



Canadian Council of Ministers
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2011 PROGRESS REPORT ON THE CANADA-WIDE STANDARDS FOR PARTICULATE MATTER AND OZONE

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The Canadian Council of Ministers of the Environment (CCME) is the primary minister-led intergovernmental forum for collective action on environmental issues of national and international concern.

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EXECUTIVE SUMMARY

Under the *Canada-wide Standards (CWS) for Particulate Matter and Ozone* participating jurisdictions committed to provide an annual progress report on the measured ambient concentrations of fine particulate matter (PM_{2.5}) and ozone beginning in 2011.

This document is the first annual progress report for the CWS and presents the PM_{2.5} and ozone concentrations in the metrics (also called 3-year averages) of the CWS targets for the 3-year period from 2009 to 2011. The CWS targets are 30 µg/m³ for PM_{2.5} and 65 ppb for ozone as 3-year averages.

The measured PM_{2.5} 3-year averages for the period from 2009 to 2011 ranged between 10 to 20 µg/m³ at the majority of reporting locations. Three-year averages above the target were limited to one location in British Columbia and three in Alberta, and they may have been influenced by smoke from forest fires.

The measured ozone 3-year averages for the period from 2009 to 2011 ranged between 45 to 58 ppb at most reporting locations. Three-year averages above the target were limited to two locations in Alberta and fifteen in Ontario. In Alberta, these two locations may have been influenced by high background concentrations and natural sources, and in Ontario the fifteen locations may have been influenced by transboundary flow of air pollution from the United States.

During the period from 2009 to 2011, less than 1% of Canadians lived in communities with PM_{2.5} levels above the CWS target, and approximately 36% of Canadians¹ lived in communities with ozone levels above the CWS target.

¹ Since the report does not include PM_{2.5} and ozone data from Québec, the 1% and 36% are calculated with Québec's population excluded.

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1. INTRODUCTION

Under the *Canada-wide Standards (CWS) for Particulate Matter and Ozone*² participating jurisdictions committed to provide an annual progress report on the measured ambient concentrations of fine particulate matter (PM_{2.5}) and ozone beginning in 2011. This document is the first annual progress report, presenting the PM_{2.5} and ozone concentrations in the metrics of the CWS targets for the 3-year period from 2009 to 2011.

Section 2 of this report provides background information on the PM_{2.5} and ozone CWS targets. Sections 3 and 4 present the measured ambient concentrations of PM_{2.5} and ozone in the metrics of the CWS targets for the 3-year period from 2009 to 2011 at CWS reporting locations across Canada³. Information on federal, provincial and territorial activities undertaken to address air pollutants, including particulate matter and ozone, is available on their respective web sites.

All ambient data in this report was provided by jurisdictions and the National Air Pollution Surveillance (NAPS) program. Under NAPS, jurisdictions collaborate to monitor and share ambient measurements of pollutants across Canada. The data are centrally maintained by Environment Canada in the Canada-wide Air Quality Database, and each jurisdiction maintains its respective data.

2. CWS Ambient Targets

The CWS ambient (outdoor) targets for PM_{2.5} and ozone are presented in Table 1.

Table 1: The PM_{2.5} and Ozone CWS ambient targets

Pollutant	Averaging time	Target	Metric (3-year average)
PM_{2.5}	24-hour (calendar day)	30 µg/m³	The 3-year average of the annual 98th percentile of the daily 24-hour average concentrations.
Ozone	8-hour	65 ppb	The 3-year average of the annual 4th highest daily maximum 8-hour average concentrations.

The *metrics* are the statistical forms of the targets. To evaluate the achievement status⁴ of a target, the measured concentrations to use must be in the form specified by the metric of the target. Since all metrics are based on 3-year averages, measured concentrations in the form of the metrics are referred to as the PM_{2.5} 3-year average and the ozone 3-year average respectively for the PM_{2.5} target and the ozone target.

² A copy of the CWS for particulate matter and ozone is available at: http://www.ccme.ca/assets/pdf/pmozzone_standard_e.pdf.

³ The Province of Québec, while not a signatory to the CWS, has undertaken analogous efforts as those covered by the CWS. Information is available at: http://www.mddefp.gouv.qc.ca/air/particules_ozone/index.htm.

⁴ Compliance with the targets is not evaluated in this report. For information on compliance evaluation, please see the *Guidance Document on Achievement Determination, 2007* at: www.ccme.ca/assets/pdf/1391_gdad_e.pdf.

