

2015 Environmental Assessment Report

AIR QUALITY IN MONTRÉAL

Service de l'environnement

Montréal 

Highlights

PORTRAIT OF THE AIR QUALITY

- Air quality is improving in Montréal
- The number of smog days is lower
- Concentrations of fine particles ($PM_{2.5}$) are on the wane

NETWORK IMPROVEMENTS

- A safer and bigger building for the Décarie Interchange station (28)
- Closing of the Verdun station (68) and relocation of its equipment
- Re-roofing of the Saint-Joseph station (80)

TURCOT PROJECT

- Conclusion of a seven-year agreement with the *Ministère des Transports du Québec* (MTQ)
- Installation and breaking-in of four air quality monitoring stations

WOOD BURNING

- Final bylaw adopted in August



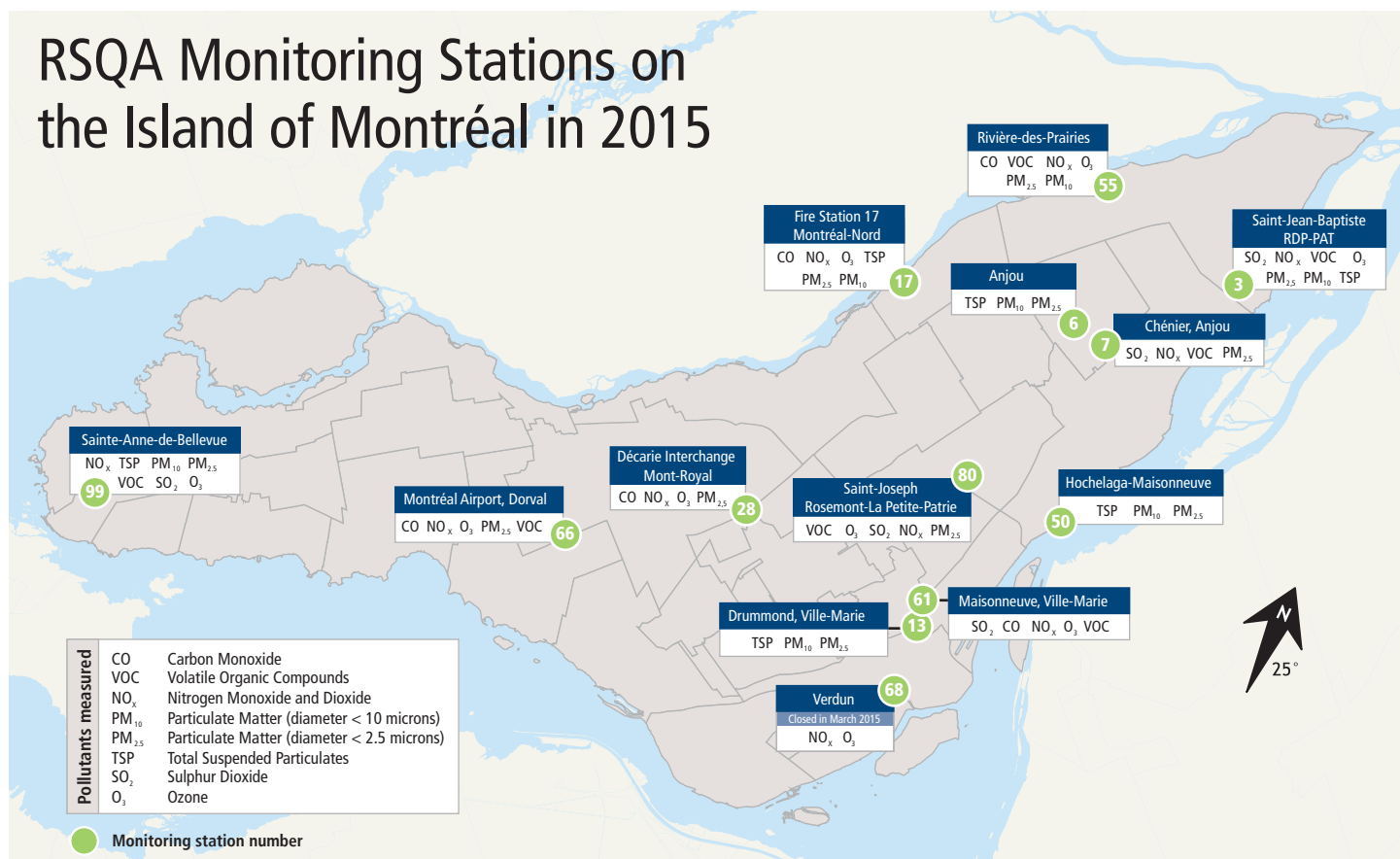
The Network

Again this year, the network is comprised of 13 monitoring stations equipped with monitors which continuously measure concentrations of pollutants such as ozone, carbon monoxide, sulphur dioxide, nitrogen oxides and fine particles. Other measures and analyses, conducted according to the sampling calendar established by the National Air Pollution Surveillance (NAPS) network, aim to collect information on, among others, volatile organic compounds and polycyclic aromatic hydrocarbons. The results thus obtained allow for the preparation of an annual snapshot and the monitoring, over many years, of the situation of these pollutants in Montréal.

