

# Environmental Assessment Report 2020

**Air Quality In Montréal**

Service de l'environnement



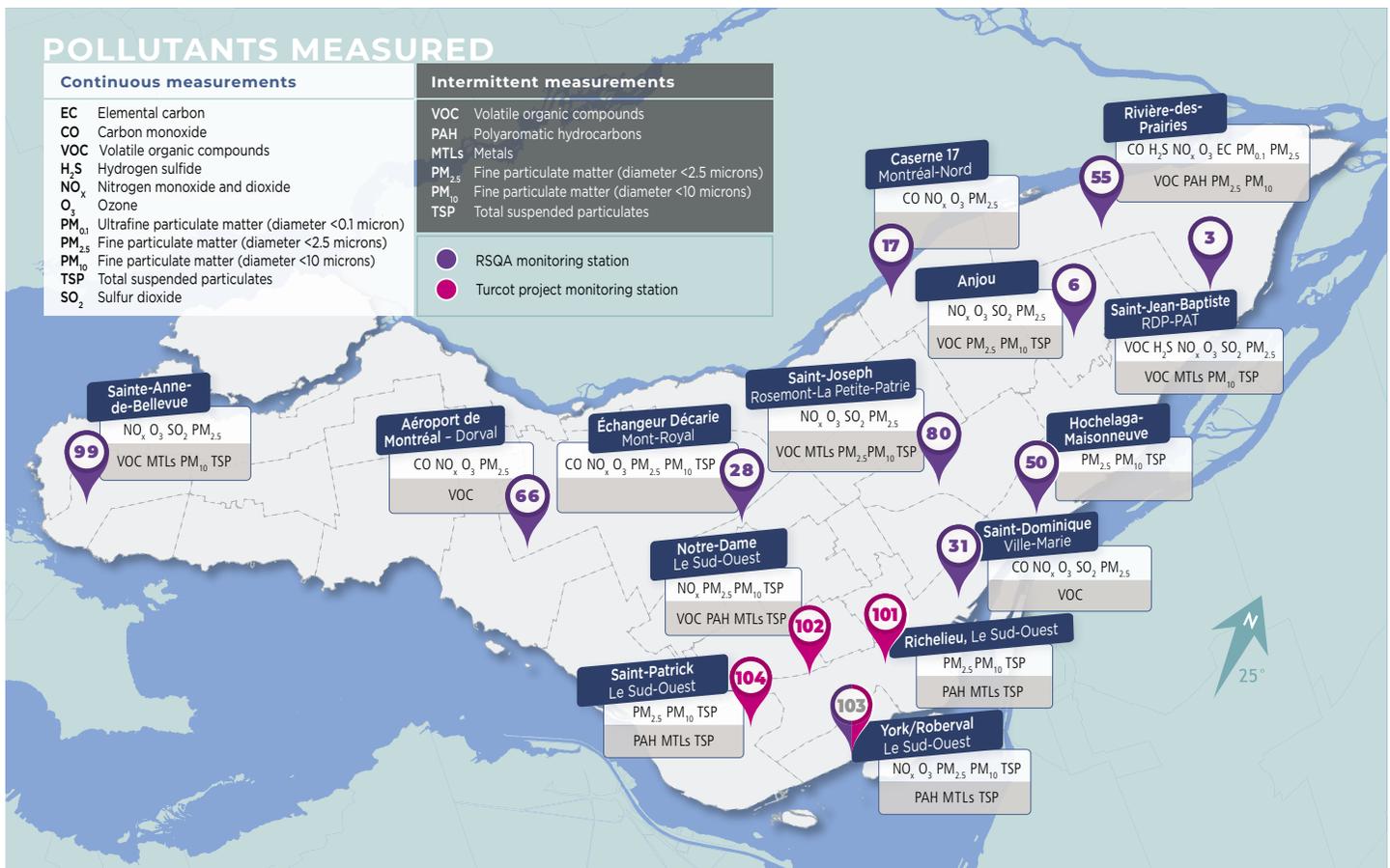
# Air Quality Monitoring

The year 2020 upended the lives of all Montrealers owing to the onset of the COVID-19 pandemic. The *Réseau de surveillance de la qualité de l'air* (RSQA) implemented various solutions to best maintain its activities in order to pursue its monitoring of air quality in Montréal during this unprecedented period. The data collected represent a wealth of findings to further our awareness of the impact of human activities on the environment.

In 2020, the RSQA numbered 14 monitoring stations spread throughout the Montréal Agglomeration territory. These stations are equipped with analyzers that continuously measure fine particulate matter (PM<sub>2.5</sub>), ozone (O<sub>3</sub>), sulfur dioxide (SO<sub>2</sub>), nitrogen oxides (NO<sub>x</sub>) and

carbon monoxide (CO). The information on air quality in Montréal is available in real time on the RSQA's Web site at the following address: [rsqa.qc.ca](http://rsqa.qc.ca).

The RSQA team is comprised of eight persons who pool their expertise to provide reliable air quality data. In order to fulfill its mission, the network conducts its activities in line with the guidelines of the National Air Pollution Surveillance (NAPS) program. The quality of the data is contingent on a number of components of the air quality monitoring system, namely the choice of the stations' location, the metrology of the instruments, the collection of data, and their validation and dissemination.

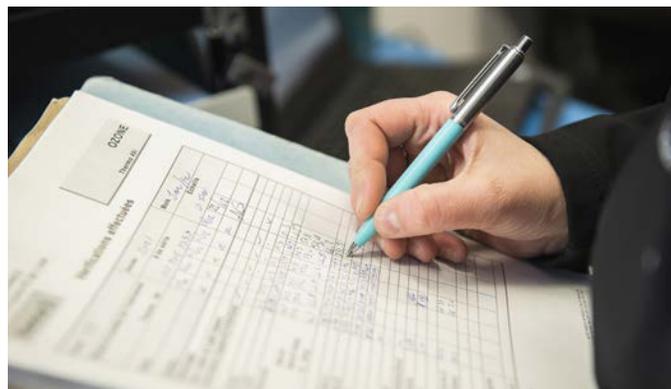




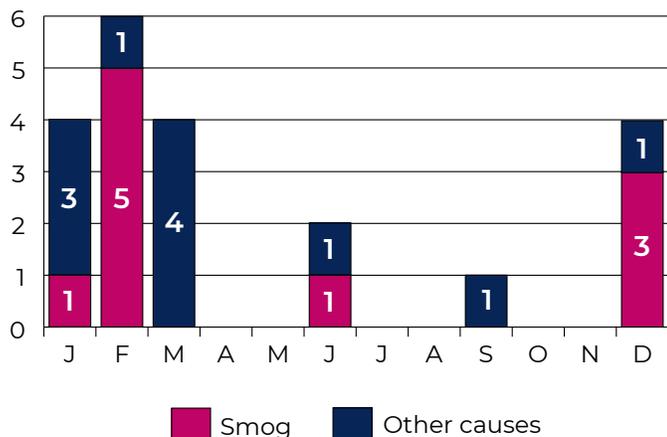
# Poor Air Quality Days

## Poor air quality or smog?

A day is deemed poor in terms of air quality as soon as fine particulate matter concentrations (PM<sub>2,5</sub>) exceed 35 µg/m<sup>3</sup> for at least 3 hours in a given station. A poor air quality day is characterized as a smog day when concentrations of PM<sub>2,5</sub> exceed 35 µg/m<sup>3</sup> during at least 3 hours over more than 75% of the agglomeration's territory. During a smog day, concentrations of PM<sub>2,5</sub> generally remain high for 24 hours and sometimes longer.



