Ministry of the Environment

Ministère de l'Environnement



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November 15, 2010

His Worship Rob Burton
Mayor
The Corporation of the Town of Oakville
P.O. Box 310
1225 Trafalgar Road
Oakville, ON L6J 5A6

And

Gord Lalonde Acting Town CAO 5207 Mulberry Drive Burlington, ON L7L 3P6

Your application for review of the need for a new air pollution Act or regulation.

MOE File: 10EBR001.R

The Ministry of the Environment has completed its consideration of your application for a review of the need for a new Act or regulation to protect public health from PM_{2.5} in Ontario air.

The Ministry of the Environment appreciates your concerns regarding the important matter of the human health effects of air-borne fine particulate matter. Ontario has implemented comprehensive regulations and programs to address ambient levels of fine particulates and continues to take significant action to improve air quality across Ontario. Many of these regulations and programs directly address components of the application's recommendations for a proposed new air pollution regulation or Act.

Ontario's approach has resulted in measurable reductions in emissions of fine particulates and precursors, and improvements to air quality. However, we have concluded that a review is warranted of the effectiveness of the current policy framework in addressing $PM_{2.5}$. This review will include an assessment of the need to revise the policy approach to direct emissions of $PM_{2.5}$. The rationale for this decision is attached.

If you have any questions regarding the above, please contact Adam Redish, Director, Air Policy and Climate Change Branch (416-314-5148).

Yours truly,

John Lieou, Assistant Deputy Minister Integrated Environmental Policy Division

Attachment

Peter Lapp, Environmental Commissioner's Office (File: R2009015)

EBR Office

Environmental Bill of Rights (EBR) Application for Review Review Decision Summary November 15, 2010

MOE File No.:

10EBR001.R

1. Issue

The Ministry of the Environment (ministry) received an application under the *Environmental Bill of Rights, 1993* (EBR) to review the need for a new air pollution Act or regulation that focuses on particulate matter less than 2.5 microns in size (fine particulate or PM_{2.5}), and to address the combined effects of proposed emissions and existing ambient concentrations.

2. Applicants' Request

The applicants have requested a review to determine if a new air pollution Act or regulation is needed.

[One that] specifically addresses $PM_{2.5}$ and its role in air quality degradation on which human health depends ... because:

- there is a public health crisis in Ontario due to ambient air concentrations of PM_{2.5};
- the existing regulatory regime does not protect against serious health impacts of PM_{2.5}; and,
- fatal and other serious health impacts will continue to grow unless immediate action is taken.

The applicants are requesting this review on the basis that:

- the 2005 reforms resulting in Ontario's regulatory regime for air pollution control, through O. Reg. 419/05, do not address the emissions of PM_{2.5};
- there is no other existing regulatory regime suitable to address the unique circumstances of PM_{2.5} across Ontario;
- a new binding regime (Act or regulation) is needed to protect human health from PM_{2.5} airborne concentrations across Ontario; and
- 4) the requested review is in the public interest...

The applicants submit that existing Ontario regulations are not protective of human health with respect to adverse health effects of PM_{2.5}. The applicants refer to several of Ontario's Environmental regulations and state the following:

 Environmental Protection Act (EPA) which provides provincial authority to regulate Ontario pollution, but has authorized no regulation of PM_{2.5}; and, provides that the director may issue a Certificate of Approval (CofA) to discharge a contaminant, and regulations prescribe conditions and criteria that apply to such decisions, but no such conditions or criteria address PM_{2.5}.

- Ontario Regulation 419/05 Air Pollution Local Air Quality which includes a standard for suspended particulate (particulate matter less than 44 μm in diameter) which is regulated for "visibility" issues. It does not regulate PM_{2.5} which causes serious health effects. This regulation requires no consideration of background ambient air quality, and is not suitable to protect public health as there is no safe level of PM_{2.5}.
- The now revoked Ontario Regulation 337 Ambient Air Quality Criteria (AAQC) which included an AAQC for suspended particulate but did not address fine PM and its health effects. This regulation was replaced by "Ontario's Ambient Air Quality Criteria" (February 2008) which does not include an AAQC for PM_{2.5}. Even if it did, there is no legal requirement that an area not exceed any applicable AAQC; nor is there any requirement that the ministry consider the AAQC or existing ambient air quality when making CofA decisions.
- Existing regulations do not address PM_{2.5} precursor pollutants.
- Existing regulations do not address existing ambient PM_{2.5} levels in Ontario air.