Within the updating of the guidelines on quality assurance and control of the National Air Pollution Surveillance network, an audit of the activities of the *Réseau de surveillance de la qualité de l'air* (RSQA) was performed by an independent firm mandated by Environment Canada. The excellent results obtained by the RSQA during this audit are a welcome reward for the sustained efforts by all team members to maintain a high performing network. The inspection also allowed for the improvement of certain practices.

Announced last year, the replacement of the TEOM-FDMS fine particle analysers by SHARP 5030 analysers was not implemented in 2015. The performance trials of the new analysers were pursued throughout the year in order to accumulate data on the behavior of these analysers in different weather conditions. Also, constraints related to the installation of these apparatus and the renovation of certain stations spurred the technical team to surpass itself and delayed the deployment of these analysers until 2016.

However, this situation did not prevent the RSQA, true to its mission, to measure the overall air quality throughout the territory of the agglomeration of Montréal, 24 / 7 in the past year. The measures conducted allow for the calculation of a real-time air quality index. This index and the many information on air quality in Montréal are available at all times on the Web site at rsqa.qc.ca.



Portrait of the air quality

In 2015, 64 days of poor air quality were recorded, of which 7 were smog days. This is 3 less smog days than in 2014, despite a similar total of poor air quality days. The pollutants responsible for these poor air quality days were fine particles (63) and ozone (1).

The smog days were observed in January and February when the temperatures fell far below the seasonal averages. The opposite is true of poor air quality days due to ozone, as the one occurrence was observed in May, when the temperature almost reached an unseasonal high of 30 °C that day.

Fireworks were responsible for the poor air quality episodes recorded in the evenings of July 4-5 and 29-30. The concentrations of fine particles generally increase during the fireworks and then decrease after midnight, which explains the two-day count for each of these events. Both occurrences have in common the stagnation of pollutants due to the absence of circulation of air masses.



Fireworks above Jacques-Cartier Bridge

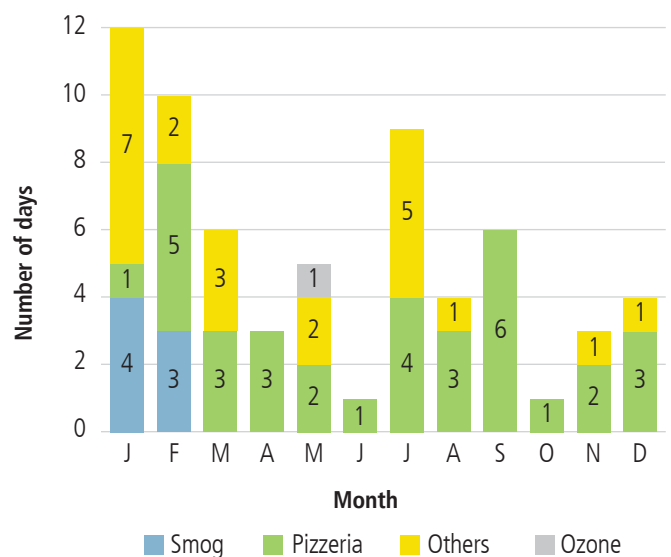
What is a poor air quality day?

According to established criteria, as soon as concentrations of fine particles are superior to $35 \mu\text{g}/\text{m}^3$ during at least three hours for a station, the day is deemed poor in terms of air quality. For a poor air quality day to be characterized as a smog day, concentrations of $\text{PM}_{2.5}$ greater than $35 \mu\text{g}/\text{m}^3$ must be measured during at least three hours over 75% of the territory of the agglomeration of Montréal. During a smog day, the concentrations of fine particles generally remain high for at least 24 hours and sometimes more.