**Poor air quality days per month in Montréal in 2020**



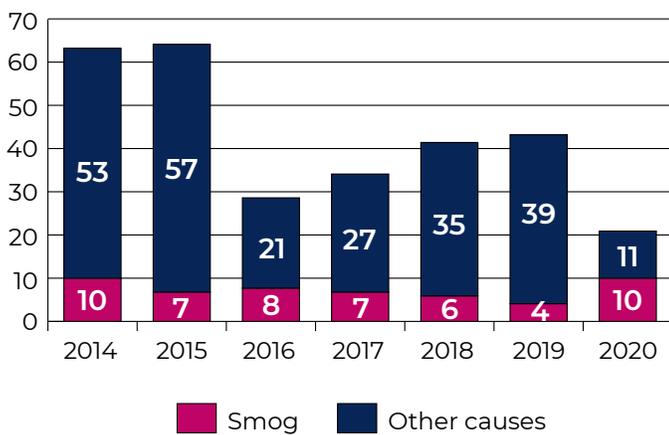
In 2020, only 21 days of poor air quality were recorded in the network's stations, for a decrease of 22 days relative to the 43 days recorded in 2019. These occurrences were all observed in only six months of the year with their distribution heavily weighted toward the winter months (January, February, March and December). As was the case in 2019, fine particles were responsible for all poor air quality days.

The impact of the confinement and decline in activities (transport, construction sites) as a result of the COVID-19 pandemic was felt starting in mid-March. Indeed, there were only 7 poor air quality days recorded between March 15 and December 31.





### Poor air quality days per year in Montréal since 2014



### Strong Resurgence of Smog

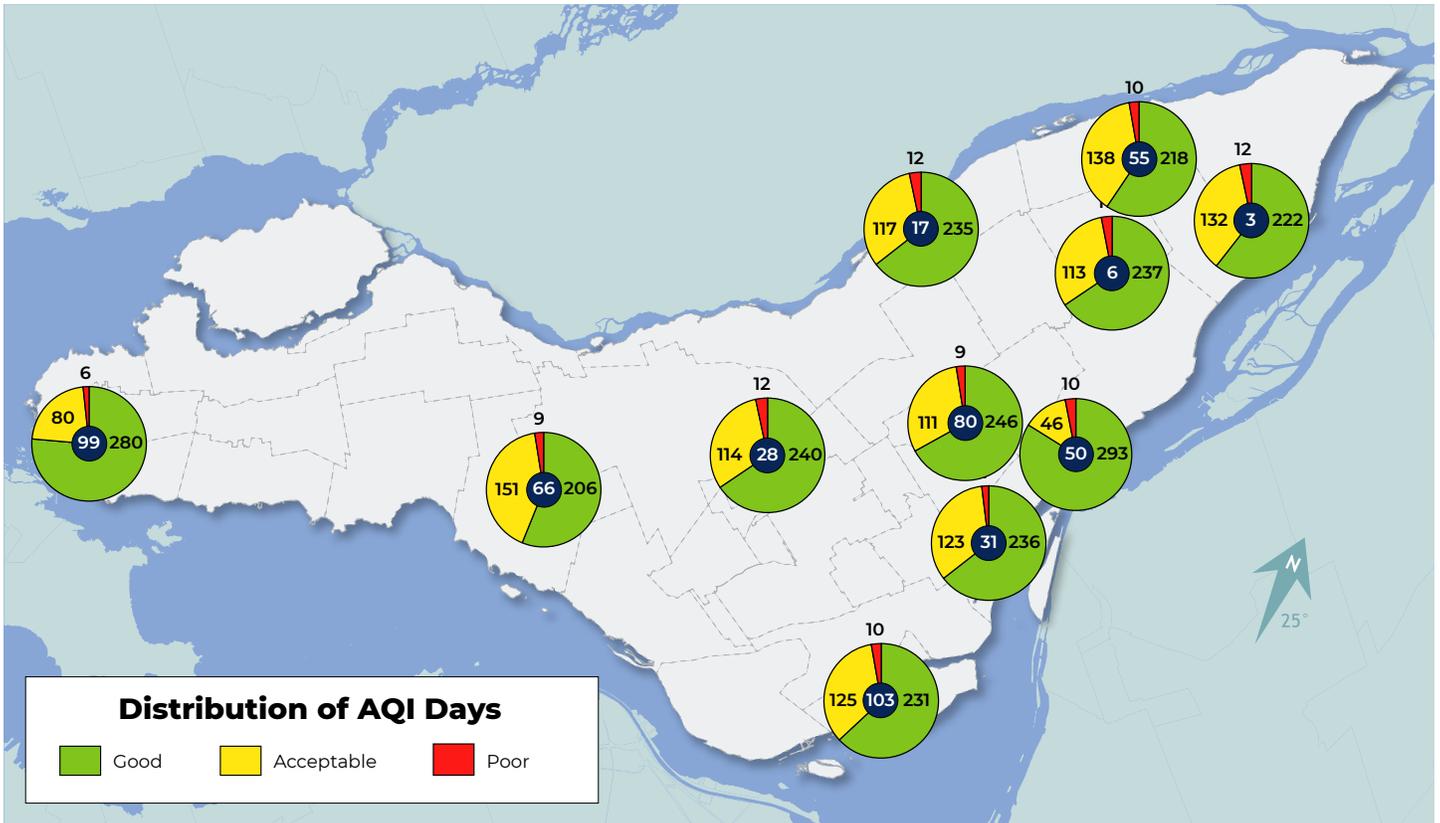
The year 2020 witnessed a resurgence of smog days with a total of 10 days observed in Montréal, for an increase of 6 such days relative to the previous year. This increase is somewhat surprising, considering the reduced activity levels during the sanitary crisis. However, meteorological conditions play a considerable role in the dispersion of pollutants. Moreover, according to the data collected by the Info-Smog program, this phenomenon was observed in all of the province's regions. The winter of 2019-2020 was among those that recorded the greatest number of days of smog warnings in Québec since the winter of 2013-2014.