The applicants have recommended that the proposed Act or regulation would have eight components:

- it would focus on the airborne contaminant posing the greatest danger to human health, namely PM_{2.5};
- it would regulate not only direct emissions of fine PM_{2.5}, but also the PM_{2.5} resulting from the emissions of "precursor" substances, that is, substances that mix together in the atmosphere to create additional quantities of PM_{2.5};
- it would apply initially to "major emitters" of PM_{2.5} and precursor substances, but would provide an approach that could be applied eventually to all other significant existing and proposed sources of PM_{2.5};
- 4) for an emitter, it would require three-dimensional mapping that would illustrate the extent of the affected airshed, as well as the concentration of PM_{2.5} within the affected airshed due to the proposed emitter (the "affected airshed");
- 5) it would require an emitter to evaluate, using an appropriate atmospheric dispersion model that has the capacity to address atmospheric chemistry, the combined air concentrations across the affected airshed of:
 - a) the existing levels of PM2.5 in the affected airshed, and
 - the future levels of PM_{2.5} resulting from the proposed source of new emissions of PM_{2.5} directly, and as a result of new emissions of precursor substances;
- 6) it would assess the risks to public health (i.e., communities or populations) associated with predicted ambient concentrations of PM_{2.5} in the affected airshed, being a combination of:
 - a) predicted ambient levels of PM_{2.5} resulting from the proposed emitter; together with,
 - b) existing ambient levels PM_{2.5} within the affected airshed;

- 7) it would establish a limit on ambient concentrations of PM_{2.5} that is based on health risks to people within the affected airshed, such that existing or future sources of emissions would be prohibited where they present an unacceptable degree of health risk; and,
- 8) it would ensure assessments are publicly communicated to affected communities in advance of any regulatory decision-making, and that affected communities have an appropriate opportunity to comment on such assessments and possible decisions, and an opportunity to use existing EBR rights to appeal any decision of concern.

The applicants state that the province has a responsibility to address the problem and to compel reduced emissions or intrusions of $PM_{2.5}$ and precursor substances into Ontario air. It is the applicants' position that a new Act or regulation is needed since existing Ontario regulations are not protective of human health respecting the adverse effects of $PM_{2.5}$.

The applicants recommend that a committee be struck to conduct the review and make recommendations to the minister on an expedited basis. The applicants recommend that the committee comprise: the Ontario Medical Association, Medical Officers of Health, and any other person the minister considers may have relevant environmental or public health expertise, interest or local authority over public health matters.

3. Ministry Review of Application

The decision to assess this EBR Application for Review (Application) has been delegated by the Minister of the Environment (Minister) to the Assistant Deputy Minister (ADM) of the Integrated Environmental Policy Division. The assessment of this Application involved staff from the ministry's Air Policy and Climate Change Branch, Standards Development Branch, Environmental Monitoring and Reporting Branch, the Environmental Assessments and Approval Branch and Operations Division. The assessment was based on the evidence provided in the application as well as ministry initiatives that address the Applicant's request.

Air Management of Fine Particulate Matter in Ontario

PM_{2.5} may be directly emitted from processes ranging from transportation to residential to industrial sources or it may be a secondary pollutant generated through complex reactions in the atmosphere. PM_{2.5} in ambient air presents significant air quality management challenges because of the wide-range of sources and the long distances it can travel; as a result, PM_{2.5} requires a broad regional air management strategy and is difficult to manage at a local level.

