

# **A NEW COMPREHENSIVE AIR MANAGEMENT SYSTEM FOR CANADA: DRAFT PROPOSAL OVERVIEW**

## **Introduction**

Air pollution has an important impact on human health and the environment. In May, 2008 the federal, provincial and territorial governments and representatives of non-government organizations and industry began an unprecedented collaboration to develop a new air management system for Canada. This was sanctioned by the federal Cabinet and by all governments through the Canadian Council of Ministers of the Environment. The goal is real emission reductions, better air quality and significant health and environmental benefits across this country.

The new comprehensive air management system will focus on air quality and the many different types of sources of emissions that determine that quality. This system will be enabled by an ongoing partnership of governments and stakeholders with all parties acting where they are best positioned to act.

A National Air Quality Accord is proposed for signature by Ministers of the Environment from the federal government and all provinces and territories. The Accord will establish agreement on objectives, roles of the parties, actions to be taken, means of collaboration, reporting to Canadians, mechanisms to provide assurance of action and air quality, and the overall management and evolution of the system.

## **The Context**

Air quality issues in Canada vary geographically, both in their causes and the complexity of solutions required. Many sources contribute to air pollution. These sources include vehicles, agricultural activity, industrial activity and, in some areas of Canada, transboundary pollution from the U.S. Meteorology also helps determine local air quality. These complex factors must be considered and all significant sources of pollution must be addressed to ensure good air quality.

Existing regulatory regimes and expertise that address these complexities should be used to full advantage. As air pollution knows no boundaries, a high level of cooperation is needed to ensure the nationally-consistent high quality of air that Canadians want and deserve. That is why this proposed new system is based on a partnership of governments and other parties that – working together - can ensure air quality for Canadians.

## The Essential Elements

The initial focus of this system is on fine particulate matter (PM 2.5) and ground level ozone and their precursor gases. Significant adverse effects on human health and the environment have been demonstrated for PM and ozone. These pollutants, in various combinations, form what is known as photochemical smog.

Other substances of concern such as mercury, benzene and polycyclic aromatic hydrocarbons (PAHs) will be addressed separately in a similar timeframe (i.e. 2015 or earlier). It is recommended that these other substances be addressed through a comparable multi-stakeholder process, and/or be considered as a related component of this system in the future.

The three interrelated, key elements of this system – operating together - will achieve the goal of good air quality and reduced health and environmental risks from air pollutants:

- (1) National Ambient Air Quality Standards
- (2) Base-level industrial emissions requirements
- (3) Air zone management

This new system is **outcomes-based** by defining expected outcomes through the setting of ambient air quality standards that apply across the country to protect human health and the environment. The system also establishes an air zone management approach that is **place-based** so that regional differences and complexities in air quality can be addressed effectively, efficiently and in the most practical manner while achieving the desired outcomes. The system is **comprehensive** in that it recognizes the need for action by all governments and also addresses the broad range of emission sources (point source, non-point source and transboundary) contributing to air quality. As part of this comprehensive system, it is recognized that addressing industrial emissions is a key element and therefore proposes base-level performance standards for significant industrial sources.

### National Ambient Air Quality Standards

National Ambient Air Quality Standards (NAAQSs) establish ambient targets for air pollutants that will apply throughout Canada. Standards will initially be set for fine particulate matter and ground-level ozone. Areas with levels of pollutants above these standards will move to meet the standards as a high priority. Areas below these standard levels that are experiencing growth in ambient pollutant concentrations will have plans and take increasingly stringent action to ensure they are not exceeded.

The standards, which are science-based and have as their purpose protecting human health and the environment, will be developed, reviewed and strengthened over time through a process that includes the consideration of practicality and achievability. The standards are to move Canada toward achievement of related tough, aspirational longer-term air quality objectives that will also be set across the country.

The National Ambient Air Quality Standards will be developed under federal leadership through a time-limited, collaborative process intended to achieve consensus among the federal, provincial and territorial governments, and other stakeholders. Collective consideration of the proposed standards by Canadian Council of Ministers of the Environment (CCME) Ministers will be part of the development process. If consensus is not reached within a pre-agreed time, the

federal government will determine the level of the standards according to the criteria for these standards within this system. The standards will be set under the section of the Canadian Environmental Protection Act that allows for the establishment of objectives, guidelines and codes of practice (Section 54 or 55). These National Ambient Air Quality Standards will be used by provinces and territories as central targets in air zone management.

