans, acute exposure results in respiratory and neurological effects and chronic exposure is associated with developmental and neurotoxic effects. Limited information is available on the carcinogenic effects of ethylbenzene (USEPA, 2016).

Xylene

Xylene is a colourless, sweet-smelling liquid or gas occurring naturally in petroleum, coal and wood tar; it is also used as a solvent in the printing, rubber, paint and leather industries. Xylene, also referred to as mixed xylenes, is a mixture of three isomers: ortho-, meta- and para-xylene, commonly known as o-, m- and p-xylene, which have the same molecular formula but different chemical structure, meaning the arrangement of their atoms is different. In humans, acute and chronic exposures result in respiratory and neurological effects. There is no information on the carcinogenic effects of mixed xylenes on humans (USEPA, 2016).

1,3-Butadiene

1,3-Butadiene is a colourless gas with a mild gasoline-like odour. It is released into the air through motor vehicle exhaust, manufacturing and processing facilities, forest fires or other combustion. Acute exposure to 1,3-butadiene by inhalation in humans results in irritation of the eyes, nasal passages, throat and lungs; in addition, 1,3-butadiene is carcinogenic in humans by inhalation (USEPA, 2016).

10-year trends and annual results

The ministry's Air Quality Health Index monitoring stations are generally representative of ambient air quality which reflects the contribution of all sources of air contaminants to air. These air monitoring stations are sited to be representative of general population exposure and thus do not necessarily reflect air quality at locations within a community that may be influenced by nearby local sources of air contaminants such as large industrial facilities or major transportation corridors. Concentrations of some air contaminants in neighborhoods located in close proximity to local sources such as an industrial facility may be higher than those measured at the Ministry's Air Quality Health Index monitoring stations.

This section presents the 10-year trends and annual results for key air contaminants listed above including volatile organic compounds such as benzene, toluene, ethylbenzene, xylene (BTEX) and 1,3-butadiene measured at the Ministry's Air Quality Health Index air monitoring stations. Associated emission trends over the same 10-year period are also provided.

Nitrogen dioxide

Highlights

10-year trends

- NO_2 concentrations have decreased by 22%
- NO_x emissions have decreased by 28%

2019 results

- No exceedances of Ontario's 1-hour and 24-hour [Ambient Air Quality Criteria](#) (AAQC)

10-year trends

Trend of NO_2 annual means across Ontario, 2010-2019

This is a line graph showing the trend of nitrogen dioxide annual means from 2010 to 2019. The nitrogen dioxide annual mean concentrations across Ontario have decreased 22% over this 10-year period. To view the data for a specific location, please select the 'Stations' radio button and use the drop-down menu.

Note:

- The Ontario 10-year trend is based on data from 32 ambient air monitoring stations.
- Ontario does not have an annual AAQC for NO_2 .

The 10-year trend for NO_2 at individual AQHI air monitoring stations in Ontario is presented in the Appendix: [10-year trend for nitrogen dioxide \(\$\text{NO}_2\$ \)](#).

Ontario NO_x emission trend, 2010-2019

This is a stacked column chart displaying the Ontario nitrogen oxides emissions trend from 2010 to 2019 indicating a decrease of approximately 28% or 105 kilotonnes, of which 51 kilotonnes was due to the road vehicles; 30 kilotonnes was due to the electricity utilities sector and 24 kilotonnes was due to other transportation sector (e.g. air, rail, marine transportation, and non-road vehicles/engines). Please note this chart excludes emissions from open and natural sources (Air Pollutant Emission Inventory 1990-2019, 2021).

2019 results

Summary of annual NO_2 results for 2019

Averaging time	Low range	High range	Number of sites with AAQC exceedances
NO_2 1-hour max	17.2 ppb at Grand Bend	78.3 ppb at Toronto East	0
NO_2 24-hour max	9.8 ppb at Port Stanley	38.7 ppb at Toronto West	0
NO_2 Annual mean	2.49 ppb at Grand Bend	14.6 ppb at Toronto West	Not applicable

The highest NO_2 means were recorded in large urbanized areas which are influenced by significant vehicular traffic, such as the Greater Toronto Area of southern Ontario.

A summary of the 2019 NO_2 annual statistics for individual AQHI air monitoring stations is detailed in the Appendix: [2019 nitrogen dioxide \(\$\text{NO}_2\$ \) annual statistics](#).

Ontario NO_x emissions by sector, 2019

This is a pie chart depicting Ontario's nitrogen oxides emissions by sector based on 2019 estimates for point/area/transportation sources. Please note this chart excludes emissions from open and natural sources (Air Pollutant Emission Inventory 1990-2019, 2021).

The transportation sector accounted for approximately 66% of total NO_x emissions in 2019.

Fine particulate matter

Highlights

10-year trends

- $\text{PM}_{2.5}$ concentrations have decreased by 20%
- $\text{PM}_{2.5}$ emissions have decreased by 15%

2019 results

- Thirteen AQHI air monitoring stations measured above the 24-hour $\text{PM}_{2.5}$ [reference level](#) of $28 \mu\text{g}/\text{m}^3$ on at least one occasion.

10-year trends

Trend of $\text{PM}_{2.5}$ annual means across Ontario, 2010-2019

This is a line graph showing the trend of fine particulate matter annual means from 2010 to 2019. The fine particulate matter annual mean concentrations across Ontario have decreased 20% over this 10-year period. To view the data for a specific location, please select the 'Stations' radio button and use the drop-down menu.

Note:

- The Ontario 10-year trend is based on data from 37 ambient air monitoring stations.
- A correction factor was applied to $\text{PM}_{2.5}$ concentrations measured by TEOM (2010-2012) to approximate SHARP-like measurements. $\text{PM}_{2.5}$ concentrations measured by SHARP are reflected from 2013 and onward.
- Ontario does not have an annual AAQC for $\text{PM}_{2.5}$ and is instead compared against a 24-hour reference level of $28 \mu\text{g}/\text{m}^3$ based on the Canadian Ambient Air Quality Standards.

The 10-year trend for $\text{PM}_{2.5}$ at individual AQHI air monitoring stations in Ontario is presented in the Appendix: [10-year trend for fine particulate matter \(\$\text{PM}_{2.5}\$ \)](#).

Ontario $\text{PM}_{2.5}$ emissions trend, 2010-2019

This is a stacked column chart displaying the Ontario fine particulate matter emissions trend from 2010 to 2019 indicating a decrease of approximately 15% or 9 kilotonnes, of which 6 kilotonnes was due to the transportation sector (e.g. road vehicles, air, rail marine transportation, and non-road vehicles/engines) and 2 kilotonnes was contributed by various industries. Please note this chart excludes emissions from open and natural sources (Air Pollutant Emission Inventory 1990-2019, 2021).

2019 results

Summary of annual $PM_{2.5}$ results for 2019

Averaging time	Low range	High range	Number of sites with AAQC exceedances
$PM_{2.5}$ 1-hour max	29 $\mu\text{g}/\text{m}^3$ at Petawawa	91 $\mu\text{g}/\text{m}^3$ at Brantford	Not applicable
$PM_{2.5}$ 24-hour max	14 $\mu\text{g}/\text{m}^3$ at Petawawa	38 $\mu\text{g}/\text{m}^3$ at Windsor West	13
$PM_{2.5}$ Annual mean	3.8 $\mu\text{g}/\text{m}^3$ at Petawawa	9.1 $\mu\text{g}/\text{m}^3$ at Windsor West	Not applicable

A summary of the 2019 $PM_{2.5}$ annual statistics for individual AQHI air monitoring stations is detailed in the Appendix: [2019 fine particulate matter \(\$PM_{2.5}\$ \) annual statistics](#).

Ontario $PM_{2.5}$ emissions by sector, 2019

This is a pie chart depicting Ontario's fine particulate matter emissions by sector based on 2019 estimates for point/area/transportation sources. Please note this chart excludes emissions from open and natural sources (Air Pollutant Emission Inventory 1990-2019, 2021).

Residential fuel combustion accounted for approximately 38% of the total PM_{2.5} emissions in 2019. The major contributor to residential emissions is fuel wood combustion in fireplaces and wood stoves.

Ground-level ozone

Highlights

10-year trends

- No significant trends

2019 results

- Five AQHI air monitoring stations measured ozone levels above the 1-hour AAQC of 80 ppb on at least one occasion

10-year trends

Trend of ozone means across Ontario, 2010-2019

This is a line graph showing the trend of ozone annual, summer and winter means from 2010 to 2019. There were no significant trends detected for Ontario over this 10-year period. To view the data for a specific location, please select the 'Stations' radio button and use the drop-down menu.

Note:

- The Ontario 10-year trend is based on data from 37 ambient air monitoring stations.
- Summer: May - September; Winter: January - April, October - December.
- Ontario does not have an annual or seasonal AAQC for ozone.

There has been no significant trend (increasing or decreasing) in annual and seasonal ozone means over the past 10 years.

Although there was no significant trend detected in ozone annual means, progressive reductions of NO_x emissions in Ontario and the U.S. have resulted in a decrease in maximum ozone concentrations and the duration of elevated ozone events in the province (OMOECC, 2018).

Similarly, there has been no significant trends in either the ozone summer or winter means over the past ten years.

Ozone levels continue to exceed Ontario's 1-hour AAQC for ozone during the warmer months and remain a challenge in areas of the province, such as southwestern Ontario. However, ozone concentrations during the winter months were well below Ontario's ozone 1-hour AAQC of 80 ppb in 2019.

The 10-year trend of annual, summer and winter ozone for individual AQHI air monitoring stations in Ontario is presented in the Appendix: [10-year trend for ozone \(\$\text{O}_3\$ \)](#), [10-year trend for ozone \(\$\text{O}_3\$ \) summer means](#), and [10-year trend for ozone \(\$\text{O}_3\$ \) winter means](#).

Ozone annual means for urban and rural Ontario, 2010-2019

This is a line graph displaying the ozone annual means for urban and rural Ontario from 2010 to 2019.

Note:

- Urban S. are urban areas in southern Ontario - Windsor, London, Hamilton, Toronto.
- Urban N. are urban areas in northern Ontario - Thunder Bay, Sault Ste. Marie, Sudbury, North Bay.
- Rural areas in Ontario - Port Stanley, Tiverton, Parry Sound, Petawawa.
- Ontario does not have an annual AAQC for ozone.

Ozone annual mean concentrations in urban areas in southern Ontario have been more comparable to those of urban areas in northern Ontario in recent years. This indicates that the decrease in [ozone scavenging](#) observed over the past 10 years due to local NO_x emission reductions has been greater in urban areas in southern Ontario than in northern Ontario.

Generally, ozone concentrations are higher in rural, transboundary-influenced sites on the northern shore of Lake Erie and the eastern shore of Lake Huron. Ozone concentrations are lower in urban areas because it is depleted (scavenged) by reacting with NO emitted by vehicles and other local combustion sources.

2019 results

Summary of annual O_3 results for 2019

Averaging time	Low range	High range	Number of sites with AAQC exceedances
Ozone 1-hour max	56 ppb at Thunder Bay	88 ppb at Newmarket	5
Ozone 24-hour max	40 ppb at Oshawa	56 ppb at Port Stanley and Sarnia	Not applicable
Ozone annual mean	21.8 ppb at Toronto West	32.3 ppb at Port Stanley	Not applicable

A summary of the 2019 ozone annual statistics for individual AQHI air monitoring stations is detailed in the Appendix: [2019 ozone \(\$\text{O}_3\$ \) annual statistics](#).

Sulphur dioxide

Highlights

10-year trends

- SO₂ concentrations have decreased by 63%
- SO₂ emissions have decreased by 56%

2019 results

- Five AQHI air monitoring stations measured sulphur dioxide levels above the 10-minute AAQC of 67 ppb on at least one occasion
- Five AQHI air monitoring stations measured sulphur dioxide levels above the 1-hour AAQC of 40 ppb on at least one occasion
- One AQHI air monitoring stations measured sulphur dioxide levels above the annual AAQC of 4 ppb

10-year trends

Trend of SO₂ annual means across Ontario, 2010-2019

This is a line graph showing the trend of sulphur dioxide annual means from 2010 to 2019. The sulphur dioxide annual mean concentrations across Ontario have decreased 63% over this 10-year period. To view the data for a specific location, please select the 'Stations' radio button and use the drop-down menu.

Note:

- The Ontario 10-year trend is based on data from 9 ambient air monitoring stations.

The 10-year trend for SO₂ at individual AQHI air monitoring stations in Ontario is presented in the Appendix: [10-year trend for sulphur dioxide \(SO₂\)](#).

Ontario SO₂ emission trend, 2010-2019

This is a stacked column chart displaying the Ontario sulphur dioxide emissions trend from 2010 to 2019 indicating a decrease of approximately 56% or 142 kilotonnes, of which 94 kilotonnes was due to the smelter sector and 38 kilotonnes was due to the electricity utilities sector. Please note this chart excludes emissions from open and natural sources (Air Pollutant Emission Inventory 1990-2019, 2021).

2019 results

Summary of annual SO₂ results for 2019

Averaging time	Low range	High range	Number of sites with AAQC exceedances
SO ₂ 10-minutes max	4.8 ppb at Ottawa Downtown	344.2 ppb at Sudbury	5
SO ₂ 1-hour max	2.7 ppb at Ottawa Downtown	123.7 ppb at Hamilton Downtown	5
SO ₂ 24-hour max	0.6 ppb at Ottawa Downtown	45.9 ppb at Hamilton Downtown	Not applicable
SO ₂ Annual mean	0.15 ppb at Toronto North	4.75 ppb at Hamilton Downtown	1

Concentrations of sulphur dioxide in neighborhoods that are located in close proximity to local sources such as an industrial facility may be higher than those measured at the ministry's Air Quality Health Index monitoring stations which are sited to be representative of general population exposure.

A summary of the 2019 SO₂ annual statistics for individual AQHI air monitoring stations is detailed in the Appendix: [2019 sulphur dioxide \(SO₂\) annual statistics](#).

Ontario SO₂ emissions by sector, 2019

This is a pie chart depicting Ontario's sulphur dioxide emissions by sector based on 2019 estimates for point/area/transportation sources. Please note this chart excludes emissions from open and natural sources (Air Pollutant Emission Inventory 1990-2019, 2021).

Smelters in northern Ontario are the major sources of SO_2 emissions in Ontario, accounting for approximately 37% of the provincial SO_2 emissions in 2019.

Volatile organic compounds

Highlights

10-year trends

- Benzene concentrations have decreased by 41%
- Toluene concentrations have decreased by 54%
- Ethylbenzene have decreased by 39%
- m- and p-xylene have decreased by 39%
- o-xylene have decreased by 34%
- 1,3-butadiene have decreased by 55%

2019 results

- Ontario's [AAQC](#) for these volatile organic compounds (where applicable) were met except for one [AQHI](#) air monitoring station that measured benzene levels above the annual [AAQC](#) of $0.45 \mu\text{g}/\text{m}^3$.

10-year trends

VOCs are measured at eight [AQHI](#) air monitoring stations (Windsor West, Sarnia, London, Kitchener, Hamilton Downtown, Toronto North, Newmarket and Ottawa) by Environment and Climate Change Canada as part of a co-operative federal-provincial program under the [NAPS Air Toxics Program](#). Toronto North began monitoring VOCs in 2017 and therefore is not included in the 10-year trends.

In 2019, 107 VOCs were analyzed and reported for each sample at each site. For the purposes of this report, commonly detected VOCs (benzene, toluene, ethylbenzene, xylene, and 1,3-butadiene) between 2010 and 2019 are included in this discussion.

Trend of benzene annual means across Ontario, 2010-2019

This is a line graph showing the trend of benzene annual mean from 2010 to 2019. The benzene annual mean concentrations across Ontario have decreased 41% over this 10-year period. To view the data for a specific location, please select the 'Stations' radio button and use the drop-down menu.

Note:

- The Ontario 10-year trend is based on data from 7 ambient air monitoring stations.

Trend of toluene annual means across Ontario, 2010-2019

This is a line graph showing the trend of toluene annual mean from 2010 to 2019. The toluene annual mean concentrations across Ontario have decreased 54% over this 10-year period. To view the data for a specific location, please select the 'Stations' radio button and use the drop-down menu.

Note:

- The Ontario 10-year trend is based on data from 7 ambient air monitoring stations.
- Ontario does not have an annual AAQC for toluene.

Trend of ethylbenzene annual means across Ontario, 2010-2019

This is a line graph showing the trend of ethylbenzene annual mean from 2010 to 2019. The ethylbenzene annual mean concentrations across Ontario have decreased 39% over this 10-year period. To view the data for a specific location, please select the 'Stations' radio button and use the drop-down menu.

Note:

- The Ontario 10-year trend is based on data from 7 ambient air monitoring stations.
- Ontario does not have an annual AAQC for ethylbenzene.

Trend of xylene annual means across Ontario, 2010-2019

This is a line graph showing the trend of xylene annual mean from 2010 to 2019. The m- and p-xylene and o-xylene annual mean concentrations across Ontario have decreased 39%, and decreased 34%, respectively, over this 10-year period. To view the data for a specific location, please select the 'Stations' radio button and use the drop-down menu.

Note:

- The Ontario 10-year trend is based on data from 7 ambient air monitoring stations.
- Ontario does not have an annual AAQC for xylene.

Trend of 1,3-butadiene annual means across Ontario, 2010-2019

This is a line graph showing the trend of 1,3-butadiene annual mean from 2010 to 2019. The 1,3-butadiene annual mean concentrations across Ontario have decreased 55% over this 10-year period. Select another location from the drop-down menu to learn the percent change in air quality for other communities.

Note:

- The Ontario 10-year trend is based on data from 7 ambient air monitoring stations.

The 10-year trend for VOCs at individual AQHI air monitoring stations in Ontario is presented in the Appendix: [10-year trend for benzene](#), [10-year trend for toluene](#), [10-year trend for ethylbenzene](#), [10-year trend for m- and p-xylene](#), [10-year trend for o-xylene](#), and [10-year trend for 1,3-butadiene](#).

2019 results

Summary of annual VOC results for 2019

Averaging time	Low range	High range	Number of sites with AAQC exceedances
Benzene 24-hour max	0.578 µg/m ³ at London	2.070 µg/m ³ at Hamilton Downtown	0
Benzene annual mean	0.250 µg/m ³ at Newmarket	0.568 µg/m ³ at Hamilton Downtown	1
Toluene 24-hour max	1.571 µg/m ³ at Ottawa Downtown	6.942 µg/m ³ at Toronto North	0
Toluene annual mean	0.418 µg/m ³ at Newmarket	1.390 µg/m ³ at Toronto North	Not applicable
Ethylbenzene 24-hour max	0.202 µg/m ³ at Ottawa Downtown	0.717 µg/m ³ at Toronto North	0
Ethylbenzene annual mean	0.064 µg/m ³ at Ottawa Downtown	0.157 µg/m ³ at Toronto North	Not applicable
m- and p-xylene 24-hour max	0.676 µg/m ³ at Ottawa Downtown	2.302 µg/m ³ at Windsor West	Not applicable
m- and p-xylene annual mean	0.186 µg/m ³ at Ottawa Downtown	0.500 µg/m ³ at Toronto North	Not applicable
o-xylene 24-hour max	0.279 µg/m ³ at Ottawa Downtown	0.814 µg/m ³ at Hamilton Downtown	Not applicable

Averaging time	Low range	High range	Number of sites with AAQC exceedances
o-xylene annual mean	0.068 µg/m ³ at Newmarket	0.156 µg/m ³ at Toronto North	Not applicable
1,3-butadiene 24-hour max	0.025 µg/m ³ at London, Kitchener, Newmarket	0.608 µg/m ³ at Sarnia	0
1,3-butadiene annual mean	0.025 µg/m ³ at London, Kitchener, Newmarket	0.054 µg/m ³ at Sarnia	0

Concentrations of some VOCs in neighborhoods that are located in close proximity to local sources such as an industrial facility may be higher than those measured at the ministry's Air Quality Health Index monitoring stations which are sited to be representative of general population exposure.

A summary of the 2019 VOCs annual statistics for individual AQHI air monitoring stations is detailed in the Appendix: [2019 benzene annual statistics](#), [2019 toluene annual statistics](#), [2019 ethylbenzene annual statistics](#), [2019 m- and p-xylene annual statistics](#), [2019 o-xylene annual statistics](#), and [2019 1,3-butadiene annual statistics](#).

Ontario VOC emissions by sector, 2019

This is a pie chart depicting Ontario's volatile organic compound emissions by sector based on 2019 estimates for point/area/transportation sources. Please note this chart excludes emissions from open and natural sources (Air Pollutant Emission Inventory 1990-2019, 2021).

Transportation sector accounted for 29% of VOC emissions in 2019; and general solvent use (e.g., degreasing, adhesives and sealants, consumer and commercial products) accounted for approximately 27% (APEI, 2020).

Ontario Ambient Air Quality Criteria

Ambient air quality refers to general air quality resulting from all sources of contaminants to air. [Ambient Air Quality Criteria](#) (AAQC) are a concentration of a contaminant in air that is protective against adverse effects on health and/or the environment.

AAQC are not regulatory values but are used to assess general (ambient) air quality resulting from all sources (i.e., industrial and non-industrial sources) of a contaminant to air. AAQC are most commonly used in environmental assessments, special studies using ambient air monitoring data, assessment of general air quality in a community and annual reporting on air quality across the province.