2020 is also the year that witnessed the longest smog episode since 2013, with four consecutive days, i.e. from January 31 to February 3, 2020. During this episode, the very light winds and the warm temperatures resulted in a stagnation that allowed fine particles to remain trapped near the surface of the soil, thus leading to the formation of a persistent smog. The strong accumulations of fine particles were in the 50 to 80  $\mu\text{g}/\text{m}^3$  range over the Montréal territory. This significant episode did not only impact Montréal, but all of the regions as well, from the Outaouais region to that of Québec.

The second significant smog occurrence in 2020, but of a lesser magnitude, lasted a little more than 24 hours, on February 11-12, and affected all regions, from Montréal to Québec City, with concentration levels similar to those of the previously mentioned occurrence. The other winter smog episodes occurred on December 19, 21-22 and were accompanied by lesser concentrations of fine particles (40-60  $\mu\text{g}/\text{m}^3$ ).

Summer smog days are getting scarcer and are often caused by forest fires. This was the case for the smog episode that occurred in Montréal on June 21<sup>st</sup>, the high concentrations of fine particles being the result of the smoke plume of a peat fire in the Kamouraska region. It's worthwhile mentioning that particles can travel very long distances and result in poor quality air and smog thousands of kilometers away from the triggering event. Indeed in recent years, particles originating from forest fires in Alberta (2015), Labrador-Newfoundland (2013) and Ontario (2012) all resulted in smog days on the territory of the Montréal Agglomeration.

## Air Quality Index (AQI) by Monitoring Station in 2020



### Air Quality Indices (AQI) by Station

Ville de Montréal measures air quality using a numerical value called the “air quality index (AQI)”. The index value of 50 is attributed to the upper limit acceptable for each of the pollutants measured. The hourly index that is posted is the greatest value of the sub-indices calculated for each of the five pollutants subjected to continuous monitoring in the RSQA stations, namely CO, O<sub>3</sub>, SO<sub>2</sub>, NO<sub>2</sub> and PM<sub>2.5</sub>.

In 2020, in addition to the smog days, the events responsible for poor air quality days in Montréal were:

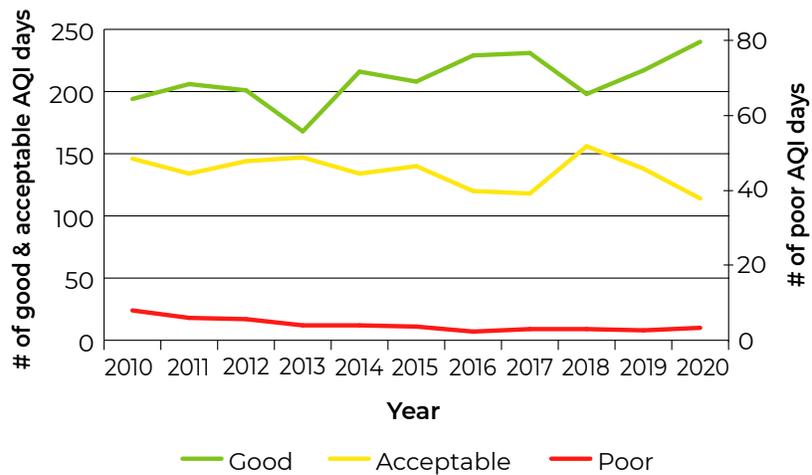
- the Montréal East-End industries (station 3);
- the Montréal-Nord transit yard workshops (station 17);
- the traffic on autoroutes (stations 28 and 103);
- the Port of Montréal activities and the traffic on Notre-Dame Est (station 50);
- wood heating in winter (station 55);
- other human activities local in scope (all stations).



Station 55  
Rivière-des-Prairies

Should one be interested in the evolution of this portrait over the years, one can observe slight downward trends in the annual averages of the number of days where the air quality index was acceptable or poor whereas the trend for the AQI on the island when air quality was good has been stable since 2017. It's worthwhile mentioning that there exists a certain annual fluctuation depending on the meteorological conditions observed during the year, but that 2020 stands out due to the increase in the number of good air quality days and a decrease in the number of acceptable air quality days.

### Evolution in the number of days where the AQI was good, acceptable or poor 2010-2020





# COVID-19

The measures imposed by the government in order to curb the dissemination of COVID-19 by slowing down the economy and shutting down construction sites has had a positive impact on the air quality of the Montréal Agglomeration.

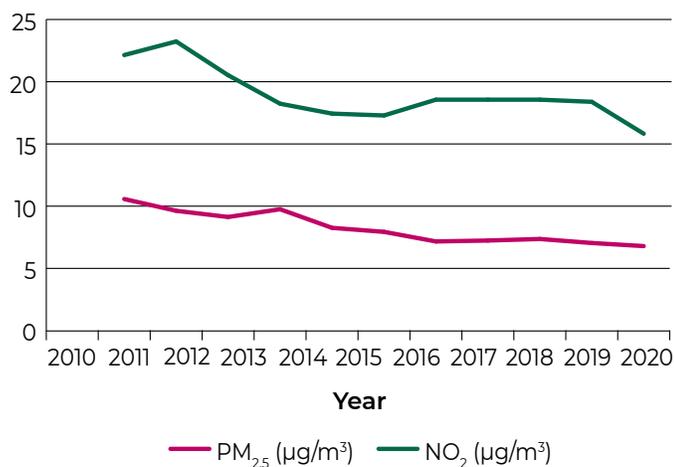
## Impact Assessment of the Confinement

In June 2020, the RSQA published an assessment of the confinement's impact on air quality: <https://montreal.ca/unites/service-de-lenvironnement>. The period chosen for this assessment extended from March 16 (the beginning of the confinement) to April 13 inclusively (the beginning of street cleaning activities by the City). The results showed significant decreases in nitrogen dioxide (NO<sub>2</sub>) and fine particulate matter (PM<sub>2.5</sub>) during this period. A key source of these two pollutants is transport. Road traffic also decreased by half near station 28 located at the intersection of Autoroutes 15 and 40.

## Evolution in PM<sub>2.5</sub> and NO<sub>2</sub> Annual Concentrations since 2010

Since 2010, there has been a downward trend for these two pollutants.