The standard development process will determine related monitoring, reporting and attainment protocols and methodologies. As a general principle, attainment should be determined by monitoring results in a local area in order to avoid a dilution effect within a larger air zone. The development process will also decide the most appropriate metric for the National Ambient Air Quality Standards given their primary purpose as targets for air zone management.

New National Ambient Air Quality Standards for particulate matter and ozone will be developed by 2010, to come into effect by 2015. Information from existing processes such as the Canada-wide Standards for PM and Ozone and standards from other jurisdictions will inform the development of the NAAQS. Whatever their metric, the initial NAAQSs are expected to be more stringent in effect than the existing Canada-wide Standards for particulate matter and ozone coming into force in 2010.

The NAAQSs will be subject to a comprehensive review every 10 years, with an interim review every five years. It is expected that these review processes will result in tightened standards unless there are compelling reasons in any review why this should not be the case. At the first interim review of these initial National Ambient Air Quality Standards in 2020, the development of additional National Ambient Air Quality Standards for the pre-cursors of particulate matter and ozone for implementation in 2025 will be considered.

#### Base-level industrial emissions requirements

This system assumes that all significant industrial sources of emissions everywhere in Canada, regardless of the air quality where facilities are located, should be expected to meet a good, base-level of environmental performance. As part of a plan to address all sources of emissions where air quality in an air zone is under pressure, more stringent requirements than base-level requirements may be imposed on industrial facilities in that zone.

These base level requirements will initially focus on Criteria Air Contaminants (SO<sub>2</sub>, NO<sub>x</sub>, VOC, PM, NH<sub>3</sub>). As a general principle, these base-level requirements should match what leading jurisdictions – inside or outside Canada - require for comparable industrial sources in attainment areas (areas where air quality standards are being met), adjusted where necessary for Canadian circumstances.

##### **Criteria Air Contaminants:**

Air issues such as smog and acid rain result from the presence of, and interactions between, a group of pollutants known as Criteria Air Contaminants and some related pollutants.

Criteria Air Contaminants refer to a group of pollutants that include SO<sub>x</sub>, NO<sub>x</sub>, PM, VOCs, CO and NH<sub>3</sub>. In addition, ground-level ozone and secondary particulate matter are often referred to as CACs because both PM are by-products of chemical reactions between the CACs.

As much as possible, these base-level requirements will be quantitative equipment-based performance standards. They will be applied through emission requirements imposed by regulation or permits on existing and new facilities. The actual level and timing of the requirements may vary for each sector.

All eligible new facilities, beyond 2015, will be required to meet the base-level requirements from the start of their operation. All existing facilities will meet the base-level requirements by 2015 except for extenuating circumstances where flexibility mechanisms and timing allowances may be available. Factors such as capital stock turnover rates will be considered in the determination of levels and timing of base-level requirements for existing facilities.

These base-level performance requirements will be regularly reviewed with the expectation that the requirements will become more stringent over time as technology advances, ensuring continuous improvement and emission reductions. Over time, the requirements for existing facilities will move toward the requirements for new facilities.

Like the National Ambient Air Quality Standards, these base-level requirements for sources will be developed through a time limited, federally-led consensus process by the federal, provincial and territorial governments and stakeholders. Where applicable and appropriate, the development process will build on validated requirements from the federal “Turning the Corner” process or will adopt current frameworks that will provide significant future emission reductions. The development process will include collective consideration of the proposed base-level requirements by Canadian Council of Ministers of the Environment (CCME) Ministers. If consensus is not reached within a pre-agreed time, the federal government will determine the requirements within the criteria for base-level requirements in this system.

The base-level requirements will be set under Section 54 or 55 of the Canadian Environmental Protection Act, and applied to individual facilities and enforced by regulation or other initiatives by the best-situated jurisdiction, drawing on existing expertise and capacity. In most cases this will be provinces, but in some instances the federal government may be the regulator of first instance, (e.g. for federal lands in the territories).