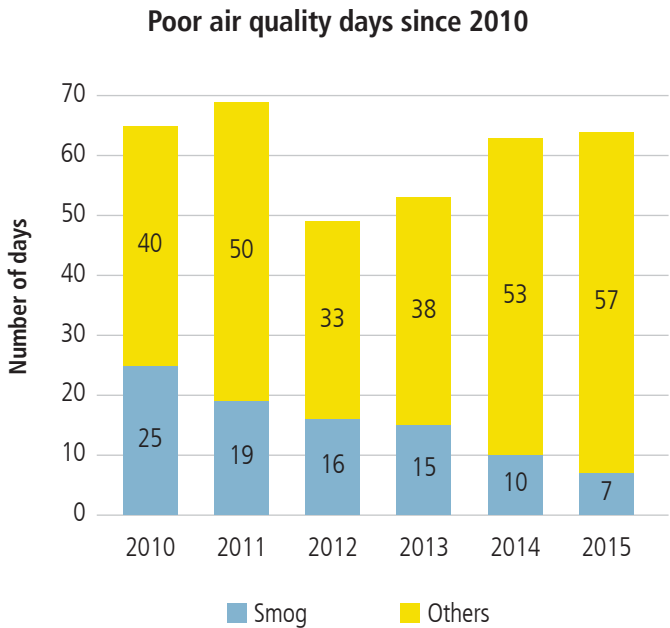
In short, in addition to smog days, the events responsible for poor air quality days were:

- the presence of a wood-burning pizza oven (34 days, station 13);
- Loto-Québec's fireworks (4 days, station 50); and
- other human activities with a local impact (19 days, all stations).

Poor air quality days in Montréal in 2015



An analysis of the results obtained since 2010 show that, year after year, the number of smog days is declining, which is good news.