To illustrate, the ministry has conducted a series of studies in the Clarkson area of southern Ontario. The Clarkson Airshed is typical of urban areas in southern Ontario with significant industry, heavy traffic volumes, residential intensification and impacts

from transboundary pollution. The Clarkson Airshed Study¹ showed that the most significant contributor to contaminant concentrations measured at ministry monitoring stations was vehicular emissions. Vehicular emissions can account for over 49% of fine PM and nitrogen oxides (NO_x) in ambient air in this part of Ontario. Residential and transboundary sources were also found to be significant: it was concluded that 39% of observed $PM_{2.5}$ levels could be attributed to sources outside of the study area. On occasion, long range transport from the United States contributed to over 50% of the measured $PM_{2.5}$ levels in the Clarkson Airshed.

The results of the Clarkson study illustrate how $PM_{2.5}$ is a complex air quality problem that requires a comprehensive management strategy to address not only industrial emissions, but also residential, transportation and transboundary sources of $PM_{2.5}$ and $PM_{2.5}$ precursors. Ontario has responded to the $PM_{2.5}$ challenge by making commitments towards reducing $PM_{2.5}$ concentrations and emissions of precursors including a 45% reduction of nitrogen oxide (NO_x) and volatile organic compounds (VOCs) emissions from 1990 values by 2015 under Ontario's Anti-Smog Action Plan; a 50% reduction of sulphur dioxide (SO_2) emissions beyond the 1985 Countdown Acid Rain Cap by 2015; and achieving the Canadian Council of Ministers (CCME) Canada-Wide Standards (CWS) for $PM_{2.5}$ and ozone by 2010.

With respect to the targets described above, provincial NO_X emissions had been reduced by 33% and VOC emissions had been reduced by 42% (based on 2007 data). In 2007 Ontario also met its commitment to reduce SO_2 emissions by 50% - 8 years ahead of schedule.

As described in more detail below, Ontario has implemented comprehensive regulations and programs to address ambient levels of PM_{2.5} and continues to take significant action to improve air quality across Ontario. Many of these regulations and programs directly address components of the applicants' recommendations for a proposed new air regulation. Ontario's approach has resulted in measurable reductions in emissions of PM_{2.5} and precursors, and improvements to air quality.

Canada-Wide Standard for PM_{2.5}

The ministry is very aware of the human health burden associated with fine particulate matter and acknowledges the results of the various studies presented in the application. Ontario has adopted the Canada-wide Standard (CWS) for $PM_{2.5}^{2}$ developed by the Canadian Council of Ministers of the Environment (CCME). The CWS is 30 μ g/m³ 24-hour averaging time to be met by 2010. Achievement is to be based on the 98th percentile ambient measurement annually, averaged over three consecutive years.

² Canada-wide Standards for Particulate Matter (PM) and Ozone, Canadian Council of Ministers of the Environment, 2000 http://www.ccme.ca/assets/pdf/pmozone_standard_e.pdf

¹ Ontario Ministry of the Environment, 2008. Clarkson Airshed Study - A Scientific Approach to Improving Air Quality - Part III The Air Quality Dispersion Modeling Source Contribution Assessment. http://www.ene.gov.on.ca/publications/6768e.pdf

Currently, this standard is under review by the CCME which may result in the standard becoming more stringent.

The CWS is implemented on a regional basis with one designated monitoring station placed in each city having a population greater than 100,000. As of 2008, all designated sites in Ontario meet the CWS³. Many of the initiatives that follow are commitments and actions to reduce fine PM concentrations and have helped Ontario meet the CWS.

State of the Environment Monitoring and Reporting

A component of the adoption of the CWS is the establishment and maintenance of monitoring networks which are needed to characterize fine PM air quality problems, to design management programs and to track progress.

The ministry has a network of 40-state-of-the-art Air Quality Index (AQI) stations across the province. The AQI is an indicator of air quality based on air pollutants, including fine PM and its precursors, that have adverse effects on human health and the environment. The ministry takes real-time air quality data from its AQI monitoring stations to produce AQI readings for each location. Index values can be accessed by the public through the ministry's Air Quality Ontario website⁴. The data from these stations are also used to produce the ministry's annual Air Quality in Ontario reports which are available through the ministry's website⁵.