### Air Zone Management

Place-based air quality management is a key feature of this system. Air zone management is intended to address the full range of pollutants that determine air quality within any particular geographic area. Sources of air pollution and the types of action that need to be taken to ensure air quality vary, reflecting the diversity across the country; there is no one-size-fits-all solution. In some parts of Canada transboundary air pollution from the United States, and/or emissions from other sources such as transportation are very large contributors to the state of air quality. Solutions for air zone issues must be suited to specific circumstances in specific geographic areas. These may entail localized requirements for sources, including potentially above the base-level requirements for industry, and national initiatives where warranted for issues such as transportation and transboundary issues.

#### *Delineating Air Zones*

Air zones for the management of air quality will be established by provinces and territories within provincial and territorial boundaries. Collectively, they will cover all of Canada.

Considerations in delineating air zone boundaries include:

- Landforms, watersheds, climate, wildlife
- Wind, temperature stratification, turbulence, deposition patterns
- Shared air quality characteristics
- Boundaries of municipalities, national parks and First Nations and Aboriginal communities
- Effects of emissions on visibility, vegetation, animal and human health, chemical content of water, soil and plant/animal tissues

- Emission sources, volumes, types and dispersion patterns
- Boundaries of existing zones, and
- Boundaries that would facilitate efficient management and effective monitoring and reporting

### *Monitoring and Planning*

Provinces (and, where they have the capacity, territories) will lead the monitoring, planning and action required to meet National Ambient Air Quality Standards in air zones. Planning and action will involve all relevant parties within an air zone in a consensus process under provincial/territorial leadership, including stakeholders and the federal government.

Municipalities may also be among the key partners in air zone management (e.g. the Greater Vancouver Regional District and the City of Montreal). Plans that are developed will, among other things, clearly outline the actions that will be taken and the parties that will be accountable for taking the actions.

An appropriate degree of monitoring, analysis and modeling is an essential foundation for the management of air quality in air zones. In some cases where air is relatively clean and development pressures are few (e.g. undeveloped or pristine areas), monitoring or projections from modeling may be all that is required. Monitoring results should be made available to the public in a way that can be readily understood, to increase the transparency of the system. New investment in monitoring should be made where needed as part of the implementation of this system. The federal government can play a significant role in facilitating improved monitoring and analysis. A better picture of air quality across Canada can be expected to be one of the many benefits of implementing this new system.

### *Taking Action in Air Zones*

For areas initially below the level of the NAAQSS, the air zone management system is designed to operationalize the related principles of “Keeping Clean Areas Clean” and “Continuous Improvement”. Population growth, industrial growth and other development are likely to place pressure on the air quality of some areas that are below the NAAQSS. The imperative is to protect air quality in this context.

If air quality deteriorates within a zone, the guiding principle will be for the jurisdictions involved to take increasingly stringent action to reduce emissions and improve or maintain air quality. These actions will deal with all sources contributing to the deterioration in air quality in the zone, prioritizing the most significant, whether transboundary, transportation, industrial or other. The new air management system proposes a series of triggers that apply to all air zones across the country to ensure proactive actions to protect air quality. The table on the following page summarizes the series of triggers.

**Keeping Clean Areas Clean:** preventative measures to avoid or minimize increases in overall ambient concentrations for PM and ozone in areas not significantly affected by local sources of emissions, i.e. air zones below the “Yellow” threshold.

**Continuous Improvement:** remedial or preventative actions to reduce emissions from anthropogenic sources with the goal of reducing overall ambient concentrations of PM and ozone in areas below the National Ambient Air Quality Standards.

In contributing to better air quality through reductions from all relevant sources in an air zone, the federal, provincial and territorial governments may each use a variety of regulatory and non-regulatory instruments. Where an air zone is in the Red Zone below a National Ambient Air Quality Standard or an air zone has air quality that does not meet the NAAQS (Black Zone), the federal government will be an increasingly active participant in the planning process, supporting provincial or territorial capacity and in taking the action it can to achieve the overall result that is needed.