3. PM_{2.5} 3-year Averages

The PM_{2.5} CWS reporting communities and their PM_{2.5} 3-year averages for the period from 2009 to 2011 are presented in Figure 1.

Newer continuous monitoring instruments that provide a more complete measure of PM_{2.5} are being deployed across Canada. Since the 3-year average concentrations for the period 2009-2011 are based on a mix of newer and older instruments, caution is recommended when comparing the 3-year averages between locations, and to the CWS target.

Figure 1: PM_{2.5} 3-year averages for reporting communities, 2009 to 2011.

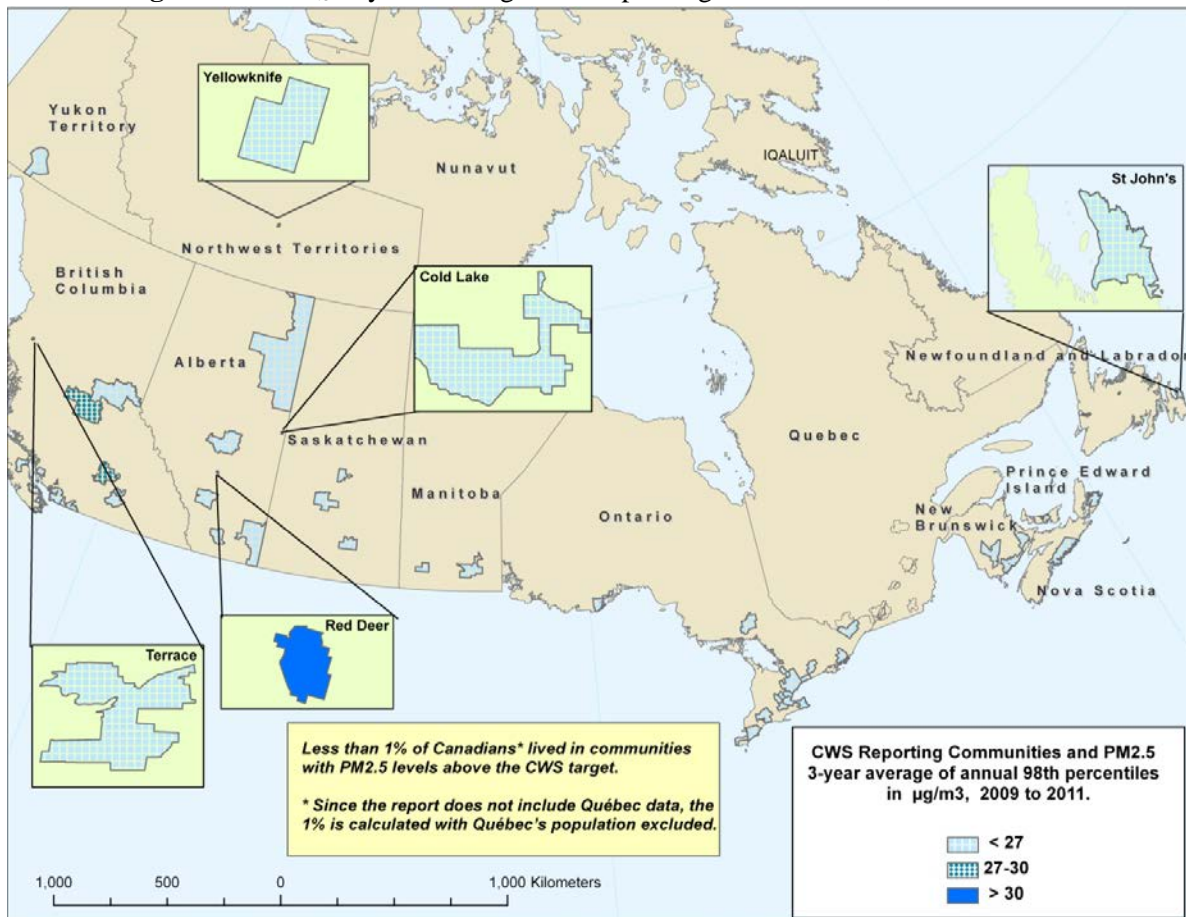
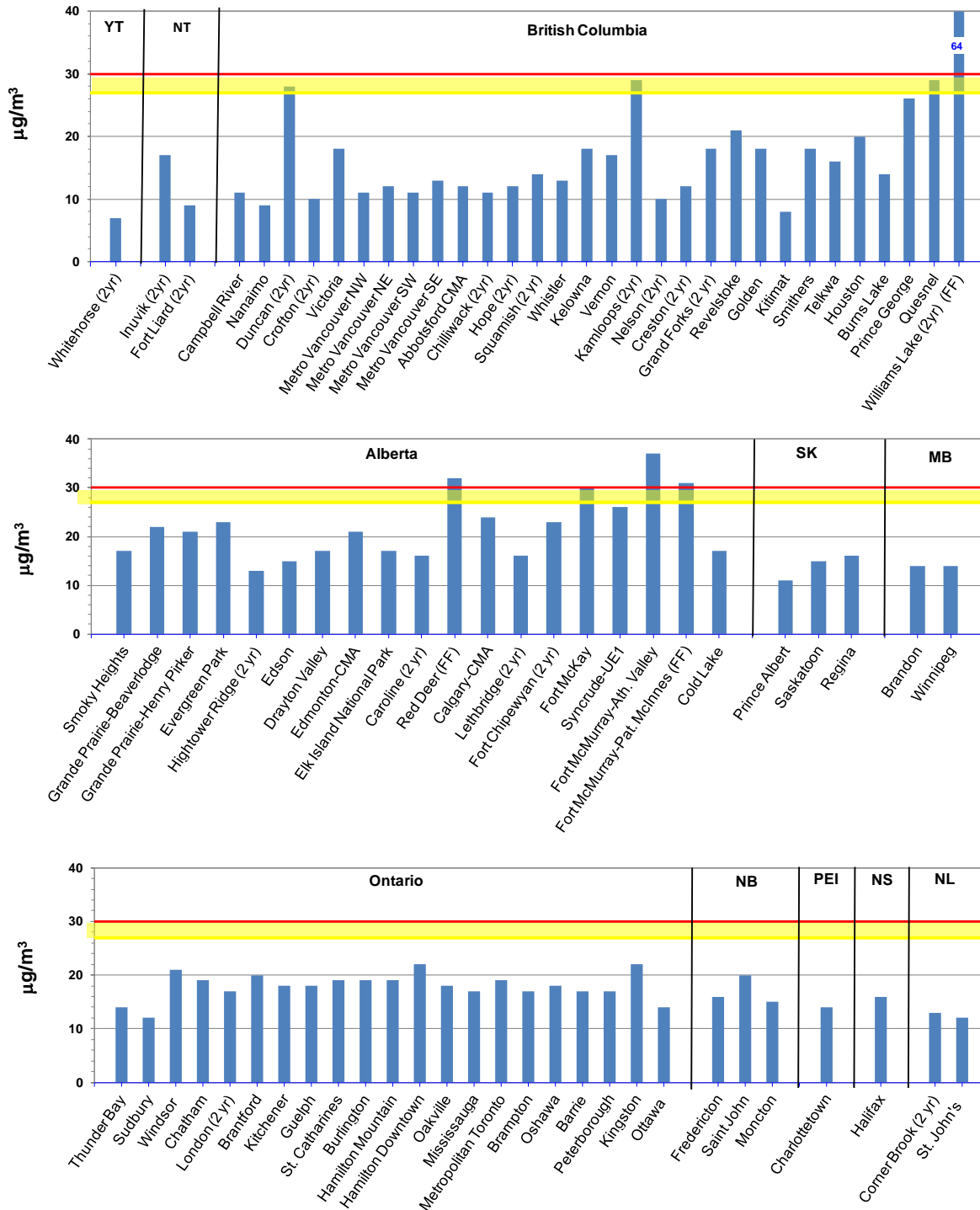