The ministry monitors air pollution levels and through smog advisories alerts the public when there is a strong likelihood that widespread elevated and persistent smog levels are expected. Members of the public can also subscribe to the Smog Alert Network notification service that provides advance warning that poor air quality may be on its way.

Current State of Air Quality in Ontario

Ontario's publicly available 2008 Air Quality in Ontario report³ provides an overview of Ontario's air quality and presents provincial PM_{2.5} emissions and ambient concentrations. Highlights of the report with respect to PM_{2.5} include:

- overall provincial PM_{2.5} emissions have decreased by approximately 30% in the 10-year period from 1998 to 2007 while the provincial annual average ambient concentration has decreased by 20% from 2003⁶ to 2008;
- fine PM emissions from industrial processes have been reduced by over 50% in the 10-year period from 1998 to 2007;

www.ene.gov.on.ca

³ Ontario Ministry of the Environment, 2010. *Air Quality in Ontario 2008 Report*. http://www.ene.gov.on.ca/publications/7356e.pdf

http://www.airqualityontario.com/

The ministry standardized continuous PM_{2.5} monitoring across Ontario in 2003 allowing for trend analyses from that date.

- significant amounts of PM_{2.5} measured in southern Ontario are of secondary formation and of transboundary origin;
- the CWS target of 30 µg/m³ was not exceeded at any of the CWS designated sites in 2008, including urban areas such as Toronto, Oshawa and Mississauga;
- 75% of Ontario's PM_{2.5} CWS designated sites were at or below 25 μg/m³ in 2008 (CWS is 30 μg/m³); and,
- PM_{2.5} levels relative to the CWS have been consistently decreasing in southern Ontario.

Similar trends can also be observed in PM_{2.5} precursors including NO_x and SO₂.

The report also shows how Ontario's $PM_{2.5}$ emissions profile has changed over the past decade. In 1998, industrial emissions accounted for more than half of Ontario's $PM_{2.5}$ emissions but have decreased over time to represent less than 35% of emissions in 2007. The dominant sector is now residential where $PM_{2.5}$ emissions account for 37% of provincial totals, up from 20% in 1998.

Regulation of Direct PM_{2.5} Emissions

Ontario does not currently regulate direct emissions of PM_{2.5} from industrial or commercial facilities. Regulating direct emissions from facilities is not the most effective way to reduce PM_{2.5} levels in an airshed since most ambient PM_{2.5} is secondary in nature and originates from transboundary and transportation sources. We do acknowledge that we have not fully assessed local impacts of individual industrial sources.

Regulation of PM_{2.5} Precursor Emissions

Ontario has a broad range of regulations and guidelines in place to address both the regional and local impacts of secondary $PM_{2.5}$. These include:

- Ontario's industrial emissions reduction plan and emissions trading program for electricity and industry sectors (O. Reg. 194/05 and O. Reg. 397/01) require reduction of emissions through setting caps and trading mechanisms. Limits have been applied for two of the most significant smog and acid-rain causing pollutants: nitrogen oxides (NO_X) and sulphur dioxide (SO₂). Since 2003, smog-causing emissions from the electricity sector have been trending downward. In 2008, Ontario's coal-fired plants had reduced emissions of NO_X by 47% and emissions of SO₂ by 51% from 2003. The emissions of NO_X and SO₂ for industrial facilities regulated under O. Reg. 194/05 were respectively approximately 5.7% and 4.9% lower in 2008 than 2007.
- Ontario is leading the way in North America by legally committing to closing coalfired generation. Closing out coal-fired generation will end emissions from these sources, improve air quality, and reduce smog-causing pollutants. Under O. Reg. 396/01 (Lakeview Generating Station) the closure of the Lakeview Generating

Station occurred in April 2005. O. Reg. 496/07 (Cessation of Coal Use — Atitkokan, Lambton, Nanticoke and Thunder Bay Generating Stations) requires the owner and operator of the remaining four coal-fired generating stations to cease using coal as of December 31, 2014.