Ontario's Ambient Air Quality Criteria for common air pollutants

Contaminant	10 minutes AAQC Assesses protection against acute effects	1-hour AAQC Assesses protection against acute effects	8-hour AAQC Assesses protection against acute effects	24-hour AAQC Assesses protection against chronic effects	Annual AAQC Assesses protection against chronic effects
NO₂	N/A	200 ppb	N/A	100 ppb	N/A
PM_{2.5}	N/A	N/A	N/A	28 µg/m ³	N/A
O₃	N/A	80 ppb	N/A	N/A	N/A
SO₂	67 ppb	40 ppb	N/A	N/A	4 ppb
CO	N/A	30 ppm	13 ppm	N/A	N/A

Contaminant	10 minutes <u>AAQC</u> Assesses protection against acute effects	1-hour <u>AAQC</u> Assesses protection against acute effects	8-hour <u>AAQC</u> Assesses protection against acute effects	24-hour <u>AAQC</u> Assesses protection against chronic effects	Annual <u>AAQC</u> Assesses protection against chronic effects
Benzene	N/A	N/A	N/A	2.3 µg/m ³	0.45 µg/m ³
Toluene	N/A	N/A	N/A	2,000 µg/m ³	N/A
Ethylbenzene	1,900 µg/m ³	N/A	N/A	1,000 µg/m ³	N/A
1,3-Butadiene	N/A	N/A	N/A	10 µg/m ³	2 µg/m ³

Notes:

- ppb – parts (of contaminant) per billion (parts of air) – by volume.
- µg/m³ – micrograms (of contaminant) per cubic metre (of air) – by weight.
- ppm – parts (of contaminant) per million (parts of air) – by volume.

Federal Air Quality Management System

The federal [Air Quality Management System](#) is a collaborative approach for reducing air pollution in Canada. It consists of several elements:

- Canadian Ambient Air Quality Standards (non-regulatory health and environmental-based air quality objectives intended to drive improvements where needed)
- air zones (management areas delineated within a province or territory)
- regional airsheds - transboundary air pollution (broad geographic areas that encompass a number of air zones and may cross provincial/territorial and international boundaries)
- base-level industrial emissions requirements
- mobile emission sources (transportation)

Air zones – Managing air quality in Ontario

Ontario has identified three air zone categories under the federal Air Quality Management System based on factors such as pollutant sources, topography, meteorological patterns, population density and other potential factors that influence ambient air concentrations.

This has resulted in six air zone areas for the province as presented in the table below.

Ontario air zone categories and areas

Air zone categories	Air zone areas
Category 1 Areas with limited pollution from either point or non-point sources or transboundary influence	Northern Ontario (with two exceptions)
Category 2 Areas under pressure from multiple sources including some or all of the following: non-point sources, smaller point sources, individual large industrial point sources, transboundary influences	Southern Ontario (with two exceptions) Sault Ste. Marie Sudbury
Category 3 Areas with a concentration of large industrial sources	Sarnia/St. Clair Township Hamilton

Ontario has designated specific ambient air quality monitoring stations as CAAQS reporting stations for each of the identified air zones in the province. Designated sites normally refer to communities with populations greater than 100,000 and/or communities with large industrial sources.

Canadian Ambient Air Quality Standard achievement

Highlights

10-year trends

- 24-hour PM_{2.5} CAAQS metric concentrations have decreased by 21%.
- No trend in annual PM_{2.5} CAAQS metric concentrations.
- 8-hour ozone CAAQS metric concentrations have decreased by 8%.

2019 results

- No exceedances of the 24-hour and annual PM_{2.5} CAAQS.
- Thirteen of 24 designated sites met the CAAQS of 63 ppb for ozone in 2019.

10-year trends – Fine particulate matter

10-year trend of 24-hour $\text{PM}_{2.5}$ CAAQS metrics in Ontario

This is a line graph showing the trend of the 24-hour fine particulate matter Canadian Ambient Air Quality Standard metrics from 2010 to 2019 in Ontario. This trend shows Ontario's decrease of 21% over this 10-year period. To view the data for a specific location, please select the 'Stations' radio button and use the drop-down menu.

Note:

- The Ontario 10-year trend is based on data from 23 ambient air monitoring stations.
- The CAAQS for 24h $\text{PM}_{2.5}$ ($28 \mu\text{g}/\text{m}^3$) is based on the 98th percentile measurement annually, averaged over three consecutive years.

10-year trend of annual $\text{PM}_{2.5}$ CAAQS metrics in Ontario

This is a line graph showing the trend of the annual fine particulate matter Canadian Ambient Air Quality Standard metrics from 2010 to 2019 in Ontario. There was no significant trend for Ontario over this 10-year period. To view the data for a specific location, please select the 'Stations' radio button and use the drop-down menu.

Note:

- The Ontario 10-year trend is based on data from 23 ambient air monitoring stations.
- The CAAQS for annual $\text{PM}_{2.5}$ ($10 \mu\text{g}/\text{m}^3$) is based on the annual mean averaged over three consecutive years.

The 10-year trends, based on the 24-hour and annual $\text{PM}_{2.5}$ CAAQS metrics at each of the designated monitoring sites, are presented in Appendix: [PM_{2.5} and ozone CAAQS metric trends for designated sites across Ontario \(2010-2019\)](#).

2019 results – Fine particulate matter

Summary of $\text{PM}_{2.5}$ CAAQS metrics for 2019

Averaging time	Range in CAAQS metrics Low	Range in CAAQS metrics High	Number of sites with CAAQS exceedances
PM_{2.5} 24-hour	13 $\mu\text{g}/\text{m}^3$ at Sault Ste. Marie	22 $\mu\text{g}/\text{m}^3$ at Hamilton Downtown	0
PM_{2.5} annual	5.1 $\mu\text{g}/\text{m}^3$ at Sault Ste. Marie	8.8 $\mu\text{g}/\text{m}^3$ at Hamilton Downtown	0

PM_{2.5} CAAQS metric values for designated sites across Ontario, 2019

This map displays the fine particulate matter Canadian Ambient Air Quality Standard metric values for designated reporting sites across Ontario for 2019 based on a 3-year average. Select the 24-hour metric or the annual metric from the drop-down menu list.

Note:

- The [CAAQS](#) for 24-hour $\text{PM}_{2.5}$ ($28 \mu\text{g}/\text{m}^3$) is based on the 98th percentile measurement annually, averaged over three consecutive years.
- The [CAAQS](#) for annual $\text{PM}_{2.5}$ ($10 \mu\text{g}/\text{m}^3$) is based on the annual mean averaged over three consecutive years.

A summary of the 2019 [CAAQS](#) metric values for the 24-hour and annual $\text{PM}_{2.5}$ at individual [CAAQS](#) reporting stations is in the Appendix: [PM_{2.5} and ozone CAAQS metric values for designated sites across Ontario \(2019\)](#).

10-year trends – Ground-level ozone

10-year trend of 8-hour O_3 [CAAQS](#) metrics in Ontario

This is a line graph showing the trend of the 8-hour ozone Canadian Ambient Air Quality Standard metrics from 2010 to 2019 in Ontario. This trend shows Ontario's decrease of 8% over this 10-year period. Select another location from the drop-down menu to learn the percent change in air quality for other communities.

Note:

- The Ontario 10-year trend is based on data from 23 ambient air monitoring stations.
- The CAAQS for ozone (63 ppb) is based on the consecutive three-year average of the annual 4th highest daily maximum eight-hour running average.

The 10-year trends, based on the 8-hour ozone CAAQS metrics at each of the designated monitoring sites, are presented in Appendix: [PM_{2.5} and ozone CAAQS metric trends for designated sites across Ontario \(2010-2019\)](#).

2019 results – Ground-level ozone

Summary of ozone CAAQS metrics for 2019

Averaging time	Low range	High range	Number of sites with <u>CAAQS</u> exceedances
Ozone 8-hour	50 ppb at Thunder Bay	71 ppb at Sarnia	11

Transboundary influences, from both the U.S. and beyond, account for a significant portion of Ontario's ozone when their levels are elevated. Ontario's CAAQS reporting stations would have met the ozone CAAQS if transboundary flow days were excluded from the calculated metric using a weight of evidence (WOE) analysis.

Ozone CAAQS metric values for designated sites across Ontario, 2019

This map displays the 8-hour ozone Canadian Ambient Air Quality Standard metric values for designated reporting sites across Ontario for 2019 based on a 3-year average.

Note:

- The [CAAQS](#) for ozone (63 ppb) is based on the consecutive three-year average of the annual 4th highest daily maximum eight-hour running average.

A summary of the 2019 [CAAQS](#) metric values for 8-hour ozone at individual [CAAQS](#) reporting stations is in the Appendix: [PM_{2.5} and ozone CAAQS metric values for designated sites across Ontario \(2019\)](#).

Weight of Evidence (WOE) analysis

Transboundary influences, from both the U.S. and beyond, account for a significant portion of Ontario's ozone when their levels are elevated. A Weight of Evidence (WOE) analysis demonstrates the influence of transboundary flow on days with elevated ozone concentrations and confirms that Ontario's [CAAQS](#) reporting stations would have met the ozone [CAAQS](#) if transboundary flow days were excluded from the calculated metric.

The [WOE](#) approach consists of performing, evaluating and documenting a series of technical analyses that collectively support the conclusion that exceedances of the [CAAQS](#) on a given day were influenced by transboundary flows or exceptional events. These analyses may include assessing the meteorological conditions (airflow, wind speed and direction, temperature, stability, etc.) and pollutant concentrations in Ontario and upwind locations.

Canadian Ambient Air Quality Standards

The Canadian Council of Ministers of the Environment have developed Canadian Ambient Air Quality Standards ([CAAQS](#)) as a key element of the Air Quality Management System to drive improvement of air quality across Canada. [CAAQS](#) are non-regulatory health and environmentally based ambient air objectives that are used to assess general air quality and reflect desirable concentrations of contaminants in air from all sources. [CAAQS](#) have been

developed for ozone, fine particulate matter, sulphur dioxide and nitrogen dioxide however only the CAAQS for ozone and fine particulate matter were in effect in 2019.

Canadian Ambient Air Quality Standards

Pollutant	Averaging time	Numerical value 2015	Numerical value 2020	Numerical value 2025	Statistical form
Fine particulate matter (PM_{2.5})	24-hour	28 µg/m ³	27 µg/m ³	N/A	The 3-year average of the annual 98 th percentile of the daily 24-hour average concentrations
Fine particulate matter (PM_{2.5})	Annual	10.0 µg/m ³	8.8 µg/m ³	N/A	The 3-year average of the annual average of all 1-hour concentrations
Ozone (O₃)	8-hour	63 ppb	62 ppb	60 ppb	The 3-year average of the annual 4 th highest of the daily maximum 8-hour average ozone concentrations

Source: [Canadian Council of Ministers of the Environment](#)

Transboundary influences on Ontario's smog

Smog related air pollutants (i.e. PM_{2.5}, ozone and their precursors) are generated both locally and regionally, and, with winds, can travel hundreds of kilometres, affecting areas far from the source of the pollution. The long-range transport and transboundary flow of air pollutants play a significant role in Ontario's air quality. Typically, during the summer, elevated levels of these smog related pollutants are often associated with distinct weather patterns (e.g., slow-moving high-pressure systems originating from south of the lower Great Lakes) that results in the long-range transport of these pollutants into Ontario from neighbouring U.S. industrial and urbanized states during south to south westerly flow conditions (Yap *et al.*, 2005).

Transboundary sources from around the globe (global background) are also significant contributors to Ontario's ozone levels.

Long-range transport and transboundary flow of air pollutants

During the smog season (May to September) prevailing southwesterly airflows results in the transport of smog related pollutants from U.S. (for example, NO_x emissions from electricity generators in the Ohio Valley) into Ontario.

NO_x emissions from electricity generators and prevailing winds

This map shows the nitrogen oxides emissions from electricity generators located in eastern U.S. and Canada with prevailing winds during smog season.

Note:

- Canadian Data: [National Pollutant Release Inventory, Environment and Climate Change Canada \(ECCC\)](#)
- US Data: [Air Markets Program Data, United States Environmental Protection Agency \(USEPA\)](#)

Modelling transboundary impacts on Ontario's air quality

The Community Multi-Scale Air Quality model (CMAQ) ([USEPA, 2018](#)), developed by the U.S. Environmental Protection Agency, was used to characterize and predict the formation, transportation, deposition and transformation of smog related pollutants (e.g., ozone and $\text{PM}_{2.5}$) in the atmosphere. Emissions of smog precursors from a region that included eastern North America was used along with meteorological conditions to assess ambient concentrations of pollutants for 2015. The CMAQ model results quantify the impact of transboundary flows of smog related pollutants into and across Ontario.

Transboundary influences on Ontario's smog

Fine particulate matter ($\text{PM}_{2.5}$)

Transboundary contributions to Ontario's $\text{PM}_{2.5}$ concentrations are mainly due to secondary $\text{PM}_{2.5}$ formation (i.e., $\text{PM}_{2.5}$ is formed in the atmosphere through a series of complex reactions involving precursor emissions such as sulphur dioxide and nitrogen oxides) originating from U.S. sources. These transboundary contributions vary across the province, ranging from approximately 25% to 87%.

Along Canada-U.S. border areas of southwestern Ontario, transboundary sources of $\text{PM}_{2.5}$ (mainly secondary $\text{PM}_{2.5}$) dominate, contributing to over 70% of the annual $\text{PM}_{2.5}$ concentrations, and decreasing further away from border areas as shown below.

Transboundary influences on Ontario's annual average $PM_{2.5}$ concentrations

This map shows the transboundary influences on Ontario's annual average fine particulate matter concentrations.

In the Greater Toronto Area (GTA) and Ottawa, where there are many more local sources of directly emitted $PM_{2.5}$, transboundary contributions of $PM_{2.5}$ are much less (e.g. up to 25% in the GTA and 35% in Ottawa).

Outside of urban areas, transboundary influences increase in all directions. In much of northern Ontario the majority of the $PM_{2.5}$ is dominated by transboundary sources (over 80% in most cases) as there are very few local sources of directly emitted $PM_{2.5}$.

Ozone

The influence of transboundary sources (U.S. and global background) on ozone levels in Ontario varies across the province. Transboundary contributions are most notable in areas of southwestern Ontario, in close proximity to the U.S. border, and along the northern shore of Lake Erie and the eastern shore of Lake Huron/Georgian Bay. In southwestern Ontario, when ozone levels are elevated, over 95% of the ozone is attributable to transboundary sources, with the U.S. contributing to as much as 40% and the remainder attributable to global background, as shown below.

Transboundary contributions vary across the province, ranging from approximately 87% to 99% with the US contributions accounting for approximately 11% to 38%.

Influences on Ontario's ozone concentrations on high concentration days

This map shows influences on Ontario's ground-level ozone concentrations on high concentration days.

Global background plays a significant role in Ontario's transboundary air pollution, contributing to 60-80% of ozone concentrations on poor air quality days across the province. In areas of northern and eastern Ontario, global background levels are much more significant.

As ozone precursor emissions continue to decrease across North America, the rising global background levels play an increasingly important role in Ontario's air quality (Environment and Climate Change Canada, 2013).

Air Quality Health Index overview

The federal [Air Quality Health Index](#) (AQHI) is a health protection communication tool designed to help the public make decisions to protect their health by limiting short-term exposure to air pollution and adjusting activities during increased levels of air pollution. It is based on the cumulative health effects of three common air pollutants: ozone, nitrogen dioxide, and fine particulate matter. It is measured on a scale from 1 to 10+, the lower the number, the lower the risk. Each risk category has accompanying health messaging. The health messages associated with the [AQHI](#) are outlined in the table below.

Air Quality Health Index categories and health messages

Health risk	Air Quality Health Index	Health messages At risk population	Health messages General population
Low	1-3	Enjoy your usual outdoor activities	Ideal air quality for outdoor activities.
Moderate	4-6	Consider reducing or rescheduling strenuous activities outdoors if you are experiencing symptoms.	No need to modify your usual activities unless you experience symptoms such as coughing and throat irritation.
High	7-10	Reduce or reschedule strenuous activities outdoors. Children and the elderly should also take it easy.	Consider reducing or rescheduling strenuous activities outdoors if you experience symptoms such as coughing and throat irritation.

Health risk	Air Quality Health Index	Health messages At risk population	Health messages General population
Very high	Above 10	Avoid strenuous activities outdoors. Children and the elderly should also avoid outdoor physical exertion.	Reduce or reschedule strenuous activities outdoors, especially if you experience symptoms such as coughing and throat irritation.

Source: Environment and Climate Change Canada.

Air Quality Health Index annual results

- Based on the [AQHI](#) categories, in 2019, Ontario reported low risk air quality 94.5% of the time, moderate risk 5.5% of the time, and high risk 0.01% of the time.
- The percentage distribution of hourly [AQHI](#) readings for each of the 39 monitoring sites by [AQHI](#) value and the number of high risk [AQHI](#) days is detailed in the Appendix: [2019 Air Quality Health Index summary](#).

Acronyms

AAQC	Ambient Air Quality Criterion (Ontario)
AQHI	Air Quality Health Index
CAAQS	Canadian Ambient Air Quality Standard
CCME	Canadian Council of Ministers of the Environment
CO	carbon monoxide
ECCC	Environment and Climate Change Canada
M-K	Mann-Kendall (statistical test)
NAPS	National Air Pollution Surveillance
NO	nitric oxide
NO ₂	nitrogen dioxide
NO _x	nitrogen oxides
O ₃	ozone
PM	particulate matter
PM _{2.5}	fine particulate matter
SAHA	Smog and Air Health Advisory
SAQS	Special Air Quality Statement
SHARP	Synchronized Hybrid Ambient Real-time Particulate
SO ₂	sulphur dioxide
TEOM	Tapered Element Oscillating Microbalance
TRAP	Traffic-related air pollutants
TRS	total reduced sulphur
U.S.	United States (of America)
VOCs	volatile organic compounds
WOE	weight of evidence
km	kilometres
kt	kilotonnes
µg/m ³	

- micrograms (of contaminant) per cubic metre (of air) – by weight
- ppb parts (of contaminant) per billion (parts of air) – by volume
- ppm parts (of contaminant) per million (parts of air) – by volume

Glossary

Air Quality Health Index

Real-time information system that provides the public with an indication of air quality in cities, towns and in rural areas across Ontario. The AQHI derives a value based on the cumulative health effects of three pollutants – O₃, PM_{2.5} and NO₂.

AQHI station

Continuous monitoring station used to inform the public of general ambient air quality levels over an entire region (not a localized area) on a real-time basis; station reports on criteria pollutant levels that are not unduly influenced by a single emission source, but rather are the result of emissions from multiple sources, including those in neighbouring provinces and states.

Ambient air

Outdoor or open air.

Ambient monitoring

Measurements of regional air quality less influenced by local and industrial sources of air contaminants.

Annual mean

The average value of hourly data for a given year.

Area sources

Small collective emission sources that are inventoried as a group, such as any small residential, governmental, institutional, commercial or industrial fuel combustion operations, which are too numerous to inventory as point sources.

Carbon monoxide

A colourless, odourless, tasteless, and at high concentrations, poisonous gas.

Continuous pollutants

Pollutants for which a continuous measurement record exists; effectively, pollutants that have hourly data (maximum 8,760 values per year except leap year – e.g. 2004 where maximum values for the year are 8,784).

Continuous station

Where pollutants are measured on a real-time basis and data determined hourly (for example ozone, sulphur dioxide).

Criterion

Maximum concentration or level (based on potential effects) of pollutant that is desirable or considered acceptable in ambient air.

Downwind

The direction the wind is going to. If the wind is blowing towards the Southeast (blowing from the Northwest), then the downwind direction is towards the Southeast and the upwind direction is towards the Northwest.

Exceedance

Above the air pollutant concentration levels established by environmental protection criteria or other environmental standards.

Fine Particulate Matter

Also referred as respirable particles: particles smaller than 2.5 micrometres in aerodynamic diameter, which arise mainly from fuel combustion, condensation of hot vapours and chemically-driven gas-to-particle conversion processes; also referred to as PM_{2.5} or respirable particles. These are fine enough to penetrate deep into the lungs.

Fossil fuels

Natural gas, petroleum, coal and any form of solid, liquid or gaseous fuel derived from organic materials for the purpose of generating heat.

Fly ash

Generated as a by-product of coal combustion and is used as a replacement for cement in concrete, among other uses

Ground-level ozone

Colourless gas formed from chemical reactions between nitrogen oxides and volatile organic compounds (VOCs) in the presence of sunlight near the Earth's surface.

Mann-Kendall (M-K) test

A nonparametric statistical approach that can be applied to data without making assumptions on the nature of the data distribution. The M-K test is suitable for environmental monitoring data to handle missing, trace and below detection limit values.

Meteorological conditions

The conditions in the atmosphere (e.g. temperature, air pressure, water vapour, air flows, etc.), and the variations (over time and space, both vertically and horizontally) and interactions of these conditions.

Metric

Concentrations measured at a monitoring station calculated in the statistical form of a standard.

Micrometre

A millionth of a metre.

Natural sources

Emission sources such as biogenic emissions from vegetation, biological and geological sources, wildfires, and other sources not made by humans.

Nitrogen dioxide

A reddish-brown gas with a pungent and irritating odour.

Open sources

Emission sources that emit air contaminants over large geographical areas. Examples include dust from farms, construction, and paved and unpaved roads.