**Annual PM<sub>2.5</sub> and NO<sub>2</sub> concentrations 2010-2020**



The annual concentrations of PM<sub>2.5</sub> in 2020 were 3.2% less than those recorded for 2019 whereas those for NO<sub>2</sub> witnessed a decrease of 12.1% in 2020 compared to 2019. The sanitary crisis exacerbated this decrease in NO<sub>2</sub> concentrations. The change in yearly variations relative to the previous year is presented in the chart below.

**Yearly variation in concentrations relative to the previous year**

Year	PM <sub>2.5</sub>	NO <sub>2</sub>
2011	-8.0%	5.9%
2012	-4.4%	-11.2%
2013	5.8%	-11.4%
2014	-12.8%	-2.9%
2015	-3.8%	-2.0%
2016	-11.5%	7.4%
2017	2.9%	-0.2%
2018	1.7%	0.2%
2019	-5.7%	-4.0%
2020	-3.2%	-12.1%

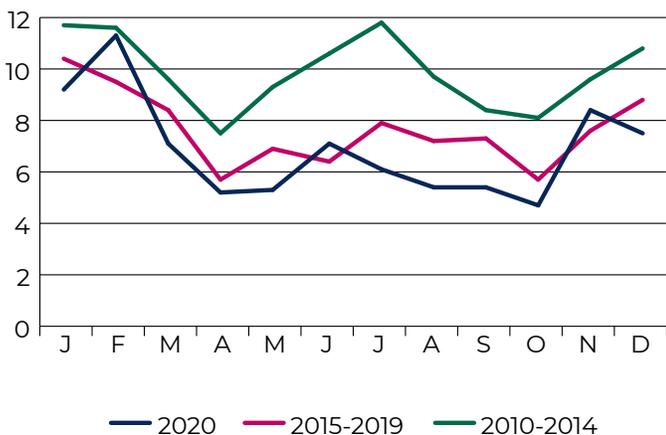


### Monthly Variation in Concentrations of PM<sub>2.5</sub> and NO<sub>2</sub>

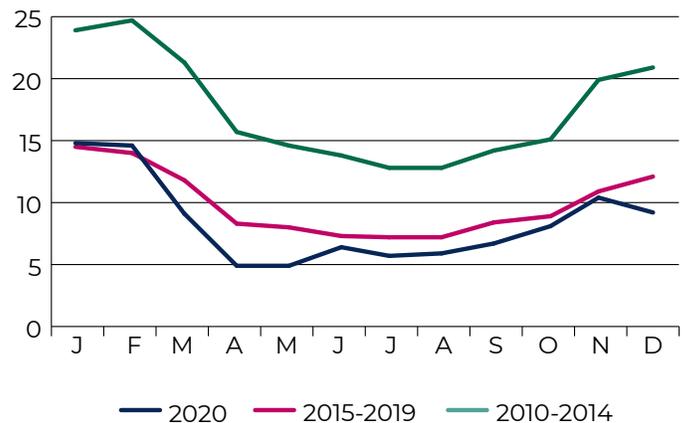
The total monthly concentrations of fine particulate matter in 2020 for all Island of Montréal stations were compared to the monthly averages of the last 10 years split into two periods i.e. 2010-2014 and 2015-2019. The results indicate that the concentrations observed were well below the average concentrations for 2010-2014 as well as below the average for a majority of months in 2015-2019. The smog occurrences observed in February and June 2020 may explain the increase in fine particulate matter concentrations for these two months.

This comparison with the monthly averages of the past 10 years was also made for the concentrations of nitrogen dioxide for all Island of Montréal stations in 2020. The difference between 2010-2014 and other years is even clearer for NO<sub>2</sub> than it is for PM<sub>2.5</sub>. Indeed, monthly NO<sub>2</sub> decreases in the 40-60% range were observed between 2010-2014 and 2020. In addition, as was the case for fine particulate matter, the majority of months in 2020 had concentrations below the average for 2015-2019. It's only in January and February 2020, just before the start of the confinement in March, that concentrations were greater than those for the same period in 2015-2019.

**2020 PM<sub>2.5</sub> (µg/m<sub>3</sub>) monthly concentrations compared to 2015-2019 & 2010-2014 averages**



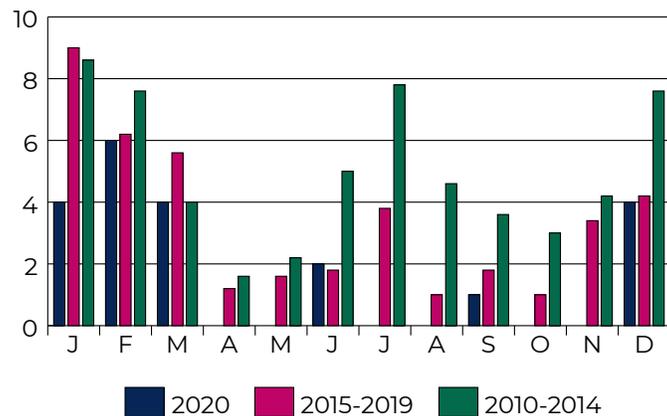
**2020 NO<sub>2</sub> (µg/m<sub>3</sub>) monthly concentrations compared to 2015-2019 & 2010-2014 averages**



### Monthly Evolution in the Number of Poor Air Quality Days since 2010

The number of poor air quality days also stood out in 2020 compared to past years. Indeed, a comparison with the 2010-2014 and 2015-2019 years clearly shows that during the months of March to November, no or few poor air quality days were recorded at the RSQA stations, whereas there was at least one in past years. Consequently, the results show a better air quality since the start of the confinement in March.

