

CANADA-WIDE STANDARDS FOR PARTICULATE MATTER AND GROUND LEVEL OZONE IMPLEMENTATION PLAN FOR YUKON TERRITORY

I. INTRODUCTION

For CWS reporting purposes, the Yukon has no census metropolitan areas (CMA). The largest community is the capital city of Whitehorse with a population of approximately 22,000.

One National Air Pollution Surveillance (NAPS) station, located in downtown Whitehorse, provides the basis for determination of achievement for CWS reporting. The station was upgraded in July 2001 to include ozone and PM_{2.5} monitoring equipment. Prior to July 2001, only total suspended particulates (TSP) data are available, from measurements taken by hi-vol particulate sampler. Due to the absence of a CMA over 100,000 population for reporting, and lack of sampling equipment throughout the Yukon for ozone and PM_{2.5}, data for Criteria Air Contaminants (CAC) available for the Yukon Territory are limited. Table 1 below shows 1995 CAC data.

Industrial (point source) air pollution data collection was mandated in 1998 with passage of the *Air Emissions Regulations*. No data is available prior to 1998.

Achievement of the CWS for Particulate Matter (PM)

The numerical target for the CWS for PM is 30 ug/m³ (24-hr averaging time), based on the 98th percentile ambient measurement annually, averaged over three consecutive years. The Yukon is unable to determine achievement or non-achievement of the CWS for particulate matter due to limited data.

Achievement of the CWS for Ozone

The numerical target of the CWS for ozone is 65 ppb (8-hr averaging time), based on the 4th highest measurement annually, averaged over three consecutive years. Limited data does not allow determination of achievement for the Ozone CWS.

Environmental Drivers/Concerns

In the Yukon, episodes of poor air quality can be attributed to three primary drivers:

- localized wind-borne dust in spring;
- summer forest fires; and
- localized winter inversions that trap vehicle exhaust and woodsmoke pollutants.

Of these, only the latter may be attributed to human-caused pollution. It is likely that PM concentrations at times exceed the CWS standard during winter inversions. These episodes may persist for weeks on end and are associated with extreme cold, in the range of minus 35°C to minus 50°C. Vehicle idling and the use of woodstoves are greatly increased during these times, and the stability of cold air masses result in accumulation of woodsmoke and vehicle exhausts.

Transboundary sources are not a great concern in the Yukon. Neighbouring jurisdictions do not boast significant air pollution sources.

Ozone does not appear to be a major air quality concern in the Yukon; our geography and climate do not lend to high concentrations of ground level ozone.

II. AIR QUALITY OVERVIEW

PM_{2.5} is emitted directly from anthropogenic and natural sources (*primary* PM_{2.5}) and is formed in the atmosphere from reactions involving various gaseous precursors (*secondary* PM). These precursors include oxides of sulphur (SO_x), oxides of nitrogen (NO_x), volatile organic compounds (VOCs) and ammonia (NH₃).

The sources of ozone are: direct transport from the stratosphere; and reactions involving both natural and anthropogenic precursor gases, including NO_x and VOCs, with the latter believed to be the major source of ground-level ozone.

Table 1 below shows data for criteria air contaminants for the Yukon. These demonstrate the current lack of industrial activity in the Yukon. Open sources (forest fires and fugitive dust) accounted for the vast majority of air pollutants in 1995. The chief human sources of air pollutants are the transportation, upstream oil and gas, fossil-fuel based electricity generation, and wood heating sectors.

Yukon 1995 CAC

Emissions (tonnes)

Sector	PM2.5	Sox	NOx	VOC	NH3
Industrial	40	10	1,044	497	0
Upstream Oil and Gas Industry	0	0	1,021	496	0
Other Industrial	40	10	23	0	0
Non-Industrial Fuel Combustion	118	146	685	185	5
Transportation	179	239	2,979	1,242	29
Miscellaneous & Incineration	25	0	0	373	8
Open Sources	19,649	16	14,077	838,050	473
Total w/o Open Sources	363	395	4,709	2,296	43
Total with Open Sources	20,012	411	18,786	840,347	515

III. STATUS OF ACTIVITIES RELATED TO PM & OZONE IMPLEMENTATION

Yukon efforts are currently focussed on improving public understanding and participation in activities to reduce air pollution from woodsmoke and vehicle exhausts, and to helping keep clean areas clean.

Recent improvement to air quality sampling equipment will provide a clearer picture of air quality in downtown Whitehorse. This data will help to focus public education efforts.

IV. NEXT STEPS (Path Forward)

Yukon will continue to improve measurement and reporting of air quality in conjunction with the recent improvements to sampling equipment. In particular, we look forward to seeing ground-level ozone and PM_{2.5} data for the first time.

The Yukon is investigating several options that will contribute to achievement of CWS for PM and ozone:

- a voluntary vehicle scrappage program to remove gross-emitting vehicles from the Yukon's vehicle fleet;
- adoption of new national woodstove certification standards into the City of Whitehorse municipal by-law;
- coordination of air quality education with energy-efficiency programs aimed at reducing use of fossil fuels in the Yukon. (eg. Clear the Air annual

- participation in the Environment Canada Commuter Challenge: a week-long friendly competition between Canadian cities to see which one can cut its air pollution the most by using active and/or sustainable modes of transportation; and,
- coordination with Environment Canada to get Yukon's air quality data (including PM and ozone) on-line in the Canada Wide Air-Quality Database, a federally managed collection of data generated from NAPS stations located throughout Canada.