Figure 2 presents the actual PM_{2.5} 3-year averages for all reporting locations. The 3-year averages ranged between 10 to 20 µg/m³ at the majority of reporting locations. Three locations recorded 3-year averages less than 10 µg/m³, Whitehorse (Yukon Territory), Fort Liard (Northwest Territories), and Kitimat (British Columbia). Three-year averages above the target were limited to one location in British Columbia and three in Alberta, and they may have been influenced by smoke from forest fires. All locations with 3-year averages within 10% of the target (indicated by the yellow band in Figure 2) were also in these two provinces.

Figure 2: PM_{2.5} 3-year average values for reporting locations, 2009 to 2011



Legend: Red line is at the value of the PM_{2.5} CWS target (30 µg/m³). Yellow band indicates the range within 10% of the target (30 to 27 µg/m³). YT=Yukon Territory; NT=Northwest Territories; SK=Saskatchewan; MB=Manitoba; NB=New Brunswick; NS=Nova Scotia; NL=Newfoundland and Labrador; PEI=Prince Edward Island. (2 yr) means that only two years of measurements were used instead of three. (FF) means that the 3-year average may have been influenced from forest fires. Data provided by provinces and territories through NAPS.

4. Ozone 3-year Averages

The ozone CWS reporting communities and their ozone 3-year averages for the period from 2009 to 2011 are presented in Figure 3.

Figure 3: Ozone 3-year averages for reporting communities, 2009 to 2011