Oxidation

A chemical reaction where a substance gains an oxygen; for example, in the atmosphere, sulphur dioxide is oxidized by hydroxyl radicals to form sulphate.

Particulate matter

The general term used to describe a mixture of microscopic solid particles and liquid droplets suspended in air.

Point sources

Sources that have a fixed location and are identified individually by name and location.

Primary pollutant

Pollutant emitted directly to the atmosphere.

Residence time

The average length of time during which a particle is in a given location or condition.

Respirable particles

See definition for fine particulate matter.

Secondary pollutant

pollutant formed from other pollutants in the atmosphere.

Sen's slope

The Sen's slope (also known as the Thiel-Sen's estimator) is closely-related to and applied in conjunction with the Mann-Kendall Test. Compared to the common least squares regression, the Sen's slope procedure is a nonparametric method for computing the value of the true slope when there are gross errors or outliers in the data (Gilbert, 1987) without making assumptions of a normal distribution on the data.

Smog

A contraction of smoke and fog; colloquial term used for photochemical smog, which includes ozone, fine particulate matter and other contaminants; tends to be a brownish haze.

Stratosphere

Atmosphere 10 to 40 kilometres above the Earth's surface.

Stratospheric ozone

Ozone formed in the stratosphere from the conversion of oxygen molecules by solar radiation; ozone found there absorbs some of the sun's ultraviolet radiation and prevents it from reaching the Earth.

Styrene

Primarily a synthetic chemical that is used extensively in the manufacture of plastics, rubber, and resins. It is also known as vinylbenzene, ethenylbenzene, cinnamene, or phenylethylene.

Sulphur dioxide

A colourless gas that smells like burnt matches.

Transportation sources

Mobile emission sources such as wheeled vehicles, ships, aircraft and railroad locomotives.

Troposphere

Atmospheric layer extending from the surface up to about 10 kilometres above the Earth's surface.

Ultrafine particles

Particles that are less than 0.1 μm in aerodynamic diameter; mostly emitted from road traffic in urban environments. These tiny particles have larger surface areas per unit mass to absorb toxic chemicals and can penetrate deep into the lungs.

Upwind

The direction the wind is coming from. If the wind is blowing from the Northwest (blowing toward the Southeast) then the upwind direction is toward the Northwest and the downwind direction is toward the Southeast.

Appendix

The Appendix is intended for use in conjunction with the 2019 Annual Air Quality in Ontario Report. The Appendix briefly describes the provincial Air Quality Health Index (AQHI) network, quality assurance and quality control procedures, and the Ministry of the Environment, Conservation and Parks' air quality database. It also includes a series of tables displaying station locations and a listing of the summary statistics including means, maximums, percentile values and the number of exceedances of the Ontario Ambient Air Quality Criteria (AAQC) for each pollutant. In addition, trends for select pollutants are displayed for a 10-year period.

Monitoring network operations

Network description

In 2019, the ministry operated 39 ambient air monitoring sites across Ontario as part of the [AQHI](#) network. The [AQHI](#) network was comprised of 134 continuous monitoring instruments at 39 sites. These instruments have the capability of recording minute data (approximately 70 million data points per year) that are used to scan and validate the continuous hourly data.

Quality assurance and quality control

Day-to-day maintenance and support of the instruments are administered by ministry staff. Instrumentation precision is verified by daily automatic internal zero and span checks. Data analysts and station operators review span control charts to confirm instrument precision using a telemetry system. A quarterly quality assurance and quality control (QA/QC) review is performed on the ambient data set to highlight anomalies and administer corrective action in a timely manner.

The air monitoring station operators routinely inspect and maintain monitoring equipment and stations with mandatory quarterly on-site visits where secondary transfer standards are used to calibrate instrumentation. Station maintenance activities are recorded using [FieldWorker Inc.](#) software, an electronic documentation solution; this information is transferred directly to the ministry's database. The instrumentation used throughout the provincial air monitoring network has been standardized to Thermo Electron Corporation analyzers to streamline parts inventory and leverage common hardware used within each analyzer. The following is a summary of the instrumentation deployed within the network and are all [US EPA](#) designated equivalent methods:

- Nitrogen Oxides – TE42C/I
- Fine Particulate Matter – [SHARP 5030](#)
- Ozone – TE49C/I
- Sulphur Dioxide – TE43I

- Carbon Monoxide – TE48I
- Total Reduced Sulphur – TE43I/CDN101

The ministry operates a laboratory with gas reference standards that adhere to those of the [U.S. National Institute of Standards and Technology \(NIST\)](#) and the Air Quality Research Division of Environment and Climate Change Canada. The secondary transfer standards used by station operators are referenced and certified to the ministry's NIST primary standards on a quarterly basis.

The Ontario ambient air quality monitoring network undergoes constant maintenance to ensure a high standard of quality control. Continuous real-time data are consistently reviewed, assessed and validated by ministry staff. Immediate actions are taken to correct any inconsistencies that may affect the validity of the data. These measures ensure ambient air monitoring data are valid, complete, comparable, representative and accurate. As a result, the 2019 ambient air quality monitoring network had 99% valid data from over one million hourly data points.

Data base

The ambient air quality data used in this report are stored in the ministry's air quality information system (AQUIS) and are made available through the [Air Quality Ontario web site](#), and the [Ministry's Open Data Catalogue web page](#). A statistical pattern test is used to identify data anomalies, such as unusual pollutant concentrations. Each pollutant has a predetermined concentration range based on historical data. Values outside this range are flagged for further investigation.

Data are obtained from automated ambient air monitoring instruments that operate continuously to produce an average measurement for every hour for a possible total of 8,760 measurements in a given year. Hourly parameters measured include [NO/NO₂/NO_x](#), [PM_{2.5}](#), [O₃](#), [SO₂](#), [CO](#) and [TRS](#) compounds. An annual mean requires at least 6,570 hourly readings. In addition, each quarter of the year should have 75% valid data for [PM_{2.5}](#), whereas for ozone, only the 2nd and 3rd quarters of the year require 75% valid data based on protocols that are consistent with the Canadian Council of Ministers of the Environment (CCME) and the United States Environmental Protection Agency ([U.S. EPA](#)). For [VOC](#) samples, half of the method detection limit (MDL) is applied as appropriate to concentrations measured below the detection limit. An annual or monthly mean for 24-hour [VOC](#) samples requires 50% of valid samples.

Network descriptive table

The [AQHI](#) network for 2019 is summarized in the 2019 Ontario Continuous Ambient Air Monitoring Network. The table displays the station name, numerical identifier and pollutants measured. The numerical identifier is the station (ID) number, the first digit of which identifies the geographic region in which the station is located. Air monitoring stations within the [AQHI](#) network can measure up to six common pollutants ([NO₂](#), [PM_{2.5}](#), ozone, [SO₂](#), [CO](#) and [TRS](#) compounds) based on the pollutant(s) of concern for the regional area it represents.

The 2019 Ontario Continuous Ambient Air Monitoring Network also identifies the type of air monitoring site: ambient, road-side, Canadian Ambient Air Quality Standard (CAAQS), and/or National Air Pollution Surveillance (NAPS). Ambient sites represent the general air quality of an area without any direct influence of local industrial sources. Road-side sites are within approximately 100 m of a major roadway with daily traffic volumes greater than 10,000 vehicles per day.

Annual statistics and 10-year trends

The 2019 statistical data and 10-year trends for various continuous pollutants, and selected volatile organic compounds, are provided in 2019 Annual Statistics, and 10-year trends, respectively. The annual averages, maximums and percentiles are displayed in the annual statistics tables. (A percentile is the value equal to or below which a given percentage of the data set falls. For example, if 70% of the data are equal to or below 0.10 [ppm](#), the 70th percentile is 0.10 [ppm](#)).

The 10-year trends are calculated from monthly means through the Mann-Kendall (M-K) test. The M-K test is a nonparametric statistical approach that can be applied to data without making assumptions on the nature of the data distribution. The M-K test is essentially a test for uniform progression (zero change) in the slope of the linear regression of time-ordered data versus time (Gilbert, 1987). The M-K test is particularly suitable for environmental monitoring data since missing, trace and below detection limit values can be handled. This test can also be used to compare trends at multiple stations. The seasonal Kendall test, also performed in this Report, is a generalization of the M-K test (Gilbert, 1987) for use to determine the true trend when there are seasonal cycles in the data which do not constitute a true long-term trend. The 10-year change over time was based on the Sen's slope, also known as the Thiel-Sen's estimator of linear trend. The Sen's slope is closely-related to and applied in conjunction with the M-K Test. Compared to the common least squares regression, the Sen's slope procedure is a nonparametric method for computing the value of the true slope when there are gross errors or outliers in the data without making assumptions of a normal distribution on the data (Gilbert, 1987).

Other informative tables

Calculated [CAAQS](#) metrics for [PM_{2.5}](#) and ozone are presented for 2019 (based on a three-year average, 2017-2019) and over a 10-year period in Canadian Ambient Air Quality Standard Reporting. The percentage distribution of hourly [AQHI](#) readings within the various health risk categories for each of the 39 monitoring sites, and the number of air quality alerts issued in Ontario during 2019 are summarized in [AQHI](#) and Air Quality Alert Program Reporting.

2019 air monitoring network

2019 Ontario continuous ambient air monitoring network

ID	Station name	Station location	Year	Latitude	Longitude	Air intake	Type	AQHI	NO₂	PM_{2.5}	O₃	SO₂	CO	TRS
Total								39	36	39	39	11	5	4

ID	Station name	Station location	Year	Latitude	Longitude	Air intake	Type	AQHI	NO ₂	PM _{2.5}	O ₃	SO ₂	CO	TRS
12008	Windsor Downtown	467 University Ave. W.	1969	42°18'58.8"	-83°02'37.2"	4	A/RS/C/N	Y	T	T	T	T	T	N/A
12016	Windsor West	College Ave./South St.	1975	42°17'34.4"	-83°04'23.3"	4	A/N	Y	T	T	T	T	N/A	T
13001	Chatham	435 Grand Ave. W.	2005	42°24'13.3"	-82°12'29.9"	15	A/C/N	Y	T	T	T	N/A	N/A	N/A
14111	Sarnia	700 Christina St. N.	2016	42°59'25.0"	-82°23'43.2"	3	A/C/N	Y	T	T	T	T	N/A	T
15020	Grand Bend	Point Blake Conservation Area	1991	43°19'59.1"	-81°44'34.4"	5	A/N	Y	T	T	T	N/A	N/A	N/A
15026	London	42 St. Julien St.	2013	42°58'28.1"	-81°12'03.1"	5	A/C/N	Y	T	T	T	N/A	N/A	N/A
16015	Port Stanley	43665 Dexter Line, Elgin Water T. Plant	2002	42°40'19.5"	-81°09'46.4"	5	A/N	Y	T	T	T	N/A	N/A	N/A
18007	Tiverton	4th Concession/Bruce Rd. 23	1979	44°18'52.1"	-81°32'59.0"	4	A/N	Y	N/A	T	T	N/A	N/A	N/A
21005	Brantford	324 Grand River Ave.	2004	43°08'19.0"	-80°17'33.5"	5	A/C/N	Y	T	T	T	N/A	N/A	N/A
26060	Kitchener	West Ave./Homewood Ave.	1990	43°26'37.8"	-80°30'13.7"	5	A/C/N	Y	T	T	T	N/A	N/A	N/A
27067	St. Catharines	Argyle Cres., Pump Stn.	1987	43°09'36.2"	-79°14'05.1"	4	A/C/N	Y	T	T	T	N/A	N/A	N/A
28028	Guelph	Exhibition St./Clark St. W.	2000	43°33'05.8"	-80°15'51.0"	4	A/C/N	Y	T	T	T	N/A	N/A	N/A
29000	Hamilton Downtown	Elgin St./Kelly St.	1987	43°15'28.0"	-79°51'42.0"	4	A/RS/C/N	Y	T	T	T	T	T	T
29118	Hamilton West	Main St. W./Hwy 403	1985	43°15'26.8"	-79°54'27.9"	3	A/RS/N	Y	T	T	T	N/A	N/A	N/A
29214	Hamilton Mountain	250 Fennell Ave. W.	2019	43°14'28.4"	-79°53'21.9"	3	A/RS/N	Y	T	T	T	T	N/A	N/A
31103	Toronto Downtown*	Bay St./Wellesley St. W.	2000	43°39'46.7"	-79°23'17.2"	10	A/RS/C/N	Y	T	T	T	N/A	N/A	N/A
31129	Toronto Downtown*	55 John St., Metro Hall	2019	43°38'43.5"	-79°23'20.7"	2	A/RS/C/N	Y	T	T	T	N/A	N/A	N/A
33003	Toronto East	Kennedy Rd./Lawrence Ave. E.	1970	43°44'52.5"	-79°16'26.6"	4	A/RS/C/N	Y	T	T	T	N/A	N/A	N/A
34021	Toronto North	4905 Dufferin St., ECCC	1988	43°46'53.8"	-79°25'03.8"	5	A/RS/C/N	Y	T	T	T	T	T	N/A
35125	Toronto West	125 Resources Rd.	2003	43°42'34.0"	-79°32'36.6"	8	A/RS/C/N	Y	T	T	T	T	T	N/A
44008	Burlington	North Shore Blvd. E./Lakeshore Rd.	1979	43°18'54.4"	-79°48'09.5"	5	A/C/N	Y	T	T	T	N/A	N/A	N/A
44017	Oakville	Eighth Line/Glenashton Dr., Halton Reservoir	2003	43°29'12.9"	-79°42'08.2"	12	A/C/N	Y	T	T	T	N/A	N/A	N/A
44029	Milton	1120 Main St. E.	2019	43°31'46.7"	-79°51'44.8"	4	A/C/N	Y	T	T	T	T	N/A	N/A
45027	Oshawa	Brittania Ave. W., Ep Taylor Stables	2005	43°57'07.5"	-78°54'45.2"	7	A/C/N	Y	T	T	T	N/A	N/A	N/A
46090	Brampton	109 McLaughlin Rd. S.	2000	43°41'55.5"	-79°46'51.3"	5	A/C/N	Y	T	T	T	N/A	N/A	N/A
46108	Mississauga	3359 Mississauga Rd. N., U of T Campus	2007	43°32'49.1"	-79°39'31.3"	5	A/C/N	Y	T	T	T	N/A	N/A	N/A
47045	Barrie	83 Perry St.	2001	44°22'56.5"	-79°42'08.3"	5	A/C/N	Y	T	T	T	N/A	N/A	N/A
48006	Newmarket	Eagle St. W./McCaffrey Rd.	2001	44°02'39.5"	-79°28'59.7"	5	A/N	Y	T	T	T	N/A	N/A	N/A
49005	Parry Sound	7 Bay St.	2001	45°20'16.3"	-80°02'17.4"	5	A/N	Y	T	T	T	N/A	N/A	N/A
49010	Dorset	1026 Bellwood Acres Rd.	1981	45°13'27.4"	-78°55'58.6"	3	A/N	Y	N/A	T	T	N/A	N/A	N/A
51001	Ottawa Downtown	Rideau St./Wurtemberg St.	1971	45°26'03.6"	-75°40'33.6"	4	A/C/N	Y	T	T	T	T	T	N/A
51010	Petawawa	Petawawa Research Forest Facility	2007	45°59'48.2"	-77°26'28.3"	6	A/N	Y	N/A	T	T	N/A	N/A	N/A
52023	Kingston	23 Beechgrove Lane	2014	44°13'11.5"	-76°31'16.1"	5	A/C/N	Y	T	T	T	N/A	N/A	N/A
54012	Belleville	2 Sidney St., Water Treatment Plant	2002	44°09'01.9"	-77°23'43.8"	10	A/N	Y	T	T	T	N/A	N/A	N/A
56051	Cornwall	Bedford St./3rd St. W.	1970	45°01'04.7"	-74°44'06.8"	4	A/N	Y	T	T	T	N/A	N/A	N/A
59006	Peterborough	10 Hospital Dr.	1998	44°18'06.9"	-78°20'46.4"	10	A/C/N	Y	T	T	T	N/A	N/A	N/A
63203	Thunder Bay	421 James St. S.	2004	48°22'45.8"	-89°17'24.6"	15	A/RS/C/N	Y	T	T	T	N/A	N/A	N/A
71078	Sault Ste. Marie	Sault College	2004	46°31'59.5"	-84°18'35.7"	8	A/C/N	Y	T	T	T	T	N/A	T
75010	North Bay	Chippewa St. W., Dept. National Defence	1979	46°19'23.5"	-79°26'57.4"	4	A/RS/N	Y	T	T	T	N/A	N/A	N/A
Total								39	36	39	39	11	5	4

ID	Station name	Station location	Year	Latitude	Longitude	Air intake	Type	AQHI	NO ₂	PM _{2.5}	O ₃	SO ₂	CO	TRS
77233	Sudbury	155 Elm St.	2013	46°29'31.0"	-81°00'11.2"	3	A/C/N	Y	T	T	T	T	N/A	N/A
81103	Toronto Downtown*	185 College St., Wallberg Bldg, U OF T	2019	43°39'46.7"	-79°23'17.2"	17	A/C/N	Y	T	T	T	N/A	N/A	N/A
Total								39	36	39	39	11	5	4

Notes:**ID**

station identification number

Year

year station began monitoring

Air intake

height of air intake above ground (m)

Type

type of monitoring site

A

ambient

RS

road-side

C

Canadian Ambient Air Quality Standard (CAAQS)

N

National Air Pollution Surveillance (NAPS)

AQHI

Air Quality Health Index

T

telemetry

NO₂

nitrogen dioxide

PM_{2.5}

fine particulate matter

O₃

ground-level ozone

SO₂

sulphur dioxide

CO

carbon monoxide

TRS

total reduced sulphur

Y

yes

*Toronto Downtown was relocated on two occasions in 2019 and should be counted as one station.

2019 annual statistics**2019 nitric oxide (NO) annual statistics**

Unit: parts per billion (ppb)

ID	City	Location	Valid h	10%	30%	50%	70%	90%	99%	Mean	Max 1h	Max 24h
12008	Windsor Downtown	467 University Ave. W.	8475	0.1	0.5	1.0	1.8	5.0	34.9	2.68	164.8	64.5
12016	Windsor West	College Ave./South St.	8640	0.2	0.3	0.7	1.6	5.2	52.8	3.06	161.2	63.4
13001	Chatham	435 Grand Ave. W.	8747	0.0	0.1	0.4	1.0	3.4	14.8	1.36	75.4	23.5
14111	Sarnia	700 Christina St. N.	8673	0.4	0.6	0.9	1.3	3.1	16.5	1.72	76.0	11.7
15020	Grand Bend	Point Blake Conservation Area	8553	0.0	0.1	0.2	0.3	0.6	2.4	0.28	9.2	2.4
15026	London	42 St. Julien St.	8684	0.0	0.1	0.2	0.5	1.7	11.7	0.87	77.0	10.8
16015	Port Stanley	43665 Dexter Line, Elgin Water T. Plt	8674	0.0	0.1	0.1	0.3	0.9	3.6	0.39	31.1	4.3
21005	Brantford	324 Grand River Ave.	8659	0.0	0.1	0.2	0.5	1.9	11.3	0.92	49.4	8.0
26060	Kitchener	West Ave./Homewood Ave.	8711	0.0	0.2	0.3	0.6	2.0	21.0	1.19	107.6	20.8
27067	St. Catharines	Argyle Cres., Pump Stn.	8677	0.0	0.2	0.4	0.7	1.9	16.9	1.16	74.8	10.2
28028	Guelph	Exhibition St./Clark St. W.	8692	0.0	0.1	0.2	0.5	1.6	14.6	0.93	68.4	14.0