Trigger	Description of air quality	Actions Required
Green Zone	Air quality not under pressure; ambient pollutant levels are below the "yellow zone" threshold.	<ul style="list-style-type: none"> <li>- Ongoing and regular monitoring required.</li> </ul>
Yellow Zone	Air quality is under pressure and ambient levels of pollutants exceed an established threshold.*	<ul style="list-style-type: none"> <li>- A rigorous action plan is required to address deteriorating air quality. Plan development is led by lead jurisdiction for the air zone.</li> <li>- Province or territory is responsible to ensure plan is implemented and tightened if needed to meet evolving quality concerns. If a plan includes federal actions, the federal government will ensure its actions are taken and will collaborate as necessary in tightening the measures in the plan.</li> </ul>
Red Zone	<p>Moving closer to the NAAQSS, beyond a defined trigger level.*</p> <p>*Note: Yellow and Red Zone triggers would be the same across Canada. They could be set as absolute values, or possibly a percentage of the NAAQSSs. The levels and nature of the triggers will be determined as part of the process of setting the NAAQSSs.</p>	<ul style="list-style-type: none"> <li>- Clearly defined milestones and timelines for rigorous actions to reduce pollution must be set.</li> <li>- Province or territory may take action outside the air zone collaborative process.</li> <li>- All levels of government will have responsibility for taking actions within their jurisdiction to reduce air pollution levels within zone, depending on the sources of concern.</li> <li>- Stronger federal involvement as required; potentially including stepped up international or inter-provincial efforts on transboundary pollution, more stringent regulation of transportation-related emissions, and other actions within areas of federal authority.</li> <li>- There may also be a need for direct federal involvement to develop capacity or technology and support provincial/territorial actions if province or territory does not/is not able to take the necessary escalated action to stay below the NAAQSSs.</li> </ul>
Black Zone	<p><i>Areas in non-attainment at the time of coming into force:</i></p> <p>Where ambient air pollution in an air zone is above the NAAQSSs level (determined by levels at one or a cluster of monitoring stations in the same local area) at the start of the implementation of this system</p>	<p>An action plan with milestones and timelines required to bring the area within the NAAQSSs level will be developed by the relevant province or territory in conjunction with the federal government. The action plan will identify the key sources contributing to the exceedance of the NAAQS and the full range of actions to be undertaken by all governments and stakeholders to reduce the pollutants of concern in the air zone. These actions may include:</p> <ul style="list-style-type: none"> <li>- Stepped up federal efforts on inter-provincial and international transboundary sources</li> <li>- Stricter measures to address transportation sources (e.g. federal regulations on fuel efficiency, provincial action to phase out older cars)</li> <li>- Tighter land use planning to restrict urban expansion; expanded transit investments</li> <li>- Stricter federal regulations on marine and aviation sources</li> <li>- Use of provincial regulations and permitting process to enforce more stringent standards of industrial emissions performance and "net overall reduction" in relation to new industrial development</li> <li>- Codes of practice and guidelines for small industrial sources</li> <li>- Heightened controls on agricultural sources</li> </ul>
Black Zone	<p><i>Areas coming into non-attainment after the NAAQS are in force:</i></p> <p>In the event that ambient air pollution levels in a zone rise above the NAAQS thresholds after the national standards are already in force</p>	<ul style="list-style-type: none"> <li>- The province/territory will develop and implement on an urgent basis an intensive plan of action to restore good air quality as rapidly as possible, in conjunction with the federal government. Other governments and stakeholders will be closely involved in development and execution of the action plan</li> <li>- The plan will include the full range of actions by all governments and stakeholders needed to bring pollution levels back below the NAAQS, as in the case of areas in non-attainment at the time of coming into force</li> </ul>

## **Accountability and Assurance Mechanisms**

Canadians need to be able to determine if results are being achieved under this system and to be confident that the action expected from governments and other parties to achieve those results is being taken. This calls for a variety of related accountability and assurance mechanisms.

### A New Air Quality Council

First, the system, its requirements and results must be as transparent as possible and there must be ongoing assessment and coordination. An Air Quality Council composed of the federal government, provinces, territories and non-government organizations and industry stakeholders is recommended to:

- assess and report on the overall results of the system;
- identify changes needed to improve the system as a whole over time;
- promote linkages and coordination among governments responsible for related air zones, within a broader airshed context; and
- make linkages to health and energy ministries in the jurisdictions

This new Air Quality Council will communicate to Canadians on how the system is doing and how accountabilities are being met. To ensure their continued ability to report on progress, recommend necessary changes, and influence decision makers, representatives of the Council might meet annually with federal and provincial/territorial Ministers of the Environment on the air system. This Council should be established under the Federal/provincial/territorial Air Quality Accord.