**Poor air quality days by month in 2020 compared to the 2015-2019 & 2010-2014 averages**



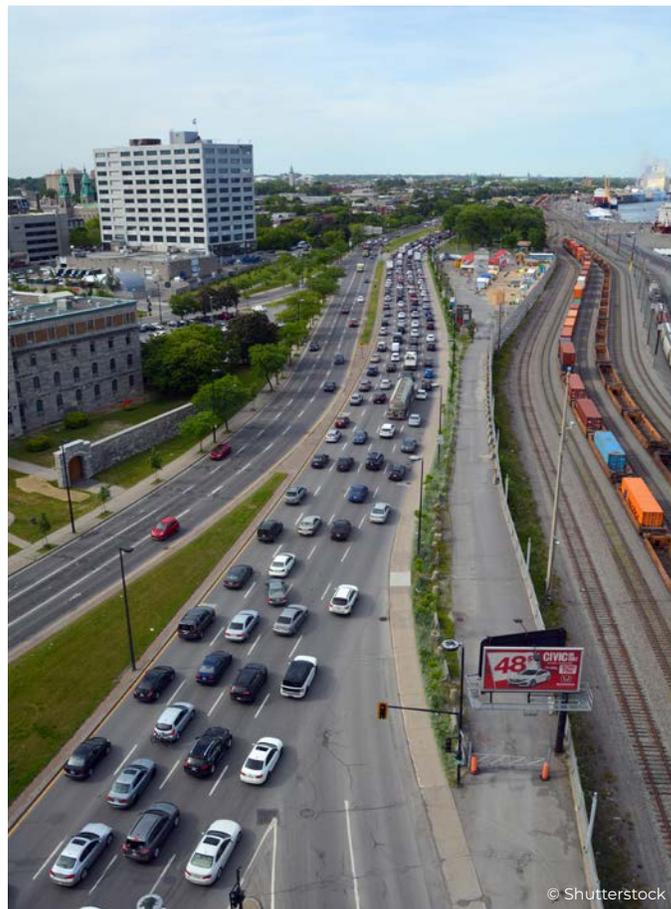


# Ultrafine Particles

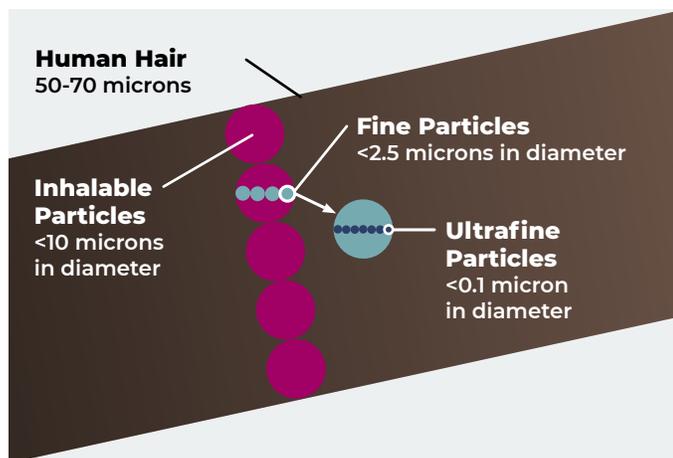
A continuous analyzer of ultrafine particles ( $PM_{0.1}$ ) was installed and brought into service at station 55 (12400, rue Wilfrid-Ouellette Rivière-des-Prairies Pointe-aux-Trembles) in October 2020. This station is the RSQA's most complete in terms of equipment. In fact, it is classified as a Level 1 facility according to the NAPS' criteria, which means that all of the parameters that it recommends are measured (reference method, characterization and continuous measurement of  $PM_{2.5}$ ,  $O_3$ ,  $NO_x$ , CO, VOC [polar and non polar], PAH and  $PM_{10}$  as well as elemental carbon).

## What Are Ultrafine Particles?

These particles have a diameter smaller than 0.1 micrometer or micron ( $\mu m$ ) and despite their small size, they are dominant in terms of their number of particles per unit of volume in the ambient air<sup>1</sup>. It's worthwhile mentioning that their unit of measure is expressed as a number of particles per cubic centimeter ( $\#/cm^3$ ) compared to larger particles that are expressed in micrograms per cubic meter ( $\mu g/m^3$ ).



## PM - PARTICLE MATTER



Ultrafine particles are derived from both natural and anthropogenic sources through primary emissions, emitted directly into the atmosphere, and secondary emissions, following the formation of aerosols from the gas phase of precursors such as volatile organic compounds. In an urban setting, combustion sources, particularly the emissions of motor vehicles, are a significant source both primary and secondary of  $PM_{0.1}$ . Also, it should be noted that diesel motors emit a greater number of  $PM_{0.1}$  than gas motors<sup>2</sup>.

<sup>1</sup> <https://www.nature.com/articles/s12276-020-0405-1.pdf>, Web site consulted March 1, 2021

<sup>2</sup> [https://cfpub.epa.gov/si/si\\_public\\_file\\_download.cfm?p\\_download\\_id=507799&Lab=NERL](https://cfpub.epa.gov/si/si_public_file_download.cfm?p_download_id=507799&Lab=NERL), Web site consulted March 1, 2021



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Particles of this size can remain airborne over many days and weeks, and travel while crossing borders over long distances in the ambient air<sup>3</sup>. They are considered as being an emerging pollutant given that their continuous measurement is very recent and not too common in air quality monitoring networks. Moreover, the cost of just one analyzer of ultrafine particles is equal to the total cost of five commonly used analyzers, i.e. those for SO<sub>2</sub>, CO, O<sub>3</sub>, NO/NO<sub>2</sub>/NO<sub>x</sub> and finally PM<sub>2.5</sub>. This pollutant has not yet been regulated but will likely be in the future. With this in mind, the RSQA has started to equip itself with this type of analyzer to better understand the sources (wood heating, road traffic, air traffic, etc.) of these particles.

### What Are Their Potential Health Effects?

Ultrafine particles can deeply penetrate the respiratory system. Also, a small fraction of PM<sub>0.1</sub> can make their way into the circulatory system (the heart and blood vessels) and even into the brain. The noxious health effects of fine particles are often caused by the fraction of PM<sub>0.1</sub>. Furthermore, studies on the health effects of ultrafine particles are still very few. However, given their very large specific surface and their capacity to absorb a significant quantity of toxic organic compounds, PM<sub>0.1</sub> are considered as being extremely reactive and potentially pathogenic<sup>4</sup>.

### What Are the Quantities of PM<sub>0.1</sub> in Montréal?

These data are collected at station 55 but only since October 2020. The few results obtained to date, less than 25% of 2020, do not allow us, at this time, to draw a portrait of the situation.

Consequently, the following results are only indicative: the average quantity of ultrafine particles for the year 2020 amounted to 7,173 particles/cm<sup>3</sup> whereas they totalled 10,393 particles/cm<sup>3</sup> during the 3 smog days that occurred on December 19, 21 and 22.

**BUDGET**

<p><b>NO/NO<sub>2</sub>/NO<sub>x</sub> analyzer</b></p>  <p><b>O<sub>3</sub> analyzer</b></p>  <p><b>CO analyzer</b></p> 	<p><b>SO<sub>2</sub> analyzer</b></p>  <p><b>PM<sub>2.5</sub> analyzer</b></p> 	<p><b>PM<sub>0.1</sub> analyzer</b></p>  <p>\$\$\$</p>
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From a budget point of view, the total cost of the 5 analyzers of regulated pollutants is equal to the cost of just one ultrafine particle analyzer.