ID	City	Location	Valid h	10%	30%	50%	70%	90%	99%	Mean	Max 1h	Max 24h
29000	Hamilton Downtown	Elgin St./Kelly St.	8739	0.2	0.5	1.3	2.9	9.7	40.9	3.99	105.6	37.7
29118	Hamilton West	Main St. W./Hwy 403	8689	0.3	0.8	1.4	2.8	10.2	43.2	4.15	124.7	33.5
29214	Hamilton Mountain	250 Fennell Ave. W.	8747	0.0	0.2	0.6	1.0	4.2	22.5	1.83	111.0	19.8
31103	Toronto Downtown	Bay St./Wellesley St. W.	2783	0.0	0.4	1.0	1.8	4.3	21.4	INS	89.5	17.3
31129	Toronto Downtown	55 John St.	4602	1.4	2.7	4.4	7.9	16.4	50.2	INS	162.4	36.4
33003	Toronto East	Kennedy Rd./Lawrence Ave. E.	8665	0.2	0.6	1.3	2.6	6.6	42.2	3.42	164.4	33.9
34021	Toronto North	4905 Dufferin St., ECCC	8652	0.0	0.3	0.6	1.5	5.3	36.8	2.70	152.3	38.1
35125	Toronto West	125 Resources Rd.	8583	0.2	1.2	2.8	6.2	17.5	70.9	7.50	278.1	69.8
44008	Burlington	North Shore Blvd. E./Lakeshore Rd.	8730	0.4	0.7	1.2	2.3	6.5	30.3	2.95	112.9	19.8
44017	Oakville	Eighth Line/Glenashton Dr., Halton Res.	8685	0.1	0.2	0.4	0.9	3.9	26.8	1.84	337.4	25.8
44029	Milton	1120 Main St. E.	8575	0.4	1.0	1.2	2.0	6.0	45.8	3.62	163.0	33.6
45027	Oshawa	Brittania Ave. W., EP Taylor Stables	8734	0.1	0.3	0.4	0.8	1.6	8.4	0.88	35.8	7.2
46090	Brampton	109 McLaughlin Rd. S.	8662	0.0	0.1	0.2	0.8	4.1	39.5	2.17	147.8	30.2
46108	Mississauga	3359 Mississauga Rd. N., U of T Campus	8740	0.1	0.2	0.4	0.9	5.5	43.8	2.57	127.0	32.3
47045	Barrie	83 Perry St.	8733	0.0	0.3	0.7	1.6	3.5	29.3	2.18	169.1	24.2
48006	Newmarket	Eagle St. W./McCaffrey Rd.	8659	0.2	0.3	0.4	0.7	2.3	18.6	1.31	104.2	13.5
49005	Parry Sound	7 Bay St.	8676	0.1	0.2	0.3	0.5	1.4	6.9	0.72	41.4	5.7
51001	Ottawa Downtown	Rideau St./Wurtemberg St.	8712	0.3	0.6	0.8	1.2	2.8	15.8	1.61	70.7	15.1
52023	Kingston	23 Beechgrove Lane	8686	0.0	0.1	0.2	0.5	1.2	5.2	0.55	71.7	11.5
54012	Belleville	2 Sidney St., Water Treatment Plant	8742	0.2	0.2	0.4	0.7	3.0	15.1	1.29	58.1	10.7
56051	Cornwall	Bedford St./3rd St. W.	8691	0.2	0.3	0.5	0.8	1.9	24.1	1.52	130.7	21.7
59006	Peterborough	10 Hospital Dr.	8678	0.3	0.6	0.7	1.0	2.0	13.0	1.23	54.0	9.0
63203	Thunder Bay	421 James St. S.	8491	0.6	1.0	1.6	2.6	8.9	35.0	3.79	86.3	20.8
71078	Sault Ste. Marie	Sault College	8632	0.2	0.4	0.7	1.3	3.4	11.5	1.48	58.8	14.1
75010	North Bay	Chippewa St. W., Dept. National Defence	8717	0.3	0.5	0.7	1.2	3.0	22.6	1.79	99.1	19.5
77233	Sudbury	155 Elm St.	8603	0.3	0.6	1.0	1.8	4.6	37.7	2.77	151.1	37.2
81103	Toronto Downtown	Wallberg Building U of T	1191	0.4	0.7	1.2	2.3	6.3	31.7	INS	69.8	16.5

2019 nitrogen dioxide (NO₂) annual statistics

Unit: parts per billion (ppb)

NO₂ 1h AAQC: 200 ppb

NO₂ 24h AAQC: 100 ppb

ID	City	Location	Valid h	10%	30%	50%	70%	90%	99%	Mean	Max 1h	Max 24h	Number of times above 1h criteria	Number of times above 24h criteria
12008	Windsor Downtown	467 University Ave. W.	8475	4.0	6.3	8.9	12.2	20.5	38.8	10.94	56.5	34.4	0	0
12016	Windsor West	College Ave./South St.	8640	3.1	5.4	8.0	11.2	19.1	40.0	9.98	60.0	32.4	0	0
13001	Chatham	435 Grand Ave. W.	8747	1.9	3.2	4.5	6.4	11.0	25.1	5.84	45.8	28.0	0	0
14111	Sarnia	700 Christina St. N.	8673	0.9	2.6	4.8	8.2	15.4	29.5	6.80	47.2	24.5	0	0
15020	Grand Bend	Point Blake Conservation Area	8553	0.3	1.1	1.9	3.0	5.4	10.6	2.49	17.2	11.1	0	0
15026	London	42 St. Julien St.	8684	1.8	3.1	4.3	6.3	11.0	27.2	5.76	45.3	24.9	0	0
16015	Port Stanley	43665 Dexter Line, Elgin Water T. Plt	8674	0.8	1.6	2.4	3.5	6.0	11.9	3.02	23.6	9.8	0	0
21005	Brantford	324 Grand River Ave.	8658	2.0	2.9	4.0	6.0	11.1	24.0	5.57	41.5	24.2	0	0
26060	Kitchener	West Ave./Homewood Ave.	8711	1.8	2.9	4.4	6.7	12.7	31.7	6.25	57.6	26.1	0	0
27067	St. Catharines	Argyle Cres., Pump Stn.	8677	1.8	2.9	4.3	6.5	12.3	27.4	5.97	43.4	21.0	0	0
28028	Guelph	Exhibition St./Clark St. W.	8692	1.2	2.4	3.8	6.0	11.7	27.5	5.44	43.7	22.2	0	0
29000	Hamilton Downtown	Elgin St./Kelly St.	8737	4.0	6.6	9.9	15.4	24.4	40.0	12.49	58.2	36.5	0	0

ID	City	Location	Valid h	10%	30%	50%	70%	90%	99%	Mean	Max 1h	Max 24h	Number of times above 1h criteria	Number of times above 24h criteria
29118	Hamilton West	Main St. W./Hwy 403	8685	3.5	5.8	8.6	13.4	22.7	38.7	11.29	58.4	38.0	0	0
29214	Hamilton Mountain	250 Fennell Ave. W.	8747	2.1	4.0	6.0	10.0	20.0	36.0	8.81	57.0	35.3	0	0
31103	Toronto Downtown	Bay St./Wellesley St. W.	2783	3.9	7.3	10.8	15.3	25.1	45.3	INS	53.0	31.0	0	0
31129	Toronto Downtown	55 John St.	4602	6.1	9.3	12.6	16.7	25.0	37.9	INS	66.9	32.3	0	0
33003	Toronto East	Kennedy Rd./Lawrence Ave. E.	8664	2.6	4.9	7.5	11.8	21.6	42.6	10.24	78.3	33.7	0	0
34021	Toronto North	4905 Dufferin St., ECCC	8649	2.8	4.8	7.5	12.1	22.2	42.7	10.51	70.1	33.4	0	0
35125	Toronto West	125 Resources Rd.	8583	4.5	8.3	12.3	17.6	28.0	47.1	14.62	75.9	38.7	0	0
44008	Burlington	North Shore Blvd. E./Lakeshore Rd.	8728	2.4	4.6	7.1	11.2	20.7	37.2	9.61	53.2	31.3	0	0
44017	Oakville	Eighth Line/Glenashton Dr., Halton Res.	8684	2.4	4.1	6.5	10.4	19.4	38.8	9.08	58.1	33.9	0	0
44029	Milton	1120 Main St. E.	8569	2.0	4.0	6.0	9.8	20.2	39.0	8.86	57.0	32.9	0	0
45027	Oshawa	Brittania Ave. W., EP Taylor Stables	8734	0.7	1.3	2.2	3.8	8.0	17.4	3.50	38.9	16.4	0	0
46090	Brampton	109 McLaughlin Rd. S.	8662	1.6	3.1	5.6	9.8	20.1	40.0	8.59	62.3	35.7	0	0
46108	Mississauga	3359 Mississauga Rd. N., U of T Campus	8737	2.1	3.7	6.0	9.8	17.6	37.3	8.40	52.3	30.6	0	0
47045	Barrie	83 Perry St.	8733	1.7	2.8	4.0	6.7	14.0	32.8	6.34	56.0	25.2	0	0
48006	Newmarket	Eagle St. W./McCaffrey Rd.	8659	1.0	2.0	3.3	5.7	12.5	33.3	5.47	55.0	26.1	0	0
49005	Parry Sound	7 Bay St.	8676	0.6	1.0	1.5	2.5	5.5	18.9	2.64	34.8	12.5	0	0
51001	Ottawa Downtown	Rideau St./Wurtemberg St.	8712	1.6	2.8	4.4	7.4	14.7	32.5	6.70	51.2	26.9	0	0
52023	Kingston	23 Beechgrove Lane	8683	1.1	1.8	2.6	4.1	8.5	22.0	4.01	50.3	19.6	0	0
54012	Belleville	2 Sidney St., Water Treatment Plant	8743	1.1	1.8	2.7	4.4	9.2	24.2	4.24	41.4	17.2	0	0
56051	Cornwall	Bedford St./3rd St. W.	8691	1.2	2.0	3.1	5.1	10.8	30.2	5.03	49.4	28.3	0	0
59006	Peterborough	10 Hospital Dr.	8678	0.6	1.4	2.4	4.0	8.5	25.4	3.90	43.3	18.2	0	0
63203	Thunder Bay	421 James St. S.	8491	1.7	2.9	4.4	7.2	14.6	31.6	6.65	49.2	25.2	0	0
71078	Sault Ste. Marie	Sault College	8632	1.1	1.8	2.8	4.7	10.3	22.6	4.47	46.8	20.8	0	0
75010	North Bay	Chippewa St. W., Dept. National Defence	8717	1.0	1.6	2.6	4.6	11.7	36.6	5.11	53.8	27.0	0	0
77233	Sudbury	155 Elm St.	8603	1.6	2.7	4.2	6.8	15.3	41.4	6.88	56.8	29.5	0	0
81103	Toronto Downtown	Wallberg Building U of T	1191	3.2	5.1	7.4	10.2	18.1	32.7	INS	37.1	22.2	0	0

2019 nitrogen oxides (NO_x) annual statistics

Unit: parts per billion (ppb)

ID	City	Location	Valid h	10%	30%	50%	70%	90%	99%	Mean	Max 1h	Max 24h
12008	Windsor Downtown	467 University Ave. W.	8475	4.5	7.3	10.2	14.2	25.6	67.4	13.6	200.4	93.8
12016	Windsor West	College Ave./South St.	8640	3.6	6.2	8.9	13.0	23.7	86.8	13.0	211.2	90.8
13001	Chatham	435 Grand Ave. W.	8747	2.0	3.5	5.2	7.7	13.9	34.2	7.2	117.1	47.6
14111	Sarnia	700 Christina St. N.	8673	1.5	3.4	5.8	9.7	18.4	42.4	8.5	120.0	33.8
15020	Grand Bend	Point Blake Conservation Area	8553	0.3	1.1	2.0	3.2	5.9	12.1	2.7	23.1	12.6
15026	London	42 St. Julien St.	8684	2.0	3.4	4.8	6.9	12.6	37.3	6.6	116.7	35.6
16015	Port Stanley	43665 Dexter Line, Elgin Water T. Plt	8674	0.9	1.7	2.6	3.8	6.7	15.5	3.4	51.7	12.1
21005	Brantford	324 Grand River Ave.	8659	2.2	3.1	4.4	6.7	13.4	31.6	6.5	74.8	28.9
26060	Kitchener	West Ave./Homewood Ave.	8711	2.0	3.2	4.8	7.5	14.6	47.1	7.4	157.6	45.8

ID	City	Location	Valid h	10%	30%	50%	70%	90%	99%	Mean	Max 1h	Max 24h
27067	St. Catharines	Argyle Cres., Pump Stn.	8677	2.1	3.3	4.7	7.2	14.5	40.1	7.1	111.4	28.3
28028	Guelph	Exhibition St./Clark St. W.	8692	1.5	2.6	4.1	6.5	13.2	38.7	6.4	108.1	36.0
29000	Hamilton Downtown	Elgin St./Kelly St.	8739	4.4	7.6	11.6	18.3	34.7	75.3	16.5	156.5	71.8
29118	Hamilton West	Main St. W./Hwy 403	8686	4.2	7.0	10.3	16.7	32.5	76.1	15.4	167.1	71.5
29214	Hamilton Mountain	250 Fennell Ave. W.	8747	2.4	4.2	7.0	11.3	24.0	52.9	10.7	164.0	55.1
31103	Toronto Downtown	Bay St./Wellesley St. W.	2783	4.0	8.2	12.1	17.2	28.8	64.6	INS	140.2	47.7
31129	Toronto Downtown	55 John St.	4602	8.1	12.7	17.8	24.5	39.1	85.3	INS	229.3	68.7
33003	Toronto East	Kennedy Rd./Lawrence Ave. E.	8665	3.1	6.0	9.2	14.3	27.4	78.2	13.7	228.0	63.6
34021	Toronto North	4905 Dufferin St., ECCC	8652	3.3	5.5	8.6	13.8	28.1	72.7	13.2	214.3	70.0
35125	Toronto West	125 Resources Rd.	8583	5.5	10.5	15.9	23.6	45.1	109.5	22.1	353.9	106.0
44008	Burlington	North Shore Blvd. E./Lakeshore Rd.	8730	3.0	5.6	8.7	13.6	26.2	62.5	12.6	161.7	49.3
44017	Oakville	Eighth Line/Glenashton Dr., Halton Res.	8685	2.7	4.5	7.1	11.5	22.9	62.3	10.9	386.9	59.6
44029	Milton	1120 Main St. E.	8575	3.0	5.0	7.6	12.0	27.0	79.6	12.5	217.0	65.1
45027	Oshawa	Brittania Ave. W., EP Taylor Stables	8734	1.0	1.8	2.8	4.6	9.6	23.2	4.4	61.3	22.6
46090	Brampton	109 McLaughlin Rd. S.	8662	1.8	3.3	6	10.9	24.1	75.4	10.74	206.1	65.8
46108	Mississauga	3359 Mississauga Rd. N., U of T Campus	8740	2.5	4.2	6.6	11	23.4	75.1	10.97	177.8	62.9
47045	Barrie	83 Perry St.	8733	2	3.4	5	7.8	18	56.3	8.52	207.8	45.0
48006	Newmarket	Eagle St. W./McCaffrey Rd.	8659	1.3	2.4	3.9	6.6	14.8	49.0	6.78	126.5	35.7
49005	Parry Sound	7 Bay St.	8676	0.8	1.4	2	3.1	6.7	23.4	3.34	58.5	17.2
51001	Ottawa Downtown	Rideau St./Wurtemberg St.	8712	2.2	3.6	5.4	8.7	17.2	46.5	8.31	102.3	42.0
52023	Kingston	23 Beechgrove Lane	8686	1.1	1.9	2.9	4.6	9.4	26.9	4.55	122.0	31.0
54012	Belleville	2 Sidney St., Water Treatment Plant	8742	1.4	2.1	3.2	5.4	11.7	36.5	5.53	83.1	21.4
56051	Cornwall	Bedford St./3rd St. W.	8691	1.5	2.5	3.7	6	12.9	51.8	6.54	170.7	41.9
59006	Peterborough	10 Hospital Dr.	8678	1.2	2	3.1	5	10.5	34.8	5.14	91.1	25.0
63203	Thunder Bay	421 James St. S.	8491	2.7	4.2	6.3	10.3	22.9	59.9	10.44	123.6	44.5
71078	Sault Ste. Marie	Sault College	8632	1.5	2.4	3.6	6	13.7	31.1	5.95	105.4	34.8
75010	North Bay	Chippewa St. W., Dept. National Defence	8717	1.3	2.2	3.5	5.9	14.5	55.9	6.91	145.3	46.5
77233	Sudbury	155 Elm St.	8603	2.1	3.5	5.4	8.7	19.8	75.5	9.65	187.8	66.6
81103	Toronto Downtown	Wallberg Building U of T	1191	3.9	6.3	8.8	12.9	23.7	58.8	INS	105.8	38.6

2019 fine particulate matter (PM_{2.5}) annual statistics

Unit: micrograms per cubic metre (µg/m³)

PM_{2.5} 24h reference level: 28 µg/m³

ID	City	Location	Valid h	10%	30%	50%	70%	90%	99%	Mean	Max 1h	Max 24h	Number of times above 24h reference level
12008	Windsor Downtown	467 University Ave. W.	8488	3	4	6	9	15	28	7.8	48	27	0
12016	Windsor West	College Ave./South St.	8620	3	5	8	11	17	32	9.1	54	38	3
13001	Chatham	435 Grand Ave. W.	8718	2	3	5	9	14	24	6.8	41	27	0
14111	Sarnia	700 Christina St. N.	8719	1	3	5	9	16	28	7.1	57	31	1
15020	Grand Bend	Point Blake Conservation Area	8541	2	2	4	6	11	20	5.4	40	23	0
15026	London	42 St. Julien St.	8746	2	3	5	8	14	26	6.7	55	26	0
16015	Port Stanley	43665 Dexter Line, Elgin Water T. Plt	8697	1	3	5	8	14	25	6.7	42	22	0
18007	Tiverton	4th Concession/Bruce Rd. 23	8640	1	2	4	6	11	21	5.0	42	21	0
21005	Brantford	324 Grand River Ave.	8729	2	4	6	9	15	29	7.4	91	28	0
26060	Kitchener	West Ave./Homewood Ave.	8725	2	3	6	8	15	28	7.2	56	31	1
27067	St. Catharines	Argyle Cres., Pump Stn.	8625	2	3.9	5	8	14	26	7.0	50	25	0
28028	Guelph	Exhibition St./Clark St. W.	8723	1	3	5	9	16	29	7.1	55	29	1
29000	Hamilton Downtown	Elgin St./Kelly St.	8646	2	5	7	11	18	30	8.8	67	29	2

ID	City	Location	Valid h	10%	30%	50%	70%	90%	99%	Mean	Max 1h	Max 24h	Number of times above 24h reference level
29118	Hamilton West	Main St. W./Hwy 403	8726	2	4	6	9	16	28	7.8	50	26	0
29214	Hamilton Mountain	250 Fennell Ave. W.	8678	2	4	6	9	16	31	7.9	61	28	0
31103	Toronto Downtown	Bay St./Wellesley St. W.	2852	2	4	6	9	16	28	INS	55	29	1
31129	Toronto Downtown	55 John St.	4582	3	5	7	9	15	29	INS	44	25	0
33003	Toronto East	Kennedy Rd./Lawrence Ave. E.	8748	2	4	6	8	14	26	7.0	51	31	1
34021	Toronto North	4905 Dufferin St., ECCC	8626	1	3	5	8	14	28	6.8	52	32	1
35125	Toronto West	125 Resources Rd.	8688	2	4	6	8	14	25	7.2	72	25	0
44008	Burlington	North Shore Blvd. E./Lakeshore Rd.	8730	2	3	6	8	15	25	7.0	55	29	1
44017	Oakville	Eighth Line/Glenashton Dr., Halton Res.	8621	2	4	6	9	14	26	7.2	52	28	0
44029	Milton	1120 Main St. E.	8530	2	4	6	9	15	27	7.5	44	27	0
45027	Oshawa	Brittania Ave. W., EP Taylor Stables	8667	2	3	5	7	12	26	6.1	55	28	0
46090	Brampton	109 McLaughlin Rd. S.	8720	2	3	5	8	14	26	6.8	47	26	0
46108	Mississauga	3359 Mississauga Rd. N., U of T Campus	8697	1	3	5	9	15	26	7.0	47	29	1
47045	Barrie	83 Perry St.	8510	2	3	5	9	16	30	7.5	51	34	2
48006	Newmarket	Eagle St. W./McCaffrey Rd.	8682	1	2	4	7	13	25	5.9	43	26	0
49005	Parry Sound	7 Bay St.	8612	1	2	3	5	9	21	4.4	51	21	0
49010	Dorset	1026 Bellwood Acres Rd.	8689	1	2	3	5	9	18	4.1	34	20	0
51001	Ottawa Downtown	Rideau St./Wurtemburg St.	8517	2	3	5	7	12	23	5.9	39	29	1
51010	Petawawa	Petawawa Research Forest Facility	8623	1	2	3	5	7	14	3.8	29	14	0
52023	Kingston	23 Beechgrove Lane	8735	1	3	4	6	11	22	5.4	59	26	0
54012	Belleville	2 Sidney St., Water Treatment Plant	8586	2	3	4	7	13	25	6.1	45	31	1
56051	Cornwall	Bedford St./3rd St. W.	8702	2	3	5	7	11	23	5.9	67	25	0
59006	Peterborough	10 Hospital Dr.	8730	1	3	4	7	13	25	6.0	48	28	0
63203	Thunder Bay	421 James St. S.	8702	1	3	4	6	10	22	5.1	70	24	0
71078	Sault Ste. Marie	Sault College	8652	1	2	4	5	10	20	4.8	55	19	0
75010	North Bay	Chippewa St. W., Dept. National Defence	8711	1	2	4	5	9	17	4.5	59	19	0
77233	Sudbury	155 Elm St.	8706	1	2	4	6	10	22	5.0	75	22	0
81103	Toronto Downtown	Wallberg Building U of T	1236	1	3	5	8	15	26	INS	46	18	0

Notes

- Measurements taken by SHARP 5030.
- The PM_{2.5} 24-hour reference level of 28 µg/m³ is based on the 24-hour PM_{2.5} Canadian Ambient Air Quality Standard (CAAQS) established in 2015.