For individual air zones, plans will be publicly available, along with the monitoring results. Information will also be made available publicly on a regular basis on how action accountabilities are being met.

### Base-level requirements

This proposal requires strong assurance for all Canadians that the base-level industrial emission requirements will be effectively applied across Canada to provide a good standard of industrial environmental performance and to ensure a level playing field for industry, provinces and territories. Provinces and territories (with some possible exceptions, e.g. lands or facilities under federal jurisdiction) ) will regulate the base-level industrial requirements.

The National Air Quality Accord establishing this system and outlining the jurisdictions' roles and commitments will enshrine the mutual commitment of governments to regulate and enforce these base-level requirements in their areas of jurisdiction. Between the two orders of government, the base-level requirements will be applied by regulation to eligible facilities in all parts of Canada. To provide further assurance, the federal government will have the responsibility to fill in any gaps in the planned regulatory application of the base-level requirements as demonstrated by regulations in place and emissions reporting by jurisdictions.

For this regulatory assurance, the focus will be on quantifiable requirements as much as possible, and transparent reporting of emissions from facilities will be required. If needed to enable the federal government to provide this additional regulatory assurance, new federal legislation could be adopted.

## National Ambient Air Quality Standards

A significant part of the action required to effectively address all relevant sources of pollutants in air zones will be taken by the federal government. For a number of air zones this includes the critical transboundary and transportation pollution element. Measures to ensure ongoing federal commitment to that action and to full participation in relevant air zone planning and action might include an annual report from the Minister of the Environment to Parliament on federal action and implementation of the system, including the results of action on transboundary emissions, and/or inclusion of a progress and action assessment in the annual report to Parliament of the federal Commissioner for Sustainable Development. The Commissioner might also have a role providing an annual report on the implementation of and results produced by the system as a whole.

If the NAAQSs are exceeded in an air zone, all applicable assurance and accountability mechanisms will be greatly enhanced to ensure that governments and stakeholders exert the efforts required to bring ambient pollution levels in the zone below the NAAQS within the shortest time achievable. These mechanisms will include the following:

- Intensive work by the provincial/territorial and federal governments, with the direct involvement of other governments and stakeholders, to develop and implement plans of action that include all measures required to achieve needed reductions.
- Stepped up reporting on progress towards meeting timelines and milestones committed to in action plans.
- Stepped up monitoring of ambient pollution levels within the zone, with a focus on pollutants that have exceeded the NAAQS;
- Requirements for the use of provincial and federal regulatory powers to ensure emissions reductions, as required, in transportation, industrial and other air pollution sources;

If ambient pollution levels in a zone exceed the National Ambient Air Quality Standards and combined federal and provincial or territorial action under the multi-party air zone action plan proves insufficient to meet the standards within agreed upon time lines, the federal and provincial or territorial governments are responsible for taking additional regulatory and other actions required to ensure the standards are met. This might involve, for example, further regulated reductions from point source emitters (industrial), regulatory limits on new sources of emissions, additional provisions to curb transportation emissions, further action on transboundary air pollution, or some combination of the above. In cases where action gaps still exist and the standards are not being met, the federal government will have the responsibility to take additional actions, in consultation with the lead jurisdiction, toward achieving needed reductions in the key sources contributing to poor air quality in the zone.

## Enabling Federal Roles in the Air Quality Management System

New legislative provisions may be required to provide the federal government with the legal framework and direction needed to play its important role – outlined above - in making this collaborative air quality management system a success. The existing Canadian Environmental Protection Act (CEPA) provides many of the tools for controlling and eliminating hazardous substances. However, its current provisions may not provide the necessary framework for managing air quality on a regional basis across the country. Such a framework could be established under a new section of CEPA devoted to the purpose.



## Projected Outcomes

The most important outcomes the system will deliver are better air quality and reduced health and environmental risks by addressing all significant contributors of air pollutants. The success of the system in delivering these outcomes will be evident in the results of monitoring of the progress of areas that are above the National Ambient Air Quality Standards in improving air quality to meet those standards. Equally important, monitoring will show the trends of air quality in other air zones and the success being achieved in managing to keep clean areas clean and ensure continuous improvement.