<sup>3</sup> [https://www.euro.who.int/\\_data/assets/pdf\\_file/0006/189051/Health-effects-of-particulate-matter-final-Eng.pdf](https://www.euro.who.int/_data/assets/pdf_file/0006/189051/Health-effects-of-particulate-matter-final-Eng.pdf), Web site consulted March 1, 2021

<sup>4</sup> [https://cfpub.epa.gov/si\\_public\\_file\\_download.cfm?p\\_download\\_id=507799&Lab=NERL](https://cfpub.epa.gov/si_public_file_download.cfm?p_download_id=507799&Lab=NERL), Web site consulted March 1, 2021



# Wood Heating and Levoglucosan

For over 10 years now, Ville de Montréal has prioritized its fight against pollution associated with wood heating in an urban setting, this type of heating being one of the main causes of winter smog. In Montréal, the combustion of firewood is second only to transport in terms of fine particle emissions (PM<sub>2.5</sub>). This explains why Ville de Montréal adopted on August 24, 2015 its By-law 15-069 concerning solid-fuel-burning devices and fireplaces.

The RSQA published a specific report, available on its Web site, detailing the impact of By-law 15-069 on air quality. Since the implementation of this By-law, one can observe a reduction in air pollution.

## By-law 15-069 in Short

The By-law is two-pronged, the first aiming to prohibit the use of any solid-fuel-burning device on the territory of Ville de Montréal during any smog warnings, and this, since the adoption of the By-law in 2015. The second, in force since October 1, 2018, prohibiting the use of any solid-fuel-burning device on the territory of Ville de Montréal unless it's been recognized by an organization identified in Schedule B of the By-law, within the framework of a certification process (CSA/B415.1-10 or EPA), stating that it emits no more than 2.5 g/h of particles in the atmosphere. However, the By-law authorizes the use, on an exceptional basis, of solid-fuel devices (compliant or not) during power outages lasting more than three hours. For further information re. By-law 15-069, please consult the Web site at <https://montreal.ca/en/topics/solid-fuel-burning-stoves-and-fireplaces>.

## But What is Levoglucosan?

Levoglucosan, the wood heating tracer, is an organic compound soluble in water formed by the pyrolysis (chemical decomposition through the application of heat) of cellulose, the core material

of wood (28-60%)<sup>5</sup>. This compound is typical of the combustion of hard woods (maple, cherry, oak, etc.). Indeed, the use of hard woods is preferable since their combustion produces more energy (heat) and is slower than that of soft woods<sup>6</sup>. The growing interest in this tracer of wood heating is due to the fact that its only possible source in the ambient air is wood combustion and that it represents a significant fraction of the aerosols that remain in the atmosphere.

Levoglucosan is thus an ideal tracer of wood heating: it's abundant in the smoke emitted by hard woods, specific to that source and relatively stable in the atmosphere. That's why this analysis, done at the Rivière-des-Prairies station, mainly focuses on this compound and allows us to monitor the evolution in the use of wood stoves and fireplaces in this neighborhood with its strong density of wood stoves.

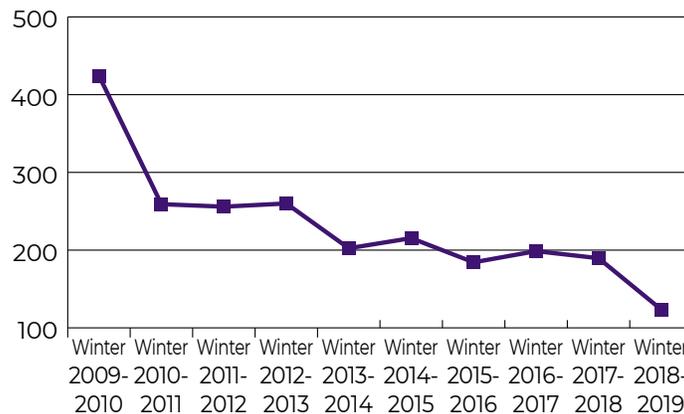
## Portrait of the Situation from 2009 to 2020

As regards the evolution of this portrait over the years and relative to the enactment of the By-law by Ville de Montréal, one can observe a significant reduction in levoglucosan over the past 10 years. In 2009, when concentrations of levoglucosan were at their peak (424.4 ng/m<sup>3</sup>), the City adopted its first By-law banning the installation of any solid-fuel-burning device, with the exception of EPA certified pellet devices (By-law 09-012 which became By-law 11-018 in 2013). From 2010 to 2012, concentrations of levoglucosan were in the 260 ng/m<sup>3</sup> range and hardly varied. Then, with the implementation of the Feu-Vert replacement program, there was a noticeable but slight reduction in levoglucosan in 2013 (202.4 ng/m<sup>3</sup>). This program offered a financial incentive to Montréal Agglomeration citizens intent on removing or replacing their wood heating devices. After a slight increase in 2014, the downward trend in levoglucosan concentrations resumed in the following years.

<sup>5</sup> <http://www.pressesagro.be/base/text/v14ns2/549.pdf> consulted October 2, 2020.

<sup>6</sup> <http://www.santecom.qc.ca/Bibliothequevirtuelle/Abitibi/64407.pdf> consulted October 2, 2020.

**Evolution of the concentrations of levoglucosan (ng/m<sup>3</sup>) during the 2009-2019 winter seasons at station 55 relative to the enacted regulations.**



First By-law banning the installation of any solid-fuel-burning device (Reg. 09-012 which became Reg. 11-018 in 2013)

Feu vert replacement program

New By-law - phase 1 Banning of the use of solid-fuel-heating devices during smog warnings (Reg. 15-069)

New By-law - phase 2 Banning of the use of any non compliant solid-fuel-heating device (Reg. 15-069) with respect to the particle emission standard of 2.5g/h

In 2015, the By-law concerning solid-fuel-burning devices and fireplaces was adopted (By-law 15-069). The first phase, regarding the banning of the use of any solid-fuel-burning device or fireplace during a smog warning, came into force upon the adoption of the By-law. Then, in October 2018, the second phase, regarding the banning of the use of any solid-fuel-burning device and fireplace, with the exception of those certified as emitting no more than 2.5 g/h of fine particles in the atmosphere, came into force. During the winter that immediately followed (2018-2019), a reduction of 35% in concentrations of levoglucosan was observed compared to the previous year. Indeed, these concentrations declined from 189.6 ng/m<sup>3</sup> in 2017-2018 to 123.8 ng/m<sup>3</sup> in 2018-

2019. Consequently, there is every reason to believe that the implementation of the second phase of By-law 15-069 had a deterrent effect on citizens with respect to their use of wood burning in the wintertime.