- Ontario's EPA, Section 9, requires a facility releasing emissions to the atmosphere to have a Certificate of Approval before it can lawfully operate. A review of an application includes an assessment of air quality impacts and may result in the issuance of a Certificate of Approval with conditions requiring the facility to minimize emissions.
- Guidelines and codes of practice are used to address PM_{2.5} and precursor emissions and are enforced through Certificates of Approval, for example:
 - Guidelines A-1 (Biomedical Waste Incinerators) and A-7 (New Municipal Waste Incinerators) which apply to incinerator systems. The limits in these guidelines include those for particulate matter, SO₂ and NO_x in addition to other compounds.
 - Guideline A-5 (Atmospheric Emissions from Stationary Combustion Turbines) to control emissions of NO_x from new and modified stationary combustion turbines by specifying atmospheric emission limits for NO_x, SO₂, and carbon monoxide.
 - Guideline A-9 (NO_X Emissions from Boilers and Heaters) imposes NO_X
 emission limits on large boilers and heaters. The purpose of this policy
 guideline is to reduce smog in Ontario by reducing the emission of NO_X by
 new or modified large boilers and heaters.
 - Guideline F-1 (Particulate Emissions at New Cement Plants) which establishes emission limits for particulate matter from new cement plants.
- Ontario has included a 24-hour value for PM_{2.5} in its AAQC guideline (February 2008)⁷. The value is provided with guidance for decision making near individual sources and is most commonly used in environmental assessments, special studies using ambient air monitoring data, and the assessment of general air quality in a community.
- Ontario recently passed a regulation (O. Reg. 455/09) under the *Toxics* Reduction Act that sets out a framework for toxics reduction action by facilities including requirements to track and evaluate toxics, to develop reduction plans, and to make summaries of plans available to the public. Some of the toxics covered by the regulation contain fine particulate fractions or are precursors to fine PM.
- Ontario's Environmental Assessment Act (EAA) applies to electricity, waste management, and transportation projects as well as a range of public sector infrastructure projects. It defines the Environmental Assessment process which

⁷ Ontario's Ambient Air Quality Criteria, 2008, http://www.ene.gov.on.ca/publications/6570e-chem.pdf

evaluates potential environmental effects of a project or undertaking, including an assessment of any contaminants emitted to air, such as PM_{2.5} if applicable.

 O. Reg. 419/05 (Air Pollution – Local Air Quality) is a general air pollution regulation requiring industrial and commercial point sources to limit emissions of a broad range of contaminants which includes total suspended PM and fine PM precursors (i.e., SO₂, NO_X and some specific VOCs) based on acceptable, healthbased point-of-impingement concentration standards. The regulation also outlines emission estimating and dispersion modelling requirements.

Transportation Initiatives

Ontario has a variety of transportation initiatives to improve air quality both today and in the future:

- Ontario's Drive Clean program is an emissions inspection and maintenance program for vehicles. From 1999 to 2005, the program reduced smog-causing emissions from light duty vehicles by more than 150,000 tonnes. The Drive Clean Heavy Duty Diesel Vehicle (HDDV) program targets harmful emissions from large trucks and buses. During the 6 year period from 2000 to 2005, Drive Clean reduced fine PM from heavy duty diesel vehicles by nearly 1,300 tonnes. Drive Clean requirements are based on O. Reg. 361/98 (Motor Vehicles).
- Public transit is a priority for Ontario. In spring 2009, the government announced that Ontario is moving ahead with over \$9 billion in priority rapid transit projects (the 'Big 5') identified in the Metrolinx Regional Transportation Plan. Construction is underway on two projects the Sheppard East LRT in Toronto and York Viva Bus Rapid Transit. All five projects are expected to be completed by 2020.
- In order to address automotive sulphur emissions before federally regulated limits came into effect in 2005, Ontario implemented the Sulphur-in-Gas Reporting Regulation (O. Reg. 212/02). The regulation required Ontario gasoline manufacturers, blenders and importers to report to the government on the average level of sulphur in their gasoline.