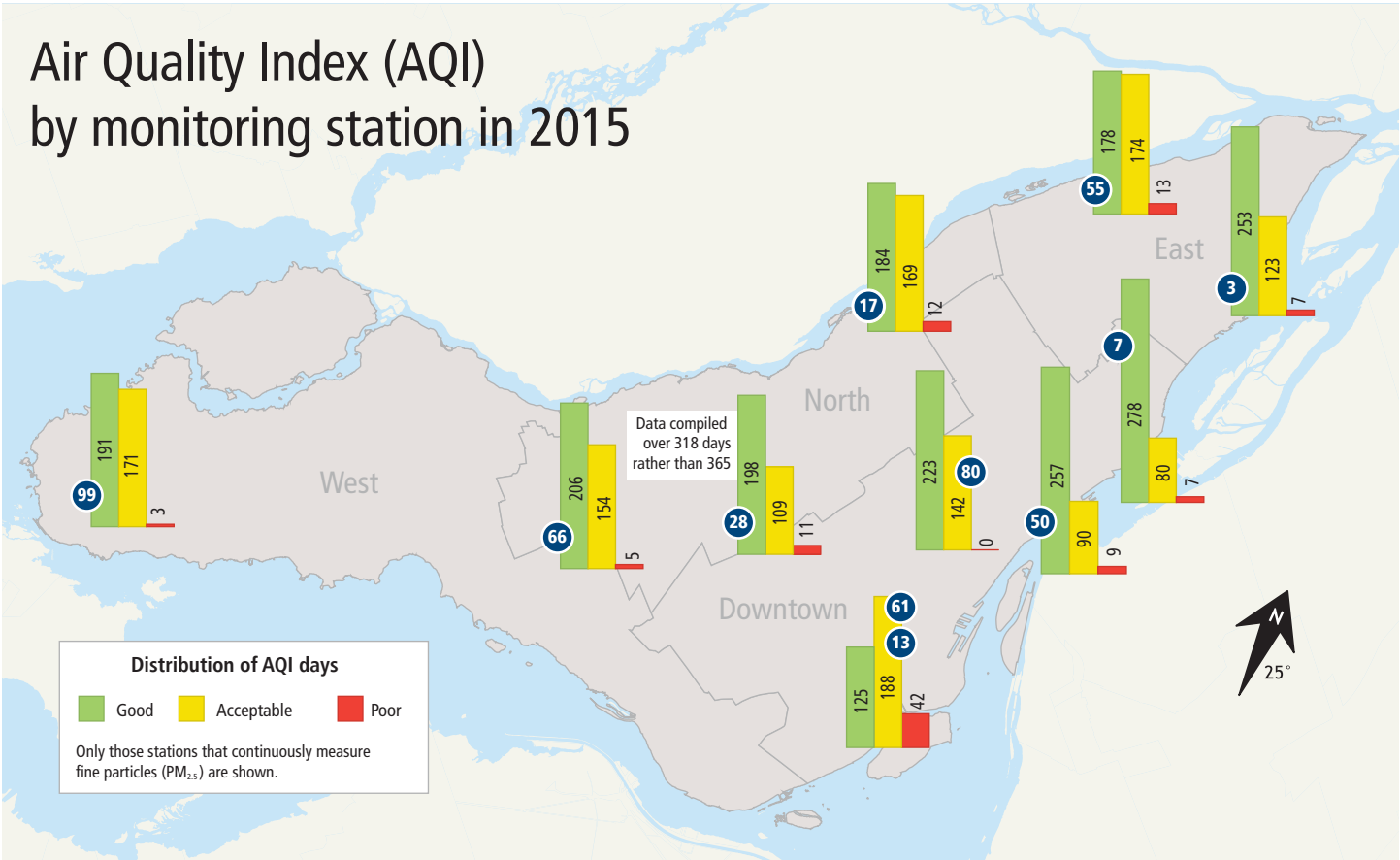


Furthermore, a comparison of the concentrations of fine particles obtained with the new ambient air quality standards confirms such a decrease. This observation is very significant, given that fine particles are associated with many health problems. We can thus assert that the air quality in the Montréal region is improving.

Comparison between Canadian Ambient Air Quality Standards (CAAQS) and fine particle concentrations measured in Montreal in $\mu\text{g}/\text{m}^3$

The 3-year average of the annual 98 th percentile of the daily 24-hour average concentrations					
Standard = 28 in 2015 Standard = 27 in 2020					
2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	
29	28	26	25	24	

The 3-year average of the annual average concentrations					
Standard = 10 in 2015 Standard = 8.8 in 2020					
2009-2011	2010-2012	2011-2013	2012-2014	2013-2015	
10.6	9.9	9.7	9.6	9.4	



Network improvements

The Décarie Interchange station (28) located in Town of Mount-Royal, one of the oldest stations in the network, underwent a rejuvenation. Indeed, a new flat roof building replaced the small cabana adorned with the graffiti that many users of the Décarie Interchange may have noticed. This transformation was necessary to comply with safety standards and enlarge the workspace required for the future installation of better performing monitors. The speed with which the work was conducted in November minimized the number of days during which the station was not in service.

Some of you may have noticed on our website that the presentation of data for certain stations sometimes showed a white dot. This was the case of the Saint-Joseph station (80) at the beginning of the year, when the station was re-roofed. The roofing work resulted in a temporary suspension of the measures that resumed January 22, 2015. Since then, the station has been operating normally.

Meanwhile, the Verdun station (68) completely ceased transmitting its data in March. The station, located in the Atwater drinking water treatment plant, no longer met certain installation criteria. The monitoring equipment was thus deployed in another station located nearby, on de Roberval Street. The addition of a fine particle analyser in this station is a major improvement, since no such analyser was present in this sector. The relocated station was commissioned in October and will be represented on the website in 2016 once the breaking-in period will have concluded successfully.



Replacement of the Décarie Interchange station (28)

Turcot Project monitoring stations



Turcot Project

Good news! The air quality monitoring program, during the Turcot Interchange works, will be ensured by the *Réseau de surveillance de la qualité de l'air*. An agreement to that effect was concluded between Ville of Montréal and the *Ministère des Transports du Québec*, responsible for the works. The program includes the installation of four monitoring stations strategically located on each side of the key worksites. Breaking-in of the monitoring equipment was terminated in December 2015. The monitoring program, which will be conducted over a seven-year timeframe, will begin in January 2016.

Bylaw concerning the use of wood-burning stoves and fireplaces now in force

It's done! The **Bylaw concerning solid-fuel-burning devices and fireplaces (15-069)** came into force August 24, 2015.

A campaign promoting the new Bylaw was launched upon the enactment of the Bylaw by the municipal council. This multipronged campaign was deployed last fall. Many platforms were used to disseminate key messages to the public.

Among the initiatives that were conducted, it is worthwhile mentioning:

- the selective posting of an information letter, of a declaration form as well as of an explanatory brochure to some 50,000 residents presumed to own a solid fuel device;
- the use of social media;
- advertising broadcast on the radio, the Web and in print media;
- the broadcast of bulletins on Métrovision and the *Ministère des Transports du Québec* (MTQ) screens; and,
- the dissemination of a newsletter.

Also, tools such as an online declaration form, a dedicated telephone line, an email address, a website and a Q&A were made available to the public to facilitate declaring the device or fireplace and the quest for information. More than 40,000 forms were received at the end of 2015.

For further information, please consult the website on wood burning at the following address: ville.montreal.qc.ca/woodburning.



Outline of the Bylaw

Do you own such a device? If so, you'll need to:

1. stop using it during a smog advisory, and this, immediately;
2. declare it in the 120-day period following the enactment of the bylaw, that is to say by December 22, 2015. You can complete the declaration form online and thereby find all of the information relative to the bylaw and its application;
3. stop using it by October 1, 2018, except if your device is certified as emitting no more than 2.5 g/hr of fine particles in the atmosphere.

"Exceptionally, the use of all solid-fuel-burning devices during electricity outages that last more than three hours is allowed."