Wood heating has a significant impact on the quality of ambient air in the Rivière-des-Prairies sector neighboring station 55. Although the monitoring stations are not all located so as to be able to measure a local issue such as this one, the results obtained are likely representative of any other sector on the Island of Montréal that boasts the same density of wood heating devices. To consult the complete study: <https://montreal.ca/unites/service-de-lenvironnement>.



# New Measurement Analyzers of Hydrogen Sulfide

At the end of 2020, two continuous measurement analyzers of hydrogen sulfide ( $H_2S$ ) were added to the network. The first, at station 55 in the neighborhood of Rivière-des-Prairies (October), and the second, at station 3 in the neighborhood of Pointe-aux-Trembles (December). It should be mentioned that the RSQA stopped measuring this pollutant in 2014 because the technology used at that time did not allow for reliable measurements. The new analyzers have a lower detection limit of 1 ppb, which allows for better measurements in the ambient air.

Hydrogen sulfide is a gas whose singular odor is comparable to that of a rotten egg. Its presence in the ambient air, even in very weak concentrations, had already drawn numerous complaints in the past. Its main sources of emission are the

industrial processes used in the oil, steel, and the pulp and paper sectors as well as in drainage (sewers) and wastewater treatment facilities. It's also produced naturally in marshes, bogs and wetlands.  $H_2S$  has no impact per se on the environment except in terms of odors. However, it may have a certain corrosive effect when its concentrations in the ambient air are greater than usual.

Next year, the concentrations of hydrogen sulfide observed will be compared to the ambient air standard indicated in By-law 90 (By-law 2001-10 of the Communauté métropolitaine de Montréal), which set an upper limit of  $11 \mu\text{g}/\text{m}^3$  for acceptable average hourly concentrations and of  $5 \mu\text{g}/\text{m}^3$  for acceptable average 24-hour concentrations.



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# Turcot Project

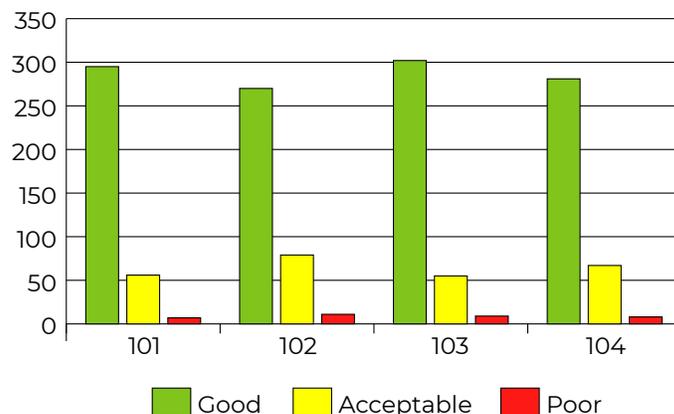
Air quality monitoring within the framework of the Turcot Interchange project continued throughout 2020. Average daily concentrations of fine particulate matter (PM<sub>2.5</sub>) exceeded the standard of 30 µg/m<sup>3</sup> set by the *Ministère de l'Environnement et de la Lutte aux changements climatiques* (MELCC) on only two occasions, all stations considered. An improvement was observed at station 102 whereas the others remained stable.

## Exceedances of the Standard for Fine Particulate Matter (PM<sub>2.5</sub>)

Stations	101	102	103	104
Total 2016	1	13	1	3
Total 2017	0	4	0	1
Total 2018	2	7	2	3
Total 2019	1	5	1	0
Total 2020	1	0	1	0

In 2020, a final milestone was reached in that all major infrastructure works were completed. The worksite's activities decelerated throughout the year, as shown by the lower results observed.

## Air Quality Index (AQI) by Turcot Project Monitoring Station in 2020



The air quality monitoring done within the framework of the Turcot Project was terminated at the end of December 2020 since the major infrastructure works had then been completed.

Station 103 located at the intersection of De Roberval and York, in the borough of Le Sud-Ouest, will remain in operation, as it was integrated into the RSQA.





# Canadian Ambient Air Quality Standards (CAAQS)



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As part of the following comparative exercise, the averages were obtained by using the data of all RSQA stations. The Canadian ambient air quality standards (CAAQS) are used for reference purposes only. Since 2017, the CAAQS deal with fine particulate matter (PM<sub>2.5</sub>), ozone (O<sub>3</sub>), sulfur dioxide (SO<sub>2</sub>) and nitrogen dioxide (NO<sub>2</sub>). These standards are the core of the Air Quality Management System (AQMS) promoted by the Canadian Council of Ministers of the Environment. These data are presented in micrograms per cubic meter (µg/m<sup>3</sup>) or parts per billion (ppb).

Since 2014, an improvement in PM<sub>2.5</sub> concentrations has been observed in Montréal's ambient air, the 3-year average annual concentrations showing a decrease of 8.6 to 7.3 µg/m<sup>3</sup>. For these two standards, the situation is similar to recent years and the results are below the standards that had been set for 2020. The 2025 standards for fine particulate matter are being reviewed and should be announced in 2022.

## Fine Particulate Matter (PM<sub>2.5</sub>) Concentrations Expressed in µg/m<sup>3</sup>

3-year average of the annual 98<sup>th</sup> percentile of the daily 24-hour average concentrations  
Canadian standard = 28 in 2015 and 27 in 2020

2014-2016	2015-2017	2016-2018	2017-2019	2018-2020
21	20	20	20	20

3-year average of the annual average concentrations  
Canadian standard = 10 in 2015 and 8.8 in 2020

2014-2016	2015-2017	2016-2018	2017-2019	2018-2020
8.6	7.5	7.4	7.4	7.3

The trend for O<sub>3</sub> is rather stable with 3-year averages fluctuating between 54 and 58 ppb from 2014 to 2020. The recorded concentrations of ozone are lower than the Canadian standard of 62 ppb for 2020 and show a slight downward trend since 2015.

## Ozone (O<sub>3</sub>) Concentrations Expressed in ppb

3-year average of the annual 4<sup>th</sup> highest daily maximum 8-hour average concentrations  
Canadian standard = 62 in 2020 and 60 in 2025

2014-2016	2015-2017	2016-2018	2017-2019	2018-2020
56	58	57	55	54



The results for SO<sub>2</sub> show a constant improvement since 2014 and are compliant with the 2020 and 2025 standards with hardly any variation from last year.