This new system will yield emissions reductions in two significant ways:

- *Increasingly reduced industrial emissions of pollutants* - while some facilities are operating at a high level and may not initially have to reduce emissions to meet base-level emission requirements, other facilities will. This will produce overall reductions of emissions. Based on preliminary industry estimates from early 2008, the following emission reductions by 2015 from 2006 levels might be expected from the application of the base-level requirements: a 50% reduction of facilities' SO<sub>2</sub> emissions from sectors representing 76% of Canada's industrial emissions; and a 28% reduction of facilities' NO<sub>x</sub> emissions from the sectors representing 75% of Canada's industrial emissions. Gaps in the data for particulate matter and VOC's do not allow similar estimates to be made for those pollutants.
- *Substantial reductions of emissions from other sources* - the improvement of air quality in air zones above NAAQSs in order to meet NAAQSs will provide other substantial reductions of emissions. The increasingly stringent tiered action required of air zones that are in compliance with NAAQSs but are under pressure, will avoid substantial net emissions increases and the potential related deterioration of air quality. In both cases, these emission reductions can be expected from all significant sources, not just industry.

## Implementation Responsibilities and Timelines

The general principles governing action and the timing action are:

- Action should be planned, collaborative and coordinated. Individual action and regulation should be undertaken by the best suited jurisdiction
- All parties that can make a significant contribution to better air quality should do their part.
- Responsibilities of parties for action should be transparent; all parties should be accountable for the action they are to take.
- The timelines of the originally tabled federal proposal will guide the timelines of the implementation of this new system, as much as possible.

Within this context, responsibilities are:

FEDERAL GOVERNMENT	PROVINCES OR TERRITORIES
National Ambient Air Quality Standards	
<ul style="list-style-type: none"> <li>• Lead collaborative process for developing NAAQSs</li> <li>• Set in Section 54 or 55 (environmental objectives) of CEPA</li> <li>• Collaborate in transparent monitoring and reporting</li> <li>• Aid in funding expansion of monitoring capacity</li> </ul>	<ul style="list-style-type: none"> <li>• Participate in collaborative development</li> <li>• Focus on achieving good air quality</li> <li>• Collaborate in transparent monitoring and reporting</li> </ul>
Base-level requirements	
<ul style="list-style-type: none"> <li>• Lead collaborative process for developing requirements</li> <li>• Set as guidelines in Section 54 or 55 of CEPA</li> <li>• Be regulator of first instance if a province or territory has insufficient capacity to perform that role</li> <li>• Provide additional regulatory assurance of the application of base-level requirements</li> </ul>	<ul style="list-style-type: none"> <li>• Collaborate in setting</li> <li>• Implement requirements through provincial regulation and other initiatives.</li> </ul>
Air Zone Management	
<ul style="list-style-type: none"> <li>• Collaborate in developing and implementing action plans</li> <li>• Lead air zone management if/where requested</li> <li>• Provide science, monitoring, modeling and other support to air zone management</li> <li>• Develop standards for ubiquitous, small-scale emission sources common to many air zones (e.g. vehicles, building efficiency, and wood burning appliances).</li> <li>• Take action to reduce trans-international boundary pollution where it is a significant factor in air zone air quality.</li> </ul>	<ul style="list-style-type: none"> <li>• Establish air zones</li> <li>• Lead development and implementation of action plans</li> <li>• Assure –through new regulatory or legislative requirements or others means – that air zones are established and, where needed, plans are developed and action is taken</li> </ul>

## Conclusion

The collaborative federal, provincial, territorial and stakeholder development of this proposal - with its focus on air quality and on a new partnership to achieve it, provides Canada with an unprecedented opportunity to move in a new, more productive direction in the management of air quality in this country. The advantages of this new system include:

- focuses on air quality and all the sources that contribute to it;
- ensures a high standard of industrial performance across Canada;
- provides for increasingly stringent measures where local conditions require them;
- builds on the existing expertise and strengths of governments by a collaborative approach based on best-suited roles;
- establishes a new partnership with stakeholders and well as governments; and
- provides greater public transparency and stronger assurance of action on air quality.

With the air challenges we face, it is essential we make the very best use of the resources all parties can provide to address them. We look to approval of this proposal and speedy follow-up action to implement it, in order to take advantage of this exceptional opportunity.