2019 ground-level ozone (O₃) annual statistics

Unit: parts per billion (ppb)

O₃ 1h AAQC: 80 ppb

ID	City	Location	Valid h	10%	30%	50%	70%	90%	99%	Mean	Max 1h	Max 24h	Number of times above 1h criterion
12008	Windsor Downtown	467 University Ave. W.	8512	11	20	26	32	42	60	26.6	82	55	1

ID	City	Location	Valid h	10%	30%	50%	70%	90%	99%	Mean	Max 1h	Max 24h	Number of times above 1h criterion
12016	Windsor West	College Ave./South St.	8635	10	20	27	34	44	61	27.3	80	49	0
13001	Chatham	435 Grand Ave. W.	8724	14	23	29	35	44	59	29.2	76	53	0
14111	Sarnia	700 Christina St. N.	8675	14	23	29	36	45	62	29.2	87	56	4
15020	Grand Bend	Point Blake Conservation Area	8528	17	26	32	37	45	60	31.6	85	53	7
15026	London	42 St. Julien St.	8694	9	21	27	33	43	55.1	26.8	70	49	0
16015	Port Stanley	43665 Dexter Line, Elgin Water T. Plt	8666	17	26	32	38	48	61	32.3	77	56	0
18007	Tiverton	4th Concession/Bruce Rd. 23	8694	18	25	31	37	43	56	31.1	81	54	1
21005	Brantford	324 Grand River Ave.	8680	10	21	28	34	44	56	27.5	74	49	0
26060	Kitchener	West Ave./Homewood Ave.	8697	11	21	27	33	43	55	27.2	77	47	0
27067	St. Catharines	Argyle Cres., Pump Stn.	8704	12	23	29	35	43	56	28.4	70	48	0
28028	Guelph	Exhibition St./Clark St. W.	8690	11	21	27	33	41	53	26.3	74	47	0
29000	Hamilton Downtown	Elgin St./Kelly St.	8677	7	18	24	31	40	53.3	24.4	65	47	0
29118	Hamilton West	Main St. W./Hwy 403	8689	4	17	24	31	40	52	23.6	65	46	0
29214	Hamilton Mountain	250 Fennell Ave. W.	8747	12	21	27	33	43	56	27.5	70	51	0
31103	Toronto Downtown	Bay St./Wellesley St. W.	2827	13	22	28	34	40	49	INS	INS	INS	0
31129	Toronto Downtown	55 John St.	4589	7	15	20	25	37	55	INS	76	46	0
33003	Toronto East	Kennedy Rd./Lawrence Ave. E.	8667	9	19	25	31	39	51	24.6	67	47	0
34021	Toronto North	4905 Dufferin St., ECCC	8585	7	17	24	31	40	53	24.1	77	43	0
35125	Toronto West	125 Resources Rd.	8463	4	15	22	28	38	55	21.8	77	44	0
44008	Burlington	North Shore Blvd. E./Lakeshore Rd.	8694	9	20	27	34	42	56	26.6	74	47	0
44017	Oakville	Eighth Line/Glenashton Dr., Halton Res.	8685	11	21	27	33	42	56	27.1	71	50	0
44029	Milton	1120 Main St. E.	8573	8	21	27	34	43	58	26.9	77	50	0
45027	Oshawa	Brittania Ave. W., EP Taylor Stables	8706	9	20	25	30	37	51	24.4	66	40	0
46090	Brampton	109 McLaughlin Rd. S.	8611	9	20	27	33	42	55	26.5	72	49	0
46108	Mississauga	3359 Mississauga Rd. N., U of T Campus	8717	5	18	25	32	40.5	53	24.5	65	48	0
47045	Barrie	83 Perry St.	8712	9	20	26	33	40	51	25.7	75	47	0
48006	Newmarket	Eagle St. W./McCaffrey Rd.	8642	13	22	28	34	41	54	27.8	88	48	4
49005	Parry Sound	7 Bay St.	8682	16	25	30	36	43	54	29.8	68	48	0
49010	Dorset	1026 Bellwood Acres Rd.	8671	10	22	28	35	42	52	27.5	64	47	0
51001	Ottawa Downtown	Rideau St./Wurtemberg St.	8725	11	20	26	32	39	49	25.9	57	46	0
51010	Petawawa	Petawawa Research Forest Facility	8746	12	22	28	34	41	49	27.3	58	47	0
52023	Kingston	23 Beechgrove Lane	8680	16	25	30	35	43	55	29.9	68	51	0
54012	Belleville	2 Sidney St., Water Treatment Plant	8743	15	24	30	35	43	56	29.6	73	51	0
56051	Cornwall	Bedford St./3rd St. W.	8686	12	22	28	33	40	50	26.9	58	46	0
59006	Peterborough	10 Hospital Dr.	8684	14	23	28	34	42	53	28.3	68	48	0
63203	Thunder Bay	421 James St. S.	8695	8	18	24	30	37	48	23.7	56	47	0
71078	Sault Ste. Marie	Sault College	8652	15	23	28	34	41	51	28.1	61	50	0
75010	North Bay	Chippewa St. W., Dept. National Defence	8722	11	21	27	32	40	50	26.4	63	46	0
77233	Sudbury	155 Elm St.	8607	12	21	27	32	39	49	26.3	75	46	0
81103	Toronto Downtown	Wallberg Building U of T	1191	14	25	31	36	43	54	INS	64	44	0

2019 sulphur dioxide (SO₂) annual statistics

Unit: parts per billion (ppb)

SO₂ 10 min AAQC: 67 ppb

SO₂ 1h AAQC: 40 ppb

SO₂ 1y AAQC: 4 ppb

ID	City	Location	Valid h	10%	30%	50%	70%	90%	99%	Mean	Max 1h	Max 24h	Number of times above 10 min criteria	Number of times above 1h criteria	Number of times above annual criteria
12008	Windsor Downtown	467 University Ave. W.	8514	0.0	0.0	0.1	0.2	1.0	6.2	0.44	21.8	6.7	0	0	0
12016	Windsor West	College Ave./South St.	8042	0.0	0.1	0.3	0.6	1.9	8.4	0.82	31.7	7.9	0	0	0
14111	Sarnia	700 Christina St. N.	8697	0.0	0.1	0.3	0.6	3.7	32.7	1.93	69.4	30.2	37	47	0
29000	Hamilton Downtown	Elgin St./Kelly St.	8706	0.2	0.4	0.7	2.0	15.4	52.1	4.75	123.7	45.9	269	185	1
29214	Hamilton Mountain	250 Fennell Ave. W.	8532	0.1	0.3	0.5	1.7	10.2	40.4	3.47	68.7	42.1	40	88	0
34021	Toronto North	4905 Dufferin St., ECCC	8617	0.0	0.0	0.0	0.1	0.3	2.0	0.15	8.6	1.6	0	0	0
35125	Toronto West	125 Resources Rd.	8458	0.0	0.1	0.1	0.2	0.5	2.5	0.27	11.8	2.3	0	0	0
44029	Milton	1120 Main St. E.	4654	0.5	0.7	0.9	1.0	2.0	5.6	INS	14.9	3.7	0	0	0
51001	Ottawa Downtown	Rideau St./Wurtemberg St.	8733	0.1	0.1	0.1	0.2	0.3	0.7	0.17	2.7	0.6	0	0	0
71078	Sault Ste. Marie	Sault College	8607	0.0	0.1	0.1	0.2	0.8	14.4	0.70	52.0	10.9	7	6	0
77233	Sudbury	155 Elm St.	8596	0.1	0.1	0.2	0.5	2.7	15.6	1.15	93.8	8.3	18	6	0

2019 carbon monoxide (CO) annual statistics

Unit: parts per million (ppm)

CO 1h AAQC: 30 ppm

CO 8h AAQC: 13 ppm

ID	City	Location	Valid h	10%	30%	50%	70%	90%	99%	Mean	Max 1h	Max 8h	Number of times above 1h criteria	Number of times above 8h criteria
12008	Windsor Downtown	467 University Ave. W.	8195	0.16	0.18	0.21	0.24	0.34	0.70	0.24	2.33	1.328	0	0
29000	Hamilton Downtown	Elgin St./Kelly St.	8616	0.14	0.17	0.21	0.27	0.41	0.69	0.25	1.89	0.95	0	0
34021	Toronto North	4905 Dufferin St., ECCC	8493	0.14	0.16	0.19	0.22	0.30	0.47	0.20	1.03	0.71	0	0
35125	Toronto West	125 Resources Rd.	8506	0.16	0.19	0.22	0.26	0.35	0.62	0.24	1.49	0.89	0	0
51001	Ottawa Downtown	Rideau St./Wurtemberg St.	8688	0.12	0.15	0.17	0.20	0.25	0.41	0.18	0.68	0.54	0	0

2019 total reduced sulphur (TRS) compounds annual statistics

Unit: parts per billion (ppb)

ID	City	Location	Valid h	10%	30%	50%	70%	90%	99%	Mean	Max 1h	Max 24h
12016	Windsor West	College Ave./South St.	8604	0	0	0	0	0	2	0.09	8	1
14111	Sarnia	700 Christina St. N.	8694	0	0	0	0	0	1	0.04	2	1
29000	Hamilton Downtown	Elgin St./Kelly St.	8738	0	0	0	0	0	1	0.06	9	1
71078	Sault Ste. Marie	Sault College	8559	0	0	0	0	1	1	0.28	5	1

2019 benzene annual statistics

Unit: micrograms per cubic metre ($\mu\text{g}/\text{m}^3$)Benzene 24h AAQC: $2.3 \mu\text{g}/\text{m}^3$ Benzene annual AAQC: $0.45 \mu\text{g}/\text{m}^3$

ID	City	Location	Number of samples	10%	25%	50%	75%	90%	Max	Min	Mean	Standard deviation	Number of times above 24h criteria	Number of times above annual criteria
12016	Windsor West	College Ave./South St.	54	0.265	0.315	0.380	0.505	0.672	1.586	0.223	0.445	0.217	0	0
14111	Sarnia	700 Christina St.	57	0.100	0.242	0.335	0.545	0.739	2.047	0.100	0.419	0.319	0	0
15026	London	42 St. Julien St.	54	0.100	0.218	0.292	0.376	0.450	0.578	0.100	0.296	0.118	0	0
26060	Kitchener	West Ave./Homewood Ave.	57	0.100	0.212	0.291	0.380	0.461	0.692	0.100	0.290	0.147	0	0
29000	Hamilton Downtown	Elgin St./Kelly St.	59	0.222	0.316	0.411	0.657	1.129	2.070	0.100	0.568	0.427	0	1
34021	Toronto North	4905 Dufferin St., ECCC	50	0.100	0.231	0.333	0.405	0.602	0.935	0.100	0.341	0.189	0	0
48006	Newmarket	Eagle St. W./McCaffrey Rd.	55	0.100	0.100	0.229	0.318	0.424	0.693	0.100	0.250	0.146	0	0
51001	Ottawa Downtown	Rideau St./Wurtemberg St.	49	0.100	0.209	0.264	0.399	0.542	1.017	0.100	0.323	0.205	0	0

2019 toluene annual statisticsUnit: micrograms per cubic metre ($\mu\text{g}/\text{m}^3$)Toluene 24h AAQC (based on odour): $2,000 \mu\text{g}/\text{m}^3$

ID	City	Location	Number of samples	10%	25%	50%	75%	90%	Max	Min	Mean	Standard deviation	Number of times above 24h criteria
12016	Windsor West	College Ave./South St.	54	0.304	0.415	0.648	0.998	1.489	2.184	0.223	0.797	0.487	0
14111	Sarnia	700 Christina St.	57	0.100	0.243	0.542	0.931	1.638	6.652	0.100	0.779	0.996	0
15026	London	42 St. Julien St.	54	0.100	0.245	0.412	0.695	0.891	1.747	0.100	0.491	0.340	0
26060	Kitchener	West Ave./Homewood Ave.	57	0.100	0.307	0.433	0.618	1.019	4.530	0.100	0.572	0.626	0
29000	Hamilton Downtown	Elgin St./Kelly St.	59	0.279	0.361	0.624	1.031	1.581	3.573	0.100	0.817	0.676	0
34021	Toronto North	4905 Dufferin St., ECCC	50	0.487	0.677	1.065	1.586	2.780	6.942	0.100	1.390	1.183	0
48006	Newmarket	Eagle St. W./McCaffrey Rd.	55	0.100	0.100	0.252	0.476	0.779	2.731	0.100	0.418	0.471	0
51001	Ottawa Downtown	Rideau St./Wurtemberg St.	49	0.274	0.369	0.550	0.798	1.047	1.571	0.100	0.618	0.337	0

2019 ethylbenzene annual statisticsUnit: micrograms per cubic metre ($\mu\text{g}/\text{m}^3$)Ethylbenzene 24h AAQC: $1,000 \mu\text{g}/\text{m}^3$

ID	City	Location	Number of sample	10%	25%	50%	75%	90%	Max	Min	Mean	Standard deviation	Number of times above 24h criteria
12016	Windsor West	College Ave./South St.	54	0.040	0.050	0.121	0.174	0.222	0.589	0.040	0.137	0.106	0
14111	Sarnia	700 Christina St.	57	0.040	0.040	0.086	0.140	0.259	0.647	0.040	0.118	0.122	0
15026	London	42 St. Julien St.	54	0.040	0.040	0.040	0.094	0.117	0.251	0.040	0.070	0.049	0
26060	Kitchener	West Ave./Homewood Ave.	57	0.040	0.040	0.040	0.102	0.156	0.238	0.040	0.079	0.053	0

ID	City	Location	Number of sample	10%	25%	50%	75%	90%	Max	Min	Mean	Standard deviation	Number of times above 24h criteria
29000	Hamilton Downtown	Elgin St./Kelly St.	59	0.040	0.040	0.096	0.162	0.284	0.557	0.040	0.126	0.113	0
34021	Toronto North	4905 Dufferin St., ECCC	50	0.040	0.084	0.110	0.209	0.302	0.717	0.040	0.157	0.131	0
48006	Newmarket	Eagle St. W./McCaffrey Rd.	55	0.040	0.040	0.040	0.065	0.113	0.368	0.040	0.067	0.062	0
51001	Ottawa Downtown	Rideau St./Wurtemberg St.	49	0.040	0.040	0.040	0.083	0.139	0.202	0.040	0.064	0.043	0

2019 m- and p-xylene annual statistics

Unit: micrograms per cubic metre ($\mu\text{g}/\text{m}^3$)

ID	City	Location	Number of sample	10%	25%	50%	75%	90%	Max	Min	Mean	Standard deviation
12016	Windsor West	College Ave./South St.	54	0.100	0.100	0.305	0.494	0.785	2.302	0.100	0.409	0.386
14111	Sarnia	700 Christina St.	57	0.100	0.100	0.202	0.300	0.533	1.114	0.100	0.256	0.224
15026	London	42 St. Julien St.	54	0.100	0.100	0.100	0.243	0.368	0.832	0.100	0.200	0.170
26060	Kitchener	West Ave./Homewood Ave.	57	0.100	0.100	0.100	0.273	0.431	0.775	0.100	0.223	0.174
29000	Hamilton Downtown	Elgin St./Kelly St.	59	0.100	0.100	0.247	0.529	0.883	1.841	0.100	0.398	0.406
34021	Toronto North	4905 Dufferin St., ECCC	50	0.100	0.229	0.317	0.651	1.012	2.098	0.100	0.500	0.446
48006	Newmarket	Eagle St. W./McCaffrey Rd.	55	0.100	0.100	0.100	0.218	0.376	1.068	0.100	0.191	0.198
51001	Ottawa Downtown	Rideau St./Wurtemberg St.	49	0.100	0.100	0.100	0.244	0.362	0.676	0.100	0.186	0.132

2019 o-xylene annual statistics

Unit: micrograms per cubic metre ($\mu\text{g}/\text{m}^3$)

ID	City	Location	Number of sample	10%	25%	50%	75%	90%	Max	Min	Mean	Standard deviation
12016	Windsor West	College Ave./South St.	54	0.045	0.045	0.115	0.191	0.272	0.564	0.045	0.147	0.118
14111	Sarnia	700 Christina St.	57	0.045	0.045	0.045	0.119	0.200	0.414	0.045	0.101	0.085
15026	London	42 St. Julien St.	54	0.045	0.045	0.045	0.085	0.145	0.304	0.045	0.074	0.057
26060	Kitchener	West Ave./Homewood Ave.	57	0.045	0.045	0.045	0.101	0.147	0.302	0.045	0.083	0.061
29000	Hamilton Downtown	Elgin St./Kelly St.	59	0.045	0.045	0.101	0.187	0.310	0.814	0.045	0.145	0.149
34021	Toronto North	4905 Dufferin St., ECCC	50	0.045	0.045	0.109	0.197	0.320	0.680	0.045	0.156	0.143
48006	Newmarket	Eagle St. W./McCaffrey Rd.	55	0.045	0.045	0.045	0.045	0.127	0.315	0.045	0.068	0.057
51001	Ottawa Downtown	Rideau St./Wurtemberg St.	49	0.045	0.045	0.045	0.106	0.141	0.279	0.045	0.078	0.052

2019 1,3-butadiene annual statistics

Unit: micrograms per cubic metre ($\mu\text{g}/\text{m}^3$)

1,3-Butadiene 24h AAQC: $10.0 \mu\text{g}/\text{m}^3$

1,3-butadiene annual AAQC: $2.0 \mu\text{g}/\text{m}^3$

ID	City	Location	Number of sample	10%	25%	50%	75%	90%	Max	Min	Mean	Standard deviation	Number of times above annual criteria 24-hour	Number of times above annual criteria 1 year
12016	Windsor West	College Ave./South St.	54	0.025	0.025	0.025	0.025	0.025	0.090	0.025	0.028	0.013	0	0
14111	Sarnia	700 Christina St.	57	0.025	0.025	0.025	0.025	0.084	0.608	0.025	0.054	0.093	0	0
15026	London	42 St. Julien St.	54	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.000	0	0
26060	Kitchener	West Ave./Homewood Ave.	57	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.000	0	0
29000	Hamilton Downtown	Elgin St./Kelly St.	59	0.025	0.025	0.025	0.025	0.025	0.062	0.025	0.028	0.009	0	0

ID	City	Location	Number of sample	10%	25%	50%	75%	90%	Max	Min	Mean	Standard deviation	Number of times above annual criteria 24-hour	Number of times above annual criteria 1 year
34021	Toronto North	4905 Dufferin St., ECCC	50	0.025	0.025	0.025	0.025	0.025	0.054	0.025	0.026	0.004	0	0
48006	Newmarket	Eagle St. W./McCaffrey Rd.	55	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.000	0	0
51001	Ottawa Downtown	Rideau St./Wurtemberg St.	49	0.025	0.025	0.025	0.025	0.025	0.079	0.025	0.027	0.010	0	0

10-year trends

10-year trend for nitric oxide (NO)

Annual mean (ppb)

ID	City/Town	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Change over 10 year (%)	Trend
12008	Windsor Downtown	4.7	4.5	4.7	3.7	4.0	3.5	3.1	3.3	3.2	2.7	-23.9	SSS
12016	Windsor West	6.1	3.8	4.6	3.6	3.8	4.2	2.9	2.6	2.6	3.1	-23.2	SSS
13001	Chatham	2.6	1.9	1.8	1.6	1.5	1.7	1.4	1.9	1.8	1.4	-12.0	SSS
14111	Sarnia	2.2	3.1	2.1	1.7	1.9	2.4	INS	1.5	1.8	1.7	-18.7	SSS
15020	Grand Bend	N/A	0.3	0.3	1.0	0.2	0.3	0.5	0.3	0.2	0.3	-9.3	Non-SSS
15026	London	2.9	3.3	4.2	1.4	1.3	1.4	1.0	1.0	0.8	0.9	-62.5	SSS
21005	Brantford	1.3	1.2	1.1	1.2	0.9	1.3	0.8	0.8	1.0	0.9	-8.7	Non-SSS
26060	Kitchener	2.5	2.0	2.1	1.6	1.6	1.6	1.3	1.0	0.9	1.2	-19.3	SSS
27067	St. Catharines	2.8	2.3	2.5	2.2	1.7	2.1	1.5	1.2	0.9	1.2	-44.9	SSS
28028	Guelph	2.0	2.3	2.2	1.1	1.2	1.3	1.1	1.1	1.2	0.9	-47.6	SSS
29000	Hamilton Downtown	5.0	4.8	4.6	4.3	3.9	1.3	4.2	3.9	3.9	4.0	-9.6	Non-SSS
29118	Hamilton West	N/A	6.4	6.3	5.4	5.9	5.1	6.2	3.9	4.2	4.2	-24.2	SSS
29214	Hamilton Mountain	2.2	2.3	1.9	2.0	2.0	1.8	1.2	1.2	1.2	1.8	-32.0	SSS
33003	Toronto East	7.8	7.6	6.6	5.7	6.2	5.8	5.4	4.4	3.1	3.4	-45.2	SSS
34021	Toronto North	5.7	6.2	5.0	4.1	4.3	3.9	3.5	3.0	2.5	2.7	-50.3	SSS
35125	Toronto West	13.4	12.4	11.3	8.6	9.5	9.2	8.2	7.7	6.7	7.5	-33.0	SSS
44008	Burlington	5.0	4.6	4.6	4.6	4.6	3.9	3.9	3.4	2.7	3.0	-35.9	SSS
44017	Oakville	3.6	2.7	3.4	2.1	3.4	2.7	1.8	1.7	1.8	1.8	-31.2	SSS
45027	Oshawa	2.3	2.3	2.1	1.5	2.0	2.3	2.5	2.4	0.9	0.9	-23.5	SSS
46090	Brampton	3.7	4.6	4.4	4.6	4.0	3.8	3.4	2.2	2.2	2.2	-45.8	SSS
46108	Mississauga	4.1	4.1	3.8	3.1	2.9	3.1	3.6	2.0	1.6	2.6	-33.5	SSS
47045	Barrie	4.3	3.8	3.2	3.2	3.7	3.5	3.7	2.6	1.8	2.2	-32.4	SSS
48006	Newmarket	2.3	2.2	2.0	1.5	1.4	1.7	1.6	1.4	1.3	1.3	-28.4	SSS
49005	Parry Sound	N/A	0.9	0.5	0.5	0.6	0.8	0.6	0.5	0.5	0.7	-1.6	Non-SSS
51001	Ottawa Downtown	1.6	1.8	2.4	2.1	1.9	2.0	1.7	1.5	1.7	1.6	-3.8	Non-SSS
52023	Kingston	0.3	0.5	0.4	0.2	0.8	0.9	0.7	0.6	0.6	0.6	44.4	SSS
54012	Belleville	2.3	2.3	1.6	1.7	1.2	1.5	1.8	1.1	1.0	1.3	-34.6	SSS
56051	Cornwall	2.0	1.9	2.2	1.9	1.5	1.8	2.1	1.2	1.4	1.5	-7.3	Non-SSS
59006	Peterborough	1.7	2.2	1.8	1.7	1.8	1.5	1.3	1.2	0.9	1.2	-47.7	SSS
63203	Thunder Bay	4.6	5.9	5.1	4.7	4.2	5.2	3.8	4.1	3.8	3.8	-22.7	SSS
71078	Sault Ste. Marie	1.9	2.0	1.7	1.3	2.0	1.7	1.0	1.3	1.2	1.5	-35.2	SSS
75010	North Bay	3.4	4.0	2.9	2.5	2.6	2.1	2.0	1.6	1.7	1.8	-53.4	SSS

Notes:

- N/A indicates data not available.
- INS indicates there was insufficient data to calculate a valid annual mean.
- Station 14111 replaced station 14064 as the Sarnia site in 2016.
- Station 15026 replaced station 15025 as the London site in 2013.
- Station 29214 replaced station 29114 as the Hamilton Mountain site in 2019.
- Station 34021 replaced station 34020 as the Toronto North site in 2017.
- Station 45027 replaced station 45026 as the Oshawa site in 2018.
- Station 46090 replaced station 46089 as the Brampton site in 2017.
- Station 52023 replaced station 52022 as the Kingston site in 2014.
- SSS - Significant Sen's Slope (significant trend detected).
- N-SSS - Non-Significant Sen's Slope (significant trend not detected).