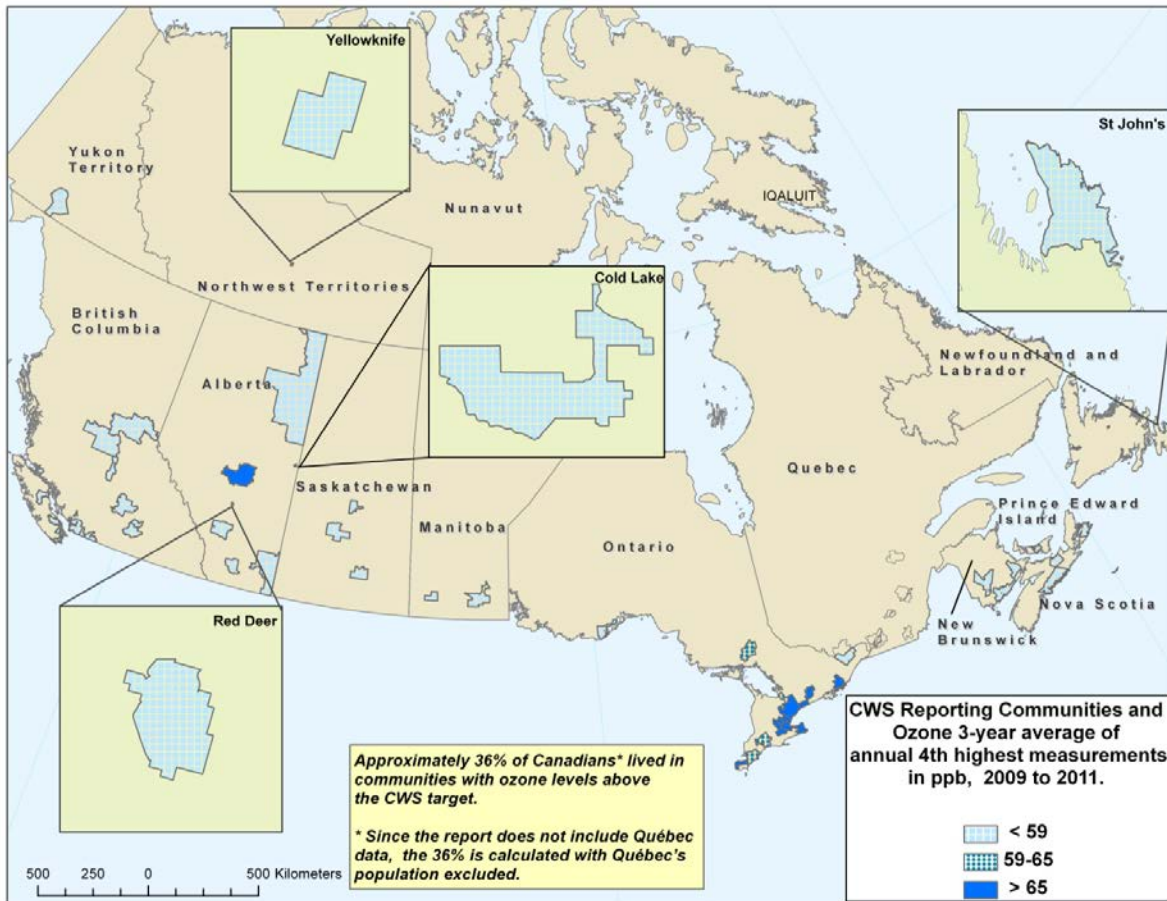
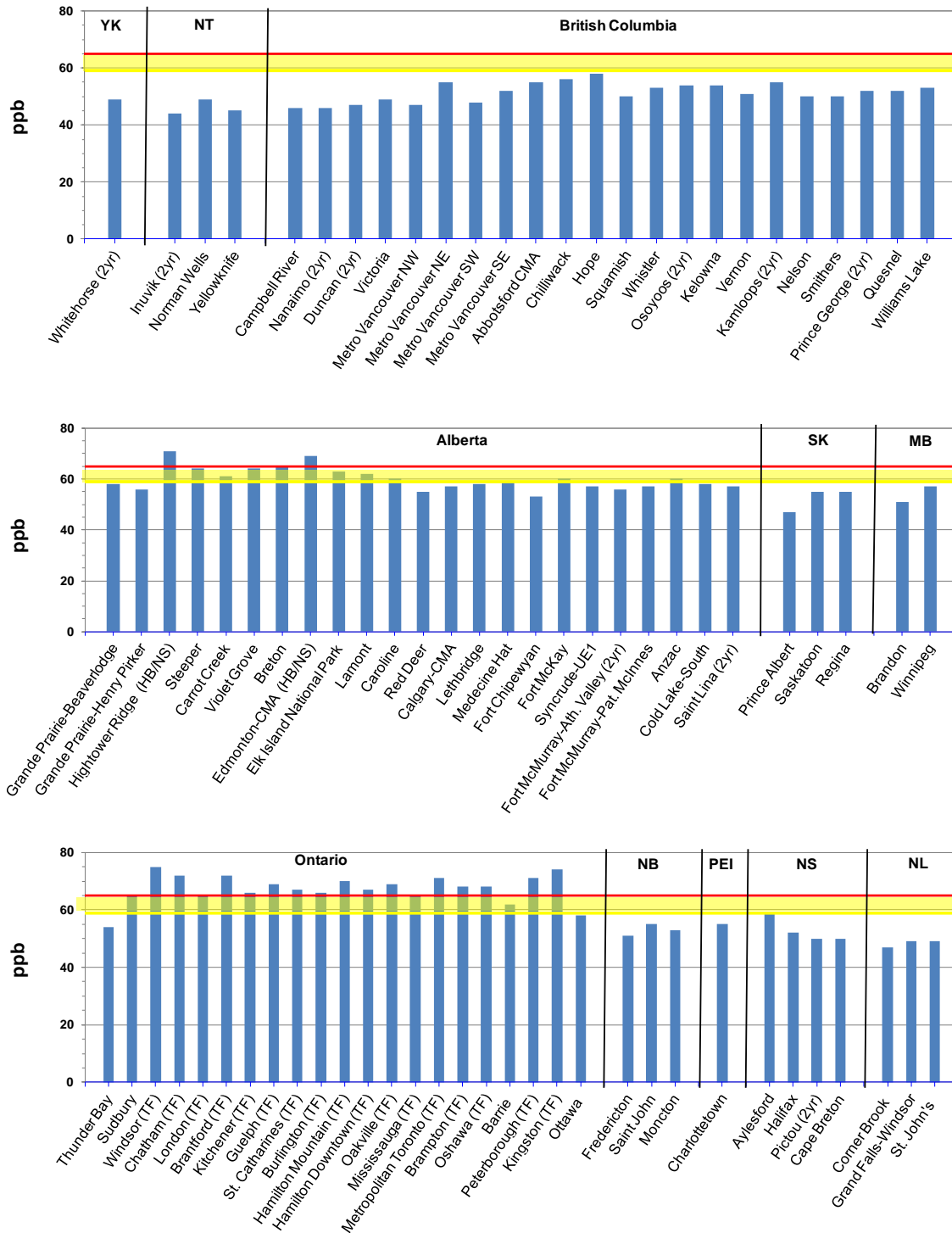


Figure 4 presents the actual ozone 3-year averages for all reporting locations. The ozone 3-year averages ranged from 45 to 58 ppb at most reporting locations. Three-year averages above the target and those within 10% of the target (indicated by the yellow band in Figure 4) were all limited to Alberta and Ontario. In Alberta, the two locations with 3-year averages above the target may have been influenced by high background concentrations and natural sources, and the fifteen locations above the target in Ontario may have been influenced by transboundary flow of air pollution from the United States.

Figure 4: Ozone 3-year average values for reporting locations, 2009 to 2011



Legend: Red line is at the value of the ozone CWS target (65 ppb). Yellow band indicates the range within 10% of the target (65 to 59 ppb). YT=Yukon Territory; NT=Northwest Territories. SK=Saskatchewan; MB=Manitoba; NB=New Brunswick; NS=Nova Scotia; NL=Newfoundland and Labrador; PEI=Prince Edward Island. (2 yr) means that only two years of measurements were used instead of three. (HB/NS) means that the 3-year averages may have been influenced by high background levels (HB) or natural sources (NS). (TF) means that the 3-year averages may have been influenced by transboundary flows of air pollution. Data provided by the provinces and territories through NAPS.