### Sulfur Dioxide (SO<sub>2</sub>) Concentrations Expressed in ppb

3-year average of the annual 99<sup>th</sup> percentile of the daily maximum 1-hour average concentrations  
Canadian standard = 70 in 2020 and 65 in 2025

2014-2016	2015-2017	2016-2018	2017-2019	2018-2020
21	18	17	17	16

Arithmetic average over a single calendar year  
of all 1-hour average concentrations  
Canadian standard = 5.0 in 2020 and 4.0 in 2025

2016	2017	2018	2019	2020
0.7	0.8	0.6	0.5	0.4

The 3-year averages for NO<sub>2</sub> showed very slight variations between 2014 and 2020. The concentrations of 44 ppb recorded in 2018-2020 were well below the 60 ppb 2020 standard but just above the 2025 standard of 42 ppb. The use

of fossil fuels in automobiles and in home heating systems is the main source of NO<sub>2</sub>. As far as the year's average is concerned, it complies with both the 2020 and 2025 standards with a downward trend since 2018. This trend was even more marked in 2020 owing to the reduced activities brought about by the COVID-19 confinement period and a gradual return to normalcy.

### Nitrogen dioxide (NO<sub>2</sub>) Concentrations Expressed in ppb

3-year average of the annual 98<sup>th</sup> percentile of the daily maximum 1-hour average concentrations  
Canadian standard = 60 in 2020 and 42 in 2025

2014-2016	2015-2017	2016-2018	2017-2019	2018-2020
45	45	45	46	44

Arithmetic average over a single calendar year  
of all 1-hour average concentrations  
Canadian standard = 17 in 2020 and 12 in 2025

2016	2017	2018	2019	2020
10.0	10.3	10.4	9.1	8.4



# RSQA

## Publication

- Environmental Assessment Report 2019
- Impact of the confinement on air quality
- Air Quality Monitoring

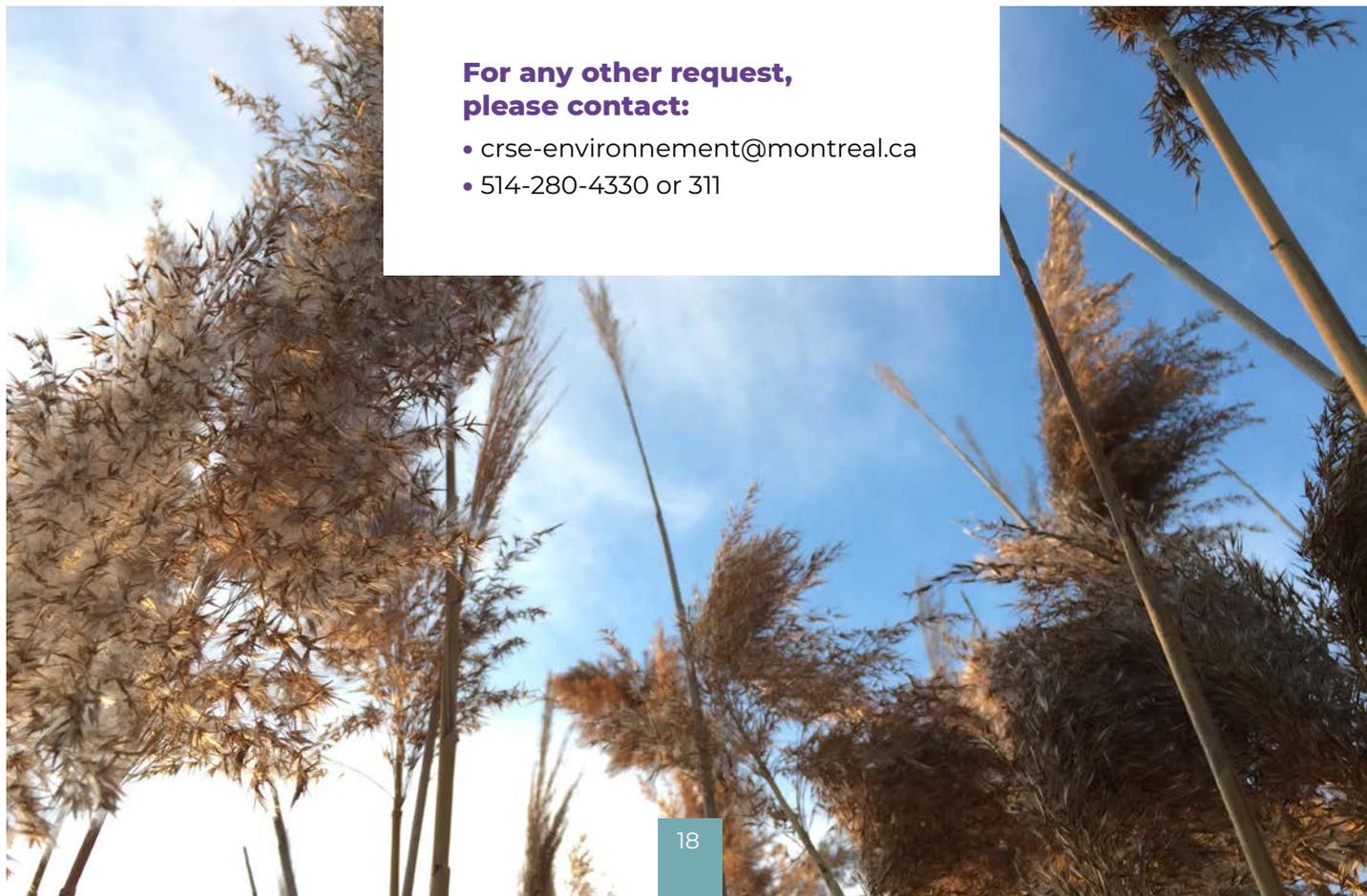
## Web Site Migration

In 2020, the RSQA's Web site greeted 65,697 visitors.

A migration of our Web site has been underway since 2020. We've taken this opportunity to collaborate with our Service de l'informatique to make available data on metals, of which arsenic, on the City's open data Web site. These data will be accessible starting sometime in 2021.

The following is an aide-mémoire indicating where to find the information on air quality.

	rsqa.qc.ca	Montreal.ca	Donnees.montreal.ca
AQI	✓		✓
Air quality forecast	✓		
Map of stations	✓		
List of stations	✓		✓
Data	✓		✓
Information on air quality		✓	
Annual Assessment Reports	✓	✓	✓



**For any other request,  
please contact:**

- crse-environnement@montreal.ca
- 514-280-4330 or 311

# Coming in 2021

## **Station 25**

Commissioning of station 25 - Longue Pointe (Avenue Haig/Rue Notre-Dame Est) as part of the implementation of a collaborative management system of the Notre-Dame integrated mobility corridors for the optimization of the access to the Port of Montréal.

## **Huge Instrumentation Upgrade**

2021 will be an unprecedented year for the RSQA with an investment in excess of \$650,000 in the upgrading of our air quality monitoring instrumentation. A communication will be released sometime this year to detail these investments.