10-year trend for nitrogen dioxide (NO₂)

Annual mean (ppb)

ID	City/Town	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Change over 10 year (%)	Trend
12008	Windsor Downtown	15.6	14.5	13.2	12.4	14.0	12.7	11.4	11.1	11.0	10.9	-24.2	SSS
12016	Windsor West	14.5	12.9	11.4	11.5	11.8	11.4	10.6	9.9	8.8	10.0	-28.5	SSS
13001	Chatham	6.4	6.6	5.7	6.0	6.8	6.8	5.4	6.1	5.1	5.8	-12.0	Non-SSS
14111	Sarnia	8.0	8.6	8.6	8.1	9.0	9.3	INS	7.3	7.6	6.8	-16.8	SSS
15020	Grand Bend	N/A	3.6	3.6	4.4	3.1	3.4	2.8	3.0	3.3	2.5	-24.2	SSS
15026	London	8.8	8.3	6.3	6.4	6.9	6.6	5.4	5.8	5.4	5.8	-25.6	SSS
21005	Brantford	5.8	6.1	5.4	4.8	5.5	5.5	4.8	4.4	5.2	5.6	-7.0	SSS
26060	Kitchener	7.7	7.7	7.1	6.7	7.0	6.8	6.2	5.8	5.8	6.3	-19.7	SSS
27067	St. Catharines	9.1	8.5	8.1	7.7	7.3	7.3	6.6	6.6	6.0	6.0	-31.7	SSS
28028	Guelph	6.7	7.3	6.5	6.6	7.1	6.3	6.2	5.9	5.9	5.4	-19.3	SSS
29000	Hamilton Downtown	12.7	13.5	11.9	12.4	12.4	12.2	11.9	11.9	11.6	12.5	-5.8	Non-SSS
29118	Hamilton West	N/A	13.1	12.1	12.7	12.8	12.2	11.8	10.4	11.0	11.3	-12.9	SSS
29214	Hamilton Mountain	8.9	9.9	8.6	9.0	9.3	9.0	7.9	7.8	7.8	8.8	-12.9	SSS
33003	Toronto East	14.8	15.2	14.0	13.6	14.2	13.9	12.1	11.5	10.6	10.2	-32.8	SSS
34021	Toronto North	14.3	15.4	13.4	12.9	13.4	12.9	12.0	10.5	10.4	10.5	-32.4	SSS
35125	Toronto West	20.1	19.1	16.3	16.1	17.1	16.6	15.7	15.0	14.4	14.6	-25.3	SSS
44008	Burlington	12.2	11.8	11.0	11.0	10.9	10.4	10.2	9.7	9.4	9.6	-19.7	SSS
44017	Oakville	9.2	10.3	9.1	9.2	8.2	7.5	8.2	8.2	8.5	9.1	-14.3	SSS
45027	Oshawa	7.2	7.0	5.6	5.9	6.8	6.6	6.3	6.4	3.8	3.5	-33.9	SSS
46090	Brampton	10.7	11.3	10.4	9.1	10.6	9.9	9.7	8.3	8.1	8.6	-26.4	SSS
46108	Mississauga	10.4	10.6	9.6	9.5	9.2	9.2	8.6	8.0	7.2	8.4	-25.1	SSS
47045	Barrie	8.7	8.6	8.1	7.8	8.1	7.4	8.1	7.3	6.4	6.3	-23.1	SSS
48006	Newmarket	7.2	8.1	7.2	6.8	6.8	6.8	6.5	6.3	6.1	5.5	-23.7	SSS
49005	Parry Sound	N/A	3.6	3.3	2.9	3.3	3.2	2.9	2.7	2.9	2.6	-24.4	SSS
51001	Ottawa Downtown	7.4	7.9	7.8	7.9	7.4	7.4	6.9	7.1	7.3	6.7	-14.2	SSS
52023	Kingston	4.3	4.6	4.0	3.6	3.9	4.4	4.4	4.4	4.2	4.0	-9.0	SSS
54012	Belleville	5.5	6.3	4.7	4.7	4.5	4.8	5.1	4.3	3.7	4.2	-22.7	SSS
56051	Cornwall	6.5	6.5	6.1	6.2	5.6	5.3	5.5	5.0	5.1	5.0	-20.9	SSS
59006	Peterborough	5.0	4.3	3.7	5.0	5.3	5.1	4.5	4.7	4.5	3.9	-18.9	SSS
63203	Thunder Bay	7.8	8.6	7.3	7.3	7.8	7.5	7.1	6.7	7.5	6.7	-15.3	SSS
71078	Sault Ste. Marie	5.5	5.3	4.8	5.0	5.3	4.8	4.0	4.4	4.4	4.5	-22.3	SSS
75010	North Bay	7.6	7.4	6.1	5.8	5.6	5.6	4.7	4.6	4.9	5.1	-34.7	SSS

Notes:

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- Station 29214 replaced station 29114 as the Hamilton Mountain site in 2019.
- Station 34021 replaced station 34020 as the Toronto North site in 2017.
- Station 45027 replaced station 45026 as the Oshawa site in 2018.
- Station 46090 replaced station 46089 as the Brampton site in 2017.
- Station 52023 replaced station 52022 as the Kingston site in 2014.
- SSS - Significant Sen's Slope (significant trend detected).
- N-SSS - Non-Significant Sen's Slope (significant trend not detected).

10-year trend for nitrogen oxides (NO_x)

Annual mean (ppb)

ID	City/Town	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Change over 10 year (%)	Trend
12008	Windsor Downtown	20.2	18.9	17.8	16.2	18.0	16.2	14.5	14.4	14.2	13.6	-24.6	SSS
12016	Windsor West	20.6	16.7	16.0	15.2	15.7	15.5	13.5	12.5	11.3	13.0	-27.4	SSS
13001	Chatham	9.0	8.4	7.5	7.7	8.2	8.5	6.8	8.0	6.9	7.2	-14.8	SSS
14111	Sarnia	10.2	11.7	10.7	9.8	10.9	11.7	INS	8.7	9.4	8.5	-19.5	SSS
15020	Grand Bend	N/A	4.0	3.9	5.4	3.4	3.8	3.3	3.4	3.4	2.7	-24.0	SSS
15026	London	11.7	11.6	10.5	7.8	8.3	8.0	6.5	6.8	6.2	6.6	-40.8	SSS
21005	Brantford	7.2	7.3	6.7	5.7	6.4	6.8	5.7	5.3	6.2	6.5	-6.3	SSS
26060	Kitchener	10.3	9.6	9.2	8.3	8.5	8.4	7.5	6.9	6.7	7.4	-20.9	SSS
27067	St. Catharines	11.8	10.9	10.6	9.9	9.1	9.4	8.2	7.9	6.8	7.1	-34.7	SSS
28028	Guleph	8.6	9.5	8.8	7.8	8.4	7.7	7.3	7.0	7.1	6.4	-25.6	SSS
29118	Hamilton West	N/A	19.5	18.4	18.1	18.7	17.3	17.9	14.2	15.2	16.5	-6.1	SSS
29214	Hamilton Mountain	11.2	12.2	10.5	11.0	11.3	10.9	9.2	9.1	8.9	15.4	-18.7	SSS
31103	Toronto Downtown	20.3	18.4	16.2	16.1	16.5	16.1	15.9	15.7	14.0	10.7	-15.8	SSS
33003	Toronto East	22.6	22.8	20.6	19.4	20.4	19.7	17.5	15.8	13.7	13.7	-38.3	SSS
34021	Toronto North	20.0	21.5	18.5	17.0	17.7	16.9	15.4	13.5	12.8	13.2	-39.7	SSS
35125	Toronto West	33.5	31.5	27.6	24.7	26.5	25.7	23.8	22.7	21.1	22.1	-28.9	SSS
44008	Burlington	17.2	16.4	15.6	15.6	15.5	14.3	14.2	13.2	12.0	12.6	-23.8	SSS
44017	Oakville	12.8	13.0	12.6	11.2	11.6	10.1	10.1	9.9	10.4	10.9	-20.4	SSS
45027	Oshawa	9.5	9.2	7.8	7.4	8.8	8.9	8.8	8.8	4.7	4.4	-30.5	SSS
46090	Brampton	14.4	15.9	14.8	13.9	14.6	13.7	13.1	10.6	10.3	10.74	-34.6	SSS
46108	Mississauga	14.5	14.7	13.4	12.6	12.1	12.3	12.2	9.9	8.8	10.97	-29.1	SSS
47045	Barrie	13.1	12.4	11.3	11.0	11.8	10.9	11.9	9.9	8.3	8.52	-26.8	SSS
48006	Newmarket	9.5	10.3	9.2	8.4	8.2	8.5	8.1	7.8	7.4	6.78	-23.8	SSS
49005	Parry Sound	N/A	4.5	3.8	3.4	4.0	4.0	3.6	3.3	3.3	3.34	-20.5	SSS
51001	Ottawa Downtown	9.0	9.7	10.2	10.1	9.3	9.5	8.6	8.6	9.0	8.31	-13.1	SSS
52023	Kingston	4.7	5.3	4.6	3.8	4.8	5.3	5.2	4.9	4.7	4.55	-9.4	SSS
54012	Belleville	7.8	8.7	6.4	6.3	5.7	6.2	6.7	5.4	4.7	5.53	-28.5	SSS
56051	Cornwall	8.5	8.4	8.4	8.0	7.0	7.1	7.6	6.2	6.3	6.54	-19.6	SSS
59006	Peterborough	6.7	6.6	5.4	6.6	7.1	6.6	5.9	5.8	5.3	5.14	-26.0	SSS
63203	Thunder Bay	12.4	14.5	12.4	12.0	11.9	12.7	11	10.8	11.3	10.44	-18.5	SSS
71078	Sault Ste. Marie	7.4	7.2	6.4	6.3	7.3	6.6	5.1	5.8	5.6	5.95	-24.8	SSS
75010	North Bay	11.0	11.5	9.1	8.3	8.1	7.8	6.7	6.2	6.6	6.91	-39.3	SSS

Notes:

- N/A indicates data not available.
- INS indicates there was insufficient data to calculate a valid annual mean.
- Station 14111 replaced station 14064 as the Sarnia site in 2016.
- Station 15026 replaced station 15025 as the London site in 2013.
- Station 29214 replaced station 29114 as the Hamilton Mountain site in 2019.
- Station 34021 replaced station 34020 as the Toronto North site in 2017.
- Station 45027 replaced station 45026 as the Oshawa site in 2018.
- Station 46090 replaced station 46089 as the Brampton site in 2017.

- Station 52023 replaced station 52022 as the Kingston site in 2014.
- SSS - Significant Sen's Slope (significant trend detected).
- N-SSS - Non-Significant Sen's Slope (significant trend not detected).

10-year trend for fine particulate matter (PM_{2.5})

Annual mean (µg/m³)

ID	City/Town	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Change over 10 year (%)	Trend
12008	Windsor Downtown	9.4	9.4	9.8	9.2	10.1	9.3	8.1	7.8	8.5	7.8	-20.8	SSS
12016	Windsor West	9.6	9.7	9.5	10.0	10.7	9.9	8.5	8.5	8.7	9.1	-12.3	SSS
13001	Chatham	8.1	8.2	7.5	8.1	8.6	8.1	6.6	6.4	6.8	6.8	-20.0	SSS
14111	Sarnia	12.7	12.9	12.7	8.5	9.0	8.4	INS	7.0	7.4	7.1	-46.1	SSS
15020	Grand Bend	7.8	7.6	7.4	7.3	8.1	7.7	6.0	5.1	5.6	5.4	-41.5	SSS
15026	London	7.8	7.7	8.1	9.1	8.8	8.3	7.1	7.0	7.3	6.7	-22.1	SSS
16015	Port Stanley	7.4	7.5	7.4	7.4	8.2	8.0	6.5	6.3	6.8	6.7	-16.5	SSS
18007	Tiverton	5.7	6.0	6.0	5.8	6.5	6.4	5.1	5.1	5.7	5.0	-18.2	SSS
21005	Brantford	8.0	8.2	7.8	8.5	9.2	8.7	7.3	7.2	7.7	7.4	-13.0	SSS
26060	Kitchener	7.8	7.7	7.7	8.7	9.3	8.8	7.3	7.0	7.4	7.2	-13.5	SSS
27067	St. Catharines	8.0	7.8	7.9	8.5	8.8	8.4	6.9	7.0	7.0	7.0	-18.2	SSS
28028	Guelph	7.0	7.4	7.4	8.1	8.9	8.4	6.9	6.8	7.4	7.1	-9.2	N-SSS
29000	Hamilton Downtown	9.4	10.0	10.2	10.1	10.8	10.2	8.2	8.5	9.2	8.8	-18.0	SSS
29118	Hamilton West	8.3	8.8	9.0	9.6	9.9	9.9	7.9	7.5	8.2	7.8	-18.8	SSS
29214	Hamilton Mountain	7.6	8.3	8.1	9.2	9.4	9.0	7.2	7.4	7.7	7.9	-16.1	SSS
33003	Toronto East	8.3	7.8	7.8	8.2	8.9	8.5	7.0	7.4	7.2	7.0	-14.7	SSS
34021	Toronto North	7.7	9.5	9.0	8.3	9.2	9.4	7.3	7.4	7.6	6.8	-26.1	SSS
35125	Toronto West	8.1	8.7	8.8	8.8	9.1	8.5	7.0	7.4	7.7	7.2	-22.6	SSS
44008	Burlington	7.7	7.8	8.0	8.7	9.6	9.4	7.6	7.0	7.2	7.0	-19.8	SSS
44017	Oakville	7.0	8.0	7.6	8.0	8.5	8.3	7.0	6.9	7.4	7.2	-11.5	SSS
45027	Oshawa	7.0	6.9	6.9	7.4	7.7	7.5	5.9	5.9	6.4	6.1	-18.9	SSS
46090	Brampton	7.2	7.6	7.2	8.5	8.9	8.4	6.8	7.0	7.3	6.8	-10.5	N-SSS
46108	Mississauga	7.6	7.7	7.5	7.9	8.7	8.5	7.2	6.8	7.3	7.0	-13.6	SSS
47045	Barrie	6.8	7.2	7.1	7.5	7.6	7.6	6.5	7.0	7.7	7.5	2.5	N-SSS
48006	Newmarket	6.8	6.9	7.1	7.3	7.3	7.1	6.0	5.9	6.4	5.9	-21.2	SSS
49005	Parry Sound	5.5	6.0	6.0	5.8	5.8	5.7	4.8	4.6	5.0	4.4	-32.8	SSS
49010	Dorset	5.1	5.4	5.3	5.4	5.3	5.6	4.6	4.6	4.9	4.1	-17.6	SSS
51001	Ottawa Downtown	5.7	6.3	6.2	7.0	7.0	6.9	5.9	5.9	5.9	5.9	-8.6	N-SSS
51010	Petawawa	4.2	4.5	4.8	4.8	4.7	4.8	4.4	4.1	3.6	3.8	-19.2	SSS
52023	Kingston	8.0	8.5	8.3	6.5	6.8	6.3	5.8	5.3	5.6	5.4	-38.3	SSS
54012	Belleville	5.6	6.2	6.5	6.9	6.8	6.6	5.5	5.8	6.4	6.1	-3.7	N-SSS
56051	Cornwall	7.0	7.3	6.9	7.7	7.0	6.9	6.4	5.9	6.3	5.9	-21.7	SSS
59006	Peterborough	6.3	7.0	6.3	7.4	6.9	6.8	5.8	5.8	6.3	6.0	-16.7	SSS
63203	Thunder Bay	5.4	6.2	5.4	6.3	6.6	6.5	4.9	5.1	6.0	5.1	-11.4	SSS
71078	Sault Ste. Marie	5.2	5.7	5.6	5.6	6.0	5.9	4.9	5.0	5.5	4.8	-8.7	SSS
75010	North Bay	4.9	5.5	5.3	5.2	5.3	5.3	4.6	4.6	5.5	4.5	-14.8	SSS
77233	Sudbury	4.7	5.2	5.1	5.7	6.0	6.3	5.4	5.0	5.4	5.0	3.5	N-SSS

Notes:

- From 2010-2012, measurements were taken by TEOM sampler operated at 30°C with a Sample Equilibration System (SES).
- As of 2013, measurements taken by Synchronized Hybrid Ambient Real-time Particulate (SHARP) 5030.
- An approximate correction factor was applied to the TEOM data prior to 2013 to be comparable to SHARP measurements and generate an approximate 10-year trend.
- INS indicates there was insufficient data in any one quarter to calculate a valid annual mean.

- Station 14111 replaced station 14064 as the Sarnia site in 2016.
- Station 15026 replaced station 15025 as the London site in 2013.
- Station 29214 replaced station 29114 as the Hamilton Mountain site in 2019.
- Station 34021 replaced station 34020 as the Toronto North site in 2017.
- Station 45027 replaced station 45026 as the Oshawa site in 2018.
- Station 46090 replaced station 46089 as the Brampton site in 2017.
- Station 52023 replaced station 52022 as the Kingston site in 2014.
- SSS - Significant Sen's Slope (significant trend detected).
- N-SSS - Non-Significant Sen's Slope (significant trend not detected).