Transboundary

Ontario is taking strong action on transboundary sources of air pollution which significantly affect the air that Ontarian's breathe. This includes:

- Ontario's active participation in the Canadian federal delegation for the Canada-US Air Quality Agreement. The federal government will be negotiating a PM Annex under this agreement; the Annex will include emission reduction commitments, and monitoring and reporting commitments.
- Ontario has implemented a four-point Transboundary Air Strategy in support of the Premier's commitments at the 2005 Shared Air Summit. The strategy includes pursuing cooperative agreements with the United States, supporting

U.S. states in legal battles with Washington for cleaner air, public education campaigns and enhancing scientific research, air quality monitoring and emissions modelling.

New Initiatives

In addition to the activities described above, Ontario is actively working to address airborne fine PM through other forums and processes, including incorporating cumulative effects assessment in decision making processes and establishing the Southwest Greater Toronto Area (SWGTA) Air Quality Task Force.

- The ministry is currently reviewing how it applies the principles of its Statement of Environmental Values (SEV), including cumulative effects assessment and the ecosystem approach, in its environmentally significant decision making. Through this process the ministry is developing the long-term tools, including science, policies and guidelines to support the application of an ecosystem approach. The SEV places priority first on prevention and second on minimizing the creation of pollutants that cause damage to the environment.
- Ontario established the SWGTA Air Quality Task Force in September 2009. Dr.
 David Balsillie was appointed as the one-person Task Force in late November
 2009. The Task Force has developed an Action Plan making recommendations
 on managing air pollution in the SWGTA in order to improve air quality now and in
 the future. The Action Plan examines how to reduce air emissions from industry,
 transportation and residential sources.
- The work of the Task Force is directly relevant to future ministry policies and programs for managing "local airsheds" in the rest of the province. The Order in Council which established the Task Force required the Action Plan to recommend: air quality improvement targets; timelines for achieving the targets; strategies for achieving the targets; reporting requirements for implementing the action plan; reporting requirements; and oversight, coordination and leadership for plan implementation. The Task Force appointed a Community Advisory Committee of residents, industries, tier 1 and tier 2 municipalities, and the Chief Medical Officers of Health for Halton and Peel.

Public Communication of Regulatory Decision-making

The applicants state a need for public communication and comment in advance of regulatory decision-making. The ministry posts all environmentally significant proposals on the Environmental Registry. Under the Environmental Bill of Rights (EBR), any member of the public can participate in ministry decisions about the environment and hold the government accountable for those decisions. The public has the right to comment on environmentally significant government proposals, to seek permission to appeal a ministry decision, or to ask a ministry to review a law or investigate harm to the environment.

The Environmental Assessment Act (EAA) has public consultation and notification requirements; therefore, projects subject to approval under the EAA are not required to be posted on the Environmental Registry for comment. An Environmental Assessment (EA) is both a study and planning process which evaluates the potential environmental effects and benefits of a project or undertaking on the environment. Projects subject to an EA require public notification and a public review period. More information regarding the EA process can be found on the ministry's website.

4. Review Decision

The ministry has implemented a comprehensive strategy to address fine particulate emissions and precursors in Ontario. The province has accomplished this through its comprehensive regulatory framework, adoption of the CWS, emission guidelines and other programs which address a wide range of industrial and non-industrial sources of fine particulate matter. The ministry is also actively addressing the issues identified by the applicants through its SEV review. The applicants' evidence and proposed regulatory components do not consider many of the measures currently in place nor the resulting significant improvements in air quality.

The ministry does acknowledge that there may be a policy gap with respect to domestic sources of primary $PM_{2.5}$. After careful consideration of the information available and the requirements of the EBR, the ADM of the Integrated Environmental Policy Division has concluded that a review by the ministry is warranted of the effectiveness of the current policy framework in addressing $PM_{2.5}$. This review will include an assessment of the need to revise the policy approach to direct emissions of $PM_{2.5}$. Other aspects of the request, such as cumulative effects, are already currently under review as part of the SEV review. Please note that the review will take a minimum of fifteen (15) months to complete.