10-year trend for ground-level ozone (O₃)

Annual mean (ppb)

ID	City/Town	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Change over 10 year (%)	Trend
12008	Windsor Downtown	28.0	27.2	28.0	26.9	26.0	27.0	27.7	27.3	26.9	26.6	-1.3	Non-SSS
12016	Windsor West	26.7	26.4	28.0	26.7	27.2	26.5	27.7	27.0	27.0	27.3	4.0	Non-SSS
13001	Chatham	31.9	29.7	29.5	29.6	29.3	29.6	29.6	29.5	28.7	29.2	-5.6	SSS
14111	Sarnia	30.7	29.7	29.7	28.6	27.1	27.8	28.8	28.4	29.0	29.2	-3.2	Non-SSS
15020	Grand Bend	35.0	32.8	33.2	32.3	31.0	30.4	30.7	31.0	31.5	31.6	-6.7	SSS
15026	London	28.2	26.8	27.7	28.7	28.1	27.9	28.2	28.1	27.6	26.8	0.7	Non-SSS
16015	Port Stanley	34.6	32.8	33.1	33.9	32.3	32.8	32.9	33.0	32.3	32.3	-3.8	SSS
18007	Tiverton	33.8	32.1	32.0	32.4	31.8	32.5	33.1	32.4	32.3	31.1	-2.2	Non-SSS
21005	Brantford	29.4	28.7	28.8	29.0	29.4	28.9	29.5	28.3	28.3	27.5	-5.0	SSS
26060	Kitchener	29.4	27.6	28.0	28.0	27.3	27.9	28.8	28.1	27.7	27.2	-2.3	Non-SSS
27067	St. Catharines	28.3	28.0	28.7	28.6	28.5	28.6	29.8	28.1	28.5	28.4	2.3	Non-SSS
28028	Guelph	30.7	28.9	28.8	29.0	27.8	27.7	28.7	28.4	28.9	26.3	-6.1	SSS
29000	Hamilton Downtown	26.9	25.4	25.7	25.0	25.3	25.9	26.7	25.6	25.6	24.4	-3.5	Non-SSS
29118	Hamilton West	24.5	24.2	24.2	24.4	22.7	23.9	24.4	25.0	25.5	23.6	1.0	Non-SSS
29214	Hamilton Mountain	29.7	28.8	30.2	29.5	29.1	29.4	29.5	29.1	29.3	27.5	-3.4	Non-SSS
33003	Toronto East	23.0	23.3	24.6	24.1	23.4	23.5	25.5	24.4	25.2	24.6	8.7	SSS
34021	Toronto North	24.8	23.6	25.7	25.3	25.3	25.7	25.9	24.0	25.5	24.1	1.0	Non-SSS
35125	Toronto West	20.6	20.1	21.5	21.5	21.1	21.3	22.1	22.1	22.3	21.8	10.1	SSS
44008	Burlington	26.6	25.9	26.7	26.4	25.5	26.5	27.6	27.1	27.6	26.6	5.6	SSS
44017	Oakville	28.0	26.8	27.7	28.3	27.2	27.4	27.1	27.4	28.7	27.1	0.8	Non-SSS
45027	Oshawa	28.0	26.6	27.0	27.2	27.2	26.2	27.2	27.9	25.8	24.4	-6.1	SSS
46090	Brampton	27.5	26.1	26.6	26.7	26.5	26.5	27.1	27.2	28.6	26.5	3.6	Non-SSS
46108	Mississauga	25.9	24.1	25.6	25.2	25.4	25.4	26.0	26.2	26.1	24.5	2.2	Non-SSS
47045	Barrie	26.8	25.3	26.3	25.5	25.6	25.4	25.9	25.9	27.5	25.7	1.1	Non-SSS
48006	Newmarket	31.5	27.8	29.4	28.7	28.6	28.5	28.6	27.9	29.8	27.8	-2.4	Non-SSS
49005	Parry Sound	31.3	29.7	30.1	30.4	29.6	30.4	29.6	29.7	30.8	29.8	-1.1	Non-SSS
49010	Dorset	28.6	27.0	28.0	28.1	27.7	27.0	27.4	26.9	28.2	27.5	-1.9	Non-SSS
51001	Ottawa Downtown	25.7	24.2	26.0	25.6	24.8	25.6	25.6	25.5	26.4	25.9	3.9	Non-SSS
51010	Petawawa	27.9	26.7	27.7	27.6	26.8	26.7	26.4	25.8	27.3	27.3	-2.1	Non-SSS
52023	Kingston	32.6	30.3	32.7	30.3	31.4	30.3	30.5	30.4	30.5	29.9	-4.1	SSS
54012	Belleville	30.0	27.9	28.0	29.2	29.6	29.6	30.5	30.2	29.9	29.6	6.0	SSS
56051	Cornwall	27.9	26.1	27.1	26.9	27.3	27.9	27.1	27.2	27.6	26.9	0.3	Non-SSS
59006	Peterborough	30.5	27.9	29.1	28.6	29.2	29.3	29.7	28.9	29.7	28.3	-0.4	Non-SSS
63203	Thunder Bay	25.7	25.2	25.0	26.3	23.4	24.0	23.2	23.4	24.3	23.7	-8.8	SSS
71078	Sault Ste. Marie	28.4	27.8	28.8	28.9	28.4	27.8	27.3	28.1	29.7	28.1	-0.7	Non-SSS
75010	North Bay	28.0	26.7	26.1	27.4	26.7	27.0	26.4	26.4	26.0	26.4	-4.2	SSS
77233	Sudbury	28.7	28.7	28.5	27.2	26.3	25.7	25.1	25.9	27.1	26.3	-10.7	SSS

Notes:

- Station 14111 replaced station 14064 as the Sarnia site in 2016.
- Station 15026 replaced station 15025 as the London site in 2013.
- Station 29214 replaced station 29114 as the Hamilton Mountain site in 2019.
- Station 34021 replaced station 34020 as the Toronto North site in 2017.
- Station 46090 replaced station 46089 as the Brampton site in 2017.
- Station 52023 replaced station 52022 as the Kingston site in 2014.
- SSS - Significant Sen's Slope (significant trend detected).
- N-SSS - Non-Significant Sen's Slope (significant trend not detected).

10-year trend for ground-level ozone (O₃) summer means (May - September)

Summer mean (ppb)

ID	City/Town	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Change over 10 year (%)	Trend
12008	Windsor Downtown	34.6	33.8	36.8	32.5	30.9	33.3	33.4	32.8	33.7	31.4	-8.2	Non-SSS
12016	Windsor West	31.8	31.9	35.7	30.9	30.9	31.8	33.0	31.8	32.4	31.2	-0.2	Non-SSS
13001	Chatham	36.5	34.4	36.6	34.2	32.4	34.4	32.9	33.1	32.1	31.9	-12.1	SSS
14111	Sarnia	34.3	32.9	36.6	32.0	29.4	31.1	32.1	32.0	34.0	31.5	-4.5	Non-SSS
15020	Grand Bend	37.8	33.9	38.9	33.1	31.5	32.3	32.0	32.1	32.7	31.7	-9.4	SSS
15026	London	32.5	30.7	34.4	30.9	29.5	31.0	30.4	29.8	30.5	27.4	-11.2	SSS
16015	Port Stanley	38.9	35.5	38.4	36.9	33.7	35.6	35.2	35.0	35.3	33.7	-12.4	SSS
18007	Tiverton	33.3	31.7	36.0	32.5	30.8	33.3	34.1	32.2	32.9	29.7	-5.8	Non-SSS
21005	Brantford	31.6	31.1	33.5	30.1	29.9	31.2	32.2	29.4	30.4	28.3	-9.4	Non-SSS
26060	Kitchener	31.6	30.2	33.5	29.8	28.5	30.2	31.8	29.8	30.6	29.2	-6.2	Non-SSS
27067	St. Catharines	32.0	31.2	35.0	31.2	29.5	31.7	33.2	29.8	31.3	29.7	-7.3	Non-SSS
28028	Guelph	32.5	31.3	34.5	30.4	28.9	30.2	31.2	29.6	31.7	27.3	-12.3	Non-SSS
29000	Hamilton Downtown	31.6	28.7	32.4	28.4	27.5	29.5	30.6	27.8	29.7	26.1	-13.2	Non-SSS
29118	Hamilton West	27.9	26.2	29.2	26.4	22.7	26.5	27.1	26.8	28.5	24.4	-4.2	Non-SSS
29214	Hamilton Mountain	34.4	32.3	37.4	32.5	31.6	33.9	33.2	31.5	34.0	29.6	-8.9	Non-SSS
33003	Toronto East	26.7	27.4	30.6	27.1	25.9	27.7	29.7	26.0	29.2	26.0	-3.0	Non-SSS
34021	Toronto North	28.0	27.5	32.7	29.4	28.6	30.7	30.7	26.3	30.4	25.9	-6.0	Non-SSS
35125	Toronto West	24.3	23.6	27.5	24.4	23.5	25.0	25.9	24.3	26.3	24.3	3.9	Non-SSS
44008	Burlington	30.2	29.2	32.5	29.2	27.4	30.1	30.5	29.0	31.8	28.8	-1.7	Non-SSS
44017	Oakville	31.5	29.9	34.2	30.6	28.3	30.2	29.9	29.5	32.4	28.8	-9.0	Non-SSS
45027	Oshawa	29.5	28.5	31.1	28.3	27.9	28.9	29.4	28.6	26.6	24.4	-11.7	SSS
46090	Brampton	30.8	29.3	32.7	29.5	28.9	30.3	31.2	29.5	32.7	28.2	-2.6	Non-SSS
46108	Mississauga	29.0	26.7	30.4	26.5	26.5	28.0	28.5	27.2	28.3	24.9	-4.3	Non-SSS
47045	Barrie	27.9	26.2	29.7	25.6	25.4	26.8	27.4	25.6	29.0	24.7	-4.7	Non-SSS
48006	Newmarket	34.4	30.5	34.2	30.3	29.4	31.2	31.7	29.0	33.2	28.4	-7.4	Non-SSS
49005	Parry Sound	30.4	28.7	32.8	30.1	28.2	31.4	28.9	27.7	30.9	27.8	-4.8	Non-SSS
49010	Dorset	25.2	23.8	28.3	25.3	24.4	24.6	25.1	23.0	25.8	23.9	-4.0	Non-SSS
51001	Ottawa Downtown	26.1	25.1	29.3	26.5	24.6	27.8	27.5	25.3	27.6	25.6	1.2	Non-SSS
51010	Petawawa	23.8	22.8	28.1	24.5	22.9	24.4	23.4	21.1	23.7	22.9	-5.3	Non-SSS
52023	Kingston	35.9	32.0	38.5	32.4	32.7	32.2	33.3	30.9	33.1	30.0	-10.8	Non-SSS
54012	Belleville	34.2	29.9	32.7	30.6	30.4	33.2	33.7	30.9	32.4	30.0	-2.8	Non-SSS
56051	Cornwall	29.8	26.7	30.7	28.1	27.0	29.7	28.7	27.1	29.4	26.1	-5.7	Non-SSS
59006	Peterborough	32.0	29.8	34.2	29.5	30.0	31.5	32.3	29.2	32.2	28.1	-5.3	Non-SSS
63203	Thunder Bay	23.9	24.2	25.3	24.7	22.7	23.6	22.0	20.4	22.1	21.8	-15.5	SSS
71078	Sault Ste. Marie	27.2	26.4	30.3	28.2	27.4	28.1	26.3	26.3	29.1	26.2	-2.2	Non-SSS
75010	North Bay	28.4	26.3	28.5	26.9	26.2	27.8	26.4	24.7	26.3	25.7	-8.4	SSS
77233	Sudbury	26.3	26.9	29.8	28.0	27.0	27.7	26.6	25.8	28.8	25.9	-4.4	Non-SSS

Notes:

- Station 14111 replaced station 14064 as the Sarnia site in 2016.
- Station 15026 replaced station 15025 as the London site in 2013.
- Station 29214 replaced station 29114 as the Hamilton Mountain site in 2019.
- Station 34021 replaced station 34020 as the Toronto North site in 2017.
- Station 46090 replaced station 46089 as the Brampton site in 2017.
- Station 52023 replaced station 52022 as the Kingston site in 2014.
- SSS - Significant Sen's Slope (significant trend detected).
- N-SSS - Non-Significant Sen's Slope (significant trend not detected).

10-year trend for ground-level ozone (O₃) winter means (January-April, October-December)

Winter mean (ppb)

ID	City/Town	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Change over 10 year (%)	Trend
12008	Windsor Downtown	23.2	22.5	21.7	22.8	22.8	22.4	23.6	23.3	22.4	23.1	1.4	Non-SSS
12016	Windsor West	22.8	22.5	22.3	23.4	24.5	22.7	23.9	23.6	23.1	24.4	5.5	Non-SSS
13001	Chatham	28.5	26.7	24.3	26.2	27.1	26.3	27.2	26.8	26.2	27.4	0.3	Non-SSS
14111	Sarnia	28.1	27.4	24.7	26.2	25.4	25.4	INS	26.0	25.4	27.6	-1.9	Non-SSS
15020	Grand Bend	33.0	32.1	29.1	31.8	30.6	29.1	29.8	30.2	30.7	31.6	-3.9	Non-SSS
15026	London	25.0	24.2	22.9	26.9	27.1	25.8	26.6	26.9	25.6	26.4	6.4	Non-SSS
16015	Port Stanley	31.5	31.0	29.3	31.8	31.3	31.2	31.2	31.5	30.2	31.4	-0.5	Non-SSS
18007	Tiverton	34.1	32.2	29.2	32.4	32.7	31.9	32.4	32.6	31.9	32.1	-1.1	Non-SSS
21005	Brantford	27.8	27.1	25.4	28.3	28.8	27.2	27.7	27.5	26.7	26.9	-2.3	Non-SSS
26060	Kitchener	27.8	25.7	24.0	26.7	26.5	26.1	26.6	27.1	25.6	25.8	-2.7	Non-SSS
27067	St. Catharines	25.6	25.8	24.1	26.8	27.9	26.3	27.2	27.0	26.4	27.5	6.4	SSS
28028	Guelph	29.3	27.2	24.8	28.0	27.0	26.0	26.8	27.5	26.9	25.7	-5.6	Non-SSS
29000	Hamilton Downtown	23.5	23.1	20.9	22.5	23.7	23.3	23.9	24.2	22.6	23.2	2.6	Non-SSS
29118	Hamilton West	22.1	22.7	20.6	23.0	22.8	22.1	22.5	23.7	23.3	23.0	5.0	SSS
29214	Hamilton Mountain	26.3	26.3	25.0	27.3	27.3	26.3	26.8	27.4	25.9	25.9	1.0	Non-SSS
33003	Toronto East	20.4	20.4	20.3	22.0	21.6	20.5	22.5	23.3	22.4	23.5	13.8	SSS
34021	Toronto North	22.5	20.8	20.7	22.3	22.8	22.1	22.6	22.3	22.0	22.8	3.0	Non-SSS
35125	Toronto West	18.0	17.7	17.2	19.5	19.4	18.6	19.4	20.5	19.4	20.1	11.4	SSS
44008	Burlington	23.9	23.5	22.5	24.4	24.1	23.8	25.6	25.7	24.7	25.2	6.8	SSS
44017	Oakville	25.5	24.7	23.1	26.6	26.5	25.3	25.1	25.9	26.0	26.0	2.6	Non-SSS
45027	Oshawa	26.9	25.2	24.1	26.4	26.7	24.3	25.6	27.3	25.4	24.5	-3.0	Non-SSS
46090	Brampton	25.2	23.8	22.2	24.6	24.8	23.8	24.1	25.6	25.6	25.3	6.8	Non-SSS
46108	Mississauga	23.7	22.5	22.2	24.3	24.7	23.6	24.2	25.5	24.6	24.2	7.5	Non-SSS
47045	Barrie	26.0	24.7	23.9	25.5	25.8	24.4	24.8	26.3	26.5	26.4	5.6	Non-SSS
48006	Newmarket	29.4	25.8	26.0	27.5	28.1	26.6	26.3	27.2	27.3	27.3	2.6	Non-SSS
49005	Parry Sound	31.9	30.4	28.1	30.6	30.6	29.8	30.0	31.1	30.7	31.3	2.2	Non-SSS
49010	Dorset	31.0	29.5	27.7	30.1	30.1	28.8	29.0	29.6	30.0	30.1	0.7	Non-SSS
51001	Ottawa Downtown	25.5	23.6	23.5	24.9	25.1	24.0	24.3	25.6	25.5	26.2	6.8	SSS
51010	Petawawa	30.8	29.5	27.5	29.9	29.6	28.5	28.6	29.3	29.8	30.4	1.4	Non-SSS
52023	Kingston	30.0	29.0	28.6	28.8	30.4	28.9	28.5	30.2	28.6	29.9	-0.3	Non-SSS
54012	Belleville	27.0	26.4	24.6	28.2	29.1	27.0	28.2	29.7	28.1	29.3	10.6	Non-SSS
56051	Cornwall	26.5	25.7	24.2	25.7	27.6	26.6	26.0	27.4	26.3	27.5	3.9	Non-SSS
59006	Peterborough	29.5	26.6	25.5	28.0	28.6	27.7	27.8	28.7	27.9	28.5	1.9	Non-SSS
63203	Thunder Bay	27.1	26.1	24.7	27.4	23.8	24.2	24.2	25.6	25.9	25.1	-4.8	Non-SSS
71078	Sault Ste. Marie	29.3	28.9	27.6	29.4	29.2	27.7	28.0	29.5	30.2	29.5	2.6	Non-SSS
75010	North Bay	27.7	27.0	24.4	27.8	27.1	26.4	26.4	27.6	25.9	26.9	-3.0	Non-SSS
77233	Sudbury	30.5	30.0	27.6	26.6	25.8	24.3	24.0	26.1	26.0	26.7	-16.7	SSS

Notes:

- Station 14111 replaced station 14064 as the Sarnia site in 2016.
- Station 15026 replaced station 15025 as the London site in 2013.
- Station 29214 replaced station 29114 as the Hamilton Mountain site in 2019.
- Station 34021 replaced station 34020 as the Toronto North site in 2017.
- Station 46090 replaced station 46089 as the Brampton site in 2017.
- Station 52023 replaced station 52022 as the Kingston site in 2014.
- SSS - Significant Sen's Slope (significant trend detected).
- N-SSS - Non-Significant Sen's Slope (significant trend not detected).

10-year trend for sulphur dioxide (SO₂)

Annual mean (ppb)

SO₂ 1y AAQC: 4 ppb

ID	City/Town	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Change over 10 year (%)	Trend
12008	Windsor Downtown	3.5	3.5	2.8	2.4	2.4	1.9	1.1	1.0	0.6	0.4	-97.1	SSS
12016	Windsor West	3.2	3.4	2.8	2.6	2.8	1.9	1.4	0.9	0.7	0.8	-89.8	SSS
14111	Sarnia	3.9	5.3	4.1	3.8	3.5	3.2	INS	1.7	1.9	1.9	-76.3	SSS
29000	Hamilton Downtown	3.3	5.2	4.8	4.8	5.1	4.3	3.2	3.5	5.0	4.8	-12.8	Non-SSS
29214	Hamilton Mountain	2.9	4.1	3.7	2.8	2.9	2.6	1.8	1.8	2.4	3.5	-45.5	SSS
35125	Toronto West	0.9	1.5	0.6	0.6	0.7	1.0	0.6	0.5	0.3	0.3	-76.7	SSS
51001	Ottawa Downtown	0.2	0.4	0.3	0.3	0.3	0.4	0	0.1	0.2	0.2	-26.8	Non-SSS
71078	Sault Ste. Marie	0.7	0.8	0.6	0.8	0.8	0.8	0.6	0.7	0.8	0.7	-12.2	Non-SSS
77233	Sudbury	1.3	1.5	1.3	2.8	2.4	2.4	2.1	1.3	1.2	1.2	-29.9	SSS

Notes:

- INS indicates there was insufficient data to calculate a valid annual mean.
- Station 14111 replaced station 14064 as the Sarnia site in 2016.
- Station 29214 replaced station 29114 as the Hamilton Mountain site in 2019.
- Station 77233 replaced station 77219 as the Sudbury site in 2013.
- SSS - Significant Sen's Slope (significant trend detected).
- N-SSS - Non-Significant Sen's Slope (significant trend not detected).

10-year trend for carbon monoxide (CO)

1h maximum (ppm)

CO 1h AAQC: 30 ppm

ID	City/Town	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Change over 10 year (%)	Trend
12008	Windsor Downtown	2.5	3.8	2.1	1.9	1.8	1.9	2.3	2.6	1.9	2.3	-7.3	N-SSS
29000	Hamilton Downtown	2.2	1.8	1.7	2.0	2.9	1.3	1.4	2.1	1.7	1.9	-6.3	N-SSS
35125	Toronto West	1.8	1.4	1.4	1.4	1.6	1.3	1.7	1.2	0.9	1.5	-15.8	N-SSS
51001	Ottawa Downtown	1.5	1.5	0.9	0.9	0.8	0.8	0.9	0.7	1.0	0.7	-38.0	SSS

Notes:

- SSS - Significant Sen's Slope (significant trend detected).
- N-SSS - Non-Significant Sen's Slope (significant trend not detected).

10-year trend for benzene

Annual mean (µg/m³)

ID	City/Town	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Change over 10 year	Trend

												(%)	
12016	Windsor West	0.687	INS	0.558	0.519	0.610	0.566	0.521	0.450	0.478	0.445	-28.9	SSS
14111	Sarnia	0.961	INS	0.900	0.820	1.007	1.191	0.689	0.604	0.574	0.419	-42.3	SSS
15026	London	0.490	INS	0.455	0.413	0.446	0.451	0.341	0.339	0.321	0.296	-39.5	SSS
26060	Kitchener	0.537	INS	0.479	N/A	0.483	0.548	0.395	0.446	0.355	0.290	-41.6	SSS
29000	Hamilton Downtown	1.060	INS	0.977	INS	0.899	1.092	0.675	0.569	0.639	0.568	-35.1	SSS
48006	Newmarket	0.416	N/A	0.371	0.406	0.422	0.425	0.328	0.385	INS	0.250	-32.4	SSS
51001	Ottawa Downtown	0.451	0.418	0.422	0.442	0.413	0.453	0.365	0.388	0.405	0.323	-20.7	SSS

Notes:

- INS indicates there was insufficient data to calculate a valid annual mean.
- N/A indicates data not available.
- The 2016 average for Sarnia is derived from data from May to December 2016.
- Station 14111 replaced station 14064 as the Sarnia site in 2016.
- The 2018 average for Windsor West is derived from data from February to July, and October to December in 2018.
- The 2018 average for Sarnia is derived from data from February to May, July, and October to December in 2018.
- The 2018 average for Hamilton Downtown is derived from data from March to June, August, and October to December in 2018.
- SSS - Significant Sen's Slope (significant trend detected).

10-year trend for tolueneAnnual mean ($\mu\text{g}/\text{m}^3$)

ID	City/Town	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Change over 10 year (%)	Trend
12016	Windsor West	1.679	INS	1.392	1.017	1.542	1.248	1.272	0.972	1.131	0.797	-35.7	SSS
14111	Sarnia	2.037	INS	2.539	1.587	1.908	2.350	1.778	1.550	1.014	0.779	-41.1	SSS
15026	London	1.334	INS	1.408	0.887	0.839	1.013	0.727	0.633	0.657	0.491	-50.9	SSS
26060	Kitchener	1.477	INS	1.322	N/A	1.278	1.052	1.020	1.002	0.625	0.572	-47.7	SSS
29000	Hamilton Downtown	2.842	INS	2.067	INS	2.229	2.249	1.642	1.296	0.862	0.817	-47.2	SSS
48006	Newmarket	0.878	N/A	0.877	0.916	0.732	1.340	1.118	0.807	INS	0.418	-30.8	SSS
51001	Ottawa Downtown	1.212	0.929	0.899	0.975	0.741	0.982	0.902	0.826	0.704	0.618	-29.4	SSS

Notes:

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- N/A indicates data not available.
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- Station 14111 replaced station 14064 as the Sarnia site in 2016.
- The 2018 average for Windsor West is derived from data from February to July, and October to December in 2018.
- The 2018 average for Sarnia is derived from data from February to May, July, and October to December in 2018.
- The 2018 average for Hamilton Downtown is derived from data from March to June, August, and October to December in 2018.
- SSS - Significant Sen's Slope (significant trend detected).

10-year trend for ethylbenzeneAnnual mean ($\mu\text{g}/\text{m}^3$)

ID	City/Town	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Change over 10 year (%)	Trend
12016	Windsor West	0.275	INS	0.221	0.179	0.267	0.238	0.234	0.181	0.187	0.137	-37.4	SSS
14111	Sarnia	0.392	INS	0.278	0.255	0.253	0.362	0.282	0.211	0.235	0.118	-36.6	SSS
15026	London	0.190	INS	0.143	0.125	0.121	0.149	0.108	0.105	0.141	0.070	-43.5	SSS
26060	Kitchener	0.220	INS	0.162	N/A	0.167	0.168	0.159	0.164	0.109	0.079	-37.9	SSS
29000	Hamilton Downtown	0.278	INS	0.193	INS	0.192	0.210	0.186	0.187	0.129	0.126	-28.7	SSS
48006	Newmarket	0.154	N/A	0.115	0.134	0.125	0.249	0.215	0.130	INS	0.067	-29.4	SSS

ID	City/Town	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Change over 10 year (%)	Trend
51001	Ottawa Downtown	0.144	0.122	0.105	0.112	0.099	0.123	0.119	0.120	0.088	0.064	-24.9	SSS

Notes:

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- Station 14111 replaced station 14064 as the Sarnia site in 2016.
- The 2018 average for Windsor West is derived from data from February to July, and October to December in 2018.
- The 2018 average for Sarnia is derived from data from February to May, July, and October to December in 2018.
- The 2018 average for Hamilton Downtown is derived from data from March to June, August, and October to December in 2018.
- SSS - Significant Sen's Slope (significant trend detected).
- N-SSS - Non-Significant Sen's Slope (significant trend not detected).

10-year trend for m- and p-xyleneAnnual mean ($\mu\text{g}/\text{m}^3$)

ID	City/Town	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Change over 10 year (%)	Trend
12016	Windsor West	0.818	<u>INS</u>	0.689	0.536	0.825	0.702	0.635	0.505	0.502	0.409	-41.9	SSS
14111	Sarnia	0.790	<u>INS</u>	0.676	0.510	0.629	0.850	0.495	0.499	0.563	0.256	-32.3	SSS
15026	London	0.500	<u>INS</u>	0.388	0.345	0.318	0.398	0.267	0.268	0.407	0.200	-38.2	SSS
26060	Kitchener	0.639	<u>INS</u>	0.478	<u>N/A</u>	0.469	0.464	0.434	0.451	0.276	0.223	-39.1	SSS
29000	Hamilton Downtown	0.842	<u>INS</u>	0.603	<u>INS</u>	0.594	0.621	0.518	0.532	0.359	0.398	-30.2	SSS
48006	Newmarket	0.437	<u>N/A</u>	0.333	0.362	0.334	0.582	0.484	0.350	<u>INS</u>	0.191	-33.6	SSS
51001	Ottawa Downtown	0.429	0.355	0.310	0.329	0.309	0.363	0.338	0.334	0.222	0.186	-30.6	SSS

Notes:

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- The 2016 average for Sarnia is derived from data from May to December 2016.
- Station 14111 replaced station 14064 as the Sarnia site in 2016.
- The 2018 average for Windsor West is derived from data from February to July, and October to December in 2018.
- The 2018 average for Sarnia is derived from data from February to May, July, and October to December in 2018.
- The 2018 average for Hamilton Downtown is derived from data from March to June, August, and October to December in 2018.
- SSS - Significant Sen's Slope (significant trend detected).
- N-SSS - Non-Significant Sen's Slope (significant trend not detected).

10-year trend for o-xyleneAnnual mean ($\mu\text{g}/\text{m}^3$)

ID	City/Town	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Change over 10 year (%)	Trend
12016	Windsor West	0.255	<u>INS</u>	0.228	0.184	0.283	0.239	0.232	0.190	0.184	0.147	-32.2	SSS
14111	Sarnia	0.262	<u>INS</u>	0.244	0.171	0.226	0.313	0.178	0.192	0.213	0.101	-30.2	SSS
15026	London	0.147	<u>INS</u>	0.126	0.118	0.113	0.146	0.103	0.103	0.148	0.074	-31.8	SSS
26060	Kitchener	0.188	<u>INS</u>	0.157	<u>N/A</u>	0.166	0.164	0.153	0.164	0.107	0.082	-40.9	SSS
29000	Hamilton Downtown	0.241	<u>INS</u>	0.195	<u>INS</u>	0.206	0.216	0.189	0.198	0.131	0.145	-18.5	SSS
48006	Newmarket	0.133	<u>N/A</u>	0.116	0.126	0.134	0.218	0.192	0.128	<u>INS</u>	0.068	-24.8	N-SSS
51001	Ottawa Downtown	0.147	0.128	0.118	0.118	0.111	0.136	0.127	0.132	0.089	0.078	-18.5	SSS

Notes:

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- Station 14111 replaced station 14064 as the Sarnia site in 2016.
- The 2018 average for Windsor West is derived from data from February to July, and October to December in 2018.
- The 2018 average for Sarnia is derived from data from February to May, July, and October to December in 2018.
- The 2018 average for Hamilton Downtown is derived from data from March to June, August, and October to December in 2018.
- SSS - Significant Sen's Slope (significant trend detected).
- N-SSS - Non-Significant Sen's Slope (significant trend not detected).

10-year trend for 1,3-butadiene

Annual mean ($\mu\text{g}/\text{m}^3$)

ID	City/Town	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Change over 10 year (%)	Trend
12016	Windsor West	0.056	<u>INS</u>	0.048	0.036	0.042	0.035	0.032	0.034	0.028	0.028	-41.0	<u>SSS</u>
14111	Sarnia	0.167	<u>INS</u>	0.205	0.209	0.124	0.216	0.089	0.077	0.088	0.054	-46.8	<u>SSS</u>
15026	London	0.050	<u>INS</u>	0.040	0.023	0.025	0.026	0.020	0.035	0.025	0.025	-36.0	<u>SSS</u>
26060	Kitchener	0.056	<u>INS</u>	0.042	<u>N/A</u>	0.029	0.029	0.023	0.038	0.026	0.025	-35.1	<u>SSS</u>
29000	Hamilton Downtown	0.060	<u>INS</u>	0.046	<u>INS</u>	0.032	0.037	0.025	0.039	0.028	0.028	-31.5	<u>SSS</u>
48006	Newmarket	0.051	<u>N/A</u>	0.039	0.021	0.020	0.028	0.024	0.035	<u>INS</u>	0.025	-32.2	<u>SSS</u>
51001	Ottawa Downtown	0.052	0.041	0.040	0.035	0.026	0.030	0.027	0.037	0.032	0.027	-36.9	<u>SSS</u>

Notes:

- INS indicates there was insufficient data to calculate a valid annual mean.
- N/A indicates data not available.
- The 2016 average for Sarnia is derived from data from May to December 2016.
- Station 14111 replaced station 14064 as the Sarnia site in 2016.
- The 2018 average for Windsor West is derived from data from February to July, and October to December in 2018.
- The 2018 average for Sarnia is derived from data from February to May, July, and October to December in 2018.
- The 2018 average for Hamilton Downtown is derived from data from March to June, August, and October to December in 2018.
- SSS - Significant Sen's Slope (significant trend detected).

Canadian Ambient Air Quality Standard reporting

PM_{2.5} and ozone CAAQS metric values for designated sites across Ontario (2019)

Air zone area	City/Town	24-hour PM _{2.5} ($\mu\text{g}/\text{m}^3$)	Annual PM _{2.5} ($\mu\text{g}/\text{m}^3$)	8-hour ozone (ppb)
Sarnia	Sarnia	19	7.2	71*(44)
Hamilton	Hamilton Downtown	22	8.8	62(44)
Hamilton	Hamilton Mountain	20	7.6	65*(48)
Sudbury	Sudbury	14	5.2	60(45)
Sault Ste. Marie	Sault Ste. Marie	13	5.1	57(46)
Northern Ontario	Thunder Bay	14	5.4	50(47)
Southern Ontario	Windsor Downtown	20	8.1	70*(42)
Southern Ontario	Chatham	17	6.7	64*(49)
Southern Ontario	London	18	7.2	65*(48)
Southern Ontario	Brantford	18	7.4	63(50)
Southern Ontario	Kitchener	19	7.2	63(50)
Southern Ontario	Guelph	19	7.1	63(49)
Southern Ontario	St. Catharines	17	7	62(47)
Southern Ontario	Burlington	18	7.1	66*(48)
Southern Ontario	Oakville	19	7.1	65*(48)
Southern Ontario	Milton	19	7.4	67*(51)

Air zone area	City/Town	24-hour PM _{2.5} (µg/m ³)	Annual PM _{2.5} (µg/m ³)	8-hour ozone (ppb)
Southern Ontario	Mississauga	19	7.1	62(47)
Southern Ontario	Brampton	20	7.1	65*(50)
Southern Ontario	Toronto	19	7.7	65*(49)
Southern Ontario	Oshawa	17	6.1	63(48)
Southern Ontario	Barrie	20	7.4	58(47)
Southern Ontario	Peterborough	16	6.1	63(49)
Southern Ontario	Kingston	15	5.5	64*(50)
Southern Ontario	Ottawa Downtown	15	5.8	57(48)

Notes:

- Designated sites normally refer to communities with populations greater than 100,000.
- Toronto reporting is based on Toronto Downtown, Toronto North, Toronto East and Toronto West stations.
- The CAAQS for 24h PM_{2.5} is 28 µg/m³ based on the 98th percentile measurement annually, averaged over three consecutive years.
- The CAAQS for annual PM_{2.5} is 10 µg/m³ based on the annual mean averaged over three consecutive years.
- The CAAQS for ozone is 63 ppb based on the consecutive three-year average of the annual 4th highest daily maximum eight-hour running average.
- An asterisk indicates an exceedance of the CAAQS.
- Value in parenthesis is the calculated 8h ozone CAAQS metric once the transboundary influence was removed.

PM_{2.5} and ozone CAAQS metric trends for designated sites across Ontario (2010-2019)

Air zone area	City/Town	10-year trend (%) based on 24-hour PM _{2.5}	10-year trend (%) based on Annual PM _{2.5}	10-year trend (%) based on 8-hour ozone
Sarnia	Sarnia	-43.5	-51.4	-6.3*
Hamilton	Hamilton Downtown	-23.1	-7.4*	-7.8
Hamilton	Hamilton Mountain	-18	-6.2*	-8.5
Sudbury	Sudbury	-8.6	9.0*	-10.2
Sault Ste. Marie	Sault Ste. Marie	-24.1	-7.3*	-9.5
Northern Ontario	Thunder Bay	-18.8	-2.1*	-8.3
Southern Ontario	Windsor Downtown	-23.1	-15.6	-8.1
Southern Ontario	Chatham	31.3	-21.2	-12.3
Southern Ontario	London	-13	-11.3*	0*
Southern Ontario	Brantford	-23.5	-6.7*	-12.5
Southern Ontario	Kitchener	-15.7*	-6.9*	-4.4*
Southern Ontario	Guelph	-10.2*	-3.0*	-6.4*
Southern Ontario	St. Catharines	-26.1*	-12.4*	-8.1
Southern Ontario	Burlington	-18.8	-7.9*	-6.4
Southern Ontario	Oakville	-11.7	-3.4*	-8.5
Southern Ontario	Mississauga	-11.2*	-8.0*	-3.4*
Southern Ontario	Brampton	-5.6*	-3.3*	-4.9
Southern Ontario	Toronto	-27.7	-16	-8.7
Southern Ontario	Oshawa	-20.5	-14.1*	-8.6
Southern Ontario	Barrie	-6.8	4.2*	-10.1
Southern Ontario	Peterborough	-24.5	-11.2*	10.3
Southern Ontario	Kingston	-58.3	-40.7	-15.6
Southern Ontario	Ottawa Downtown	-13.5*	-6.1*	-7.4*

Notes:

- Designated sites normally refer to communities with populations greater than 100,000.
- Toronto reporting is based on Toronto Downtown, Toronto North, Toronto East and Toronto West stations.
- *Non-Significant Sen's Slope (significant trend not detected).

AQHI and Air Quality Alert Program Reporting

2019 Air Quality Health Index summary

Station ID	City/Town	No. of valid hours	Low risk AQHI=1	Low risk AQHI=2	Low risk AQHI=3	Moderate risk AQHI=4	Moderate risk AQHI=5	Moderate risk AQHI=6	High risk AQHI=7	High risk AQHI=8	High risk AQHI=9	High risk AQHI=10	Very high risk AQHI=+	No. of days at least 1 hour > 6
12008	Windsor Downtown	8444	1.85	42.12	44.56	10.23	1.20	0.02	0.01	0	0	0	0	1
12016	Windsor West	8613	2.23	41.65	43.75	10.84	1.45	0.08	0	0	0	0	0	0
13001	Chatham	8694	9.73	53.29	31.19	5.56	0.23	0	0	0	0	0	0	0
14111	Sarnia	8684	8.92	51.20	31.20	7.30	1.27	0.07	0.05	0	0	0	0	4
15020	Grand Bend	8449	16.63	60.58	19.82	2.64	0.25	0	0.08	0	0	0	0	3
15026	London	8735	14.59	56.34	25.80	3.10	0.17	0	0	0	0	0	0	0
16015	Port Stanley	8673	12.87	54.51	28.29	4.06	0.27	0	0	0	0	0	0	0
18007	Tiverton	8632	14.61	63.00	20.41	1.85	0.12	0	0.01	0	0	0	0	1
21005	Brantford	8708	13.78	53.67	28.16	4.13	0.16	0.06	0.03	0	0	0	0	2
26060	Kitchener	8711	11.24	55.17	29.71	3.35	0.32	0.20	0.01	0	0	0	0	1
27067	St. Catharines	8604	8.60	56.66	31.32	3.24	0.17	0	0	0	0	0	0	0
28028	Guelph	8722	15.08	57.74	23.91	3.00	0.23	0.05	0	0	0	0	0	0
29000	Hamilton Downtown	8585	2.83	38.25	44.34	11.87	2.48	0.22	0	0	0	0	0	0
29118	Hamilton West	8724	5.90	44.92	38.87	8.93	1.24	0.14	0	0	0	0	0	0
29214	Hamilton Mountain	8691	5.10	47.52	37.84	7.71	1.67	0.16	0	0	0	0	0	0
31103	Toronto Downtown	2880	0.56	29.90	49.72	14.38	4.90	0.56	0	0	0	0	0	0
31129	Toronto Downtown	4570	2.41	43.74	39.91	12.28	1.60	0.07	0	0	0	0	0	0
33003	Toronto East	8719	6.79	50.29	34.77	7.00	0.80	0.23	0.07	0.05	0	0	0	2
34021	Toronto North	8535	9.00	46.46	34.90	8.04	1.35	0.18	0.08	0	0	0	0	1
35125	Toronto West	8505	2.12	39.93	46.27	10.03	1.20	0.39	0.06	0.01	0	0	0	2
44008	Burlington	8666	4.66	48.20	39.51	6.70	0.82	0.10	0	0	0	0	0	0
44017	Oakville	8618	5.06	47.96	38.85	7.14	0.87	0.13	0	0	0	0	0	0
44029	Milton	8521	3.84	51.00	36.99	7.29	0.81	0.07	0	0	0	0	0	0
45027	Oshawa	8667	25.57	61.69	12.06	0.68	0	0	0	0	0	0	0	0
46090	Brampton	8657	7.95	51.05	33.88	6.04	0.89	0.18	0.01	0	0	0	0	1
46108	Mississauga	8667	9.59	56.13	29.20	4.67	0.33	0.07	0	0	0	0	0	0
47045	Barrie	8493	13.28	56.98	25.53	3.83	0.33	0.06	0	0	0	0	0	0
48006	Newmarket	8668	14.24	59.07	22.70	3.67	0.21	0.07	0.05	0	0	0	0	1
49005	Parry Sound	8605	19.54	65.23	13.88	1.30	0.06	0	0	0	0	0	0	0
49010	Dorset	8640	24.42	61.25	13.94	0.39	0	0	0	0	0	0	0	0
51001	Ottawa Downtown	8481	16.05	52.89	27.32	3.56	0.18	0	0	0	0	0	0	0
51010	Petawawa	8631	26.62	62.00	11.27	0.10	0	0	0	0	0	0	0	0
52023	Kingston	8726	12.81	63.73	21.49	1.94	0.03	0	0	0	0	0	0	0
54012	Belleville	8582	11.16	63.37	22.76	2.65	0.07	0	0	0	0	0	0	0
56051	Cornwall	8699	17.00	60.23	21.06	1.52	0.20	0	0	0	0	0	0	0
59006	Peterborough	8715	18.26	59.66	19.61	2.41	0.07	0	0	0	0	0	0	0
63203	Thunder Bay	8441	22.07	55.76	20.03	2.10	0.04	0	0	0	0	0	0	0

Station ID	City/Town	No. of valid hours	Low risk AOHI=1	Low risk AOHI=2	Low risk AOHI=3	Moderate risk AOHI=4	Moderate risk AOHI=5	Moderate risk AOHI=6	High risk AOHI=7	High risk AOHI=8	High risk AOHI=9	High risk AOHI=10	Very high risk AOHI=+	No. of days at least 1 hour > 6
71078	Sault Ste. Marie	8623	19.18	57.85	21.38	1.52	0.07	0	0	0	0	0	0	0
75010	North Bay	8664	19.61	62.30	15.84	2.11	0.14	0	0	0	0	0	0	0
77233	Sudbury	8682	14.33	59.77	21.73	3.50	0.63	0.03	0	0	0	0	0	0
81103	Toronto Downtown	1185	1.27	42.53	45.57	10.63	0	0	0	0	0	0	0	0

2019 air quality alert summary

Air quality forecast region	Special air quality statement	Smog and air health advisory
Algonquin	0	0
Atikokan - Upsala - Quetico	1	0
Attawapiskat	1	0
Bancroft - Bon Echo Park	0	0
Barrie - Orillia - Midland	0	0
Belleville - Quinte - Northumberland	0	0
Big Trout Lake - Sachigo Lake	1	0
Brockville - Leeds and Grenville	0	0
Burk's Falls - Bayfield Inlet	0	0
Chapleau - Gogama	1	0
City of Hamilton	0	0
City of Ottawa	0	0
City of Thunder Bay	0	0
City of Toronto	1	0
Cornwall - Morrisburg	0	0
Dryden - Ignace	1	0
Dufferin - Innisfil	0	0
Dunnville - Caledonia - Haldimand	0	0
Elgin	0	0
Elliot Lake - Ranger Lake	0	0
Fort Frances - Rainy Lake	1	0
Fort Hope - Webequie	1	0
Fort Severn	1	0
Geraldton - Manitouwadge - Hornepayne	1	0
Greater Sudbury and Vicinity	0	0
Grey - Bruce	0	0
Haliburton	0	0
Halton - Peel	0	0
Huron - Perth	0	1
Kapuskasing - Hearst	1	0
Kenora - Nestor Falls	1	0
Kingston - Prince Edward	0	0
Kirkland Lake - New Liskeard - Temagami	0	0
Lake Nipigon - Wabakimi	1	0
London - Middlesex	0	0
Manitoulin - Northshore - Killarney	0	0
Ontario	4	1

Air quality forecast region	Special air quality statement	Smog and air health advisory
Moosonee - Fort Albany	1	0
Niagara	0	0
Nipigon - Marathon - Superior North	0	0
North Bay - West Nipissing	0	0
Oxford - Brant	0	0
Parry Sound - Muskoka	0	0
Peawanuck	1	0
Peterborough - Kawartha Lakes	0	0
Pickle Lake - Wunnummin Lake	2	0
Prescott and Russell	0	0
Red Lake - Ear Falls	2	0
Renfrew - Pembroke - Barry's Bay	0	0
Sandy Lake - Pikangikum	2	0
Sarnia - Lambton	1	0
Sault Ste. Marie - Superior East	0	0
Simcoe - Delhi - Norfolk	0	0
Sioux Lookout - Savant Lake	1	0
Smiths Falls - Lanark - Sharbot Lake	0	0
Stirling - Tweed - South Frontenac	0	0
Superior West	1	0
Timmins - Cochrane	1	0
Waterloo - Wellington	0	0
Wawa - White River - Pukaskwa	0	0
Windsor - Essex - Chatham - Kent	0	0
York - Durham	0	0
Ontario	4	1

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Footnotes

- [1] ^ Ontario has adopted the 24-hour PM_{2.5} CAAQS value, in the absence of an AAQC, that could also be used “as is” for comparison to the 24-hour measurement of air quality data.
- [2] ^ Based on odour.
- [1] ^ People with heart or breathing problems are at greater risk. Follow your doctor’s usual advice about exercising and managing your condition.