

# **Proposal for Cumulative Effects Assessment (CEA) in Air Approvals**

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**Standards Development Branch**

**Ministry of the Environment and Climate Change**

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***Proposition prévoyant l'évaluation des effets cumulatifs (ÉEC) au moment d'accorder une autorisation relative à l'air***

Le ministère de l'Environnement et de l'Action en matière de changement climatique (le ministère) propose une politique prévoyant l'évaluation des effets cumulatifs (ÉEC) au moment d'accorder une autorisation relative à l'air afin d'améliorer le cadre de gestion de la qualité de l'air de l'Ontario et de gérer de façon plus efficace les effets cumulatifs des sources de pollution atmosphérique. Le règlement ontarien sur la qualité de l'air à l'échelle locale (Règlement de l'Ontario 419/05 : *Air Pollution – Local Air Quality*; Règl. de l'Ont. 419/05) se greffe à ce cadre afin de protéger les collectivités locales contre les effets de la pollution atmosphérique en réglementant les installations et les contaminants. La proposition décrit un processus grâce auquel on tiendra compte de plusieurs émissions industrielles et non industrielles au moment d'accorder des autorisations relatives à l'air.

La proposition s'appliquera aux installations nouvelles et agrandies exploitées dans certaines régions où les niveaux de contaminant dans l'air ambiant dépassent les Critères de qualité de l'air ambiant (CQAA) et où il y a une concentration de sources industrielles – Hamilton/Burlington et Sarnia/Corunna. Dans ces régions, les niveaux de benzène et de benzoapyrène ont été supérieurs aux CQAA entre 2009 et 2014. De plus, plusieurs sources industrielles de ces contaminants ont été inscrites dans l'Inventaire national des rejets de polluants.

Dans ces régions et pour ces contaminants, les installations nouvelles et agrandies seraient tenues d'effectuer des analyses techniques comparatives lorsqu'elles demandent une autorisation environnementale. Sous réserve de la décision du directeur du ministère ayant pouvoir de signature, l'installation pourrait être tenue d'utiliser la ou les meilleures technologies existantes pour réduire le plus possible les taux d'émission, selon les niveaux mesurés dans une région. En vertu de la politique proposée, des mesures accrues de lutte contre la pollution atmosphérique peuvent être exigées même si l'installation est conforme à la norme de qualité de l'air prévue par le Règl. de l'Ont. 419/05. Les attentes dépendent des résultats de la modélisation de sources multiples quant aux mesures à prendre. Cette modélisation génère une carte de la concentration des polluants indiquant les endroits où les mesures de gestion seraient prises.

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# 1 Introduction and Background

## 1.1 Overview

The Ministry of the Environment and Climate Change (ministry) is proposing a policy for Cumulative Effects Assessment (CEA) in air approvals to more effectively consider cumulative impacts from multiple air pollution sources - both industrial and non-industrial. In developing this proposal, the ministry had input from a subgroup of the Local Air Quality/Air Standards External Working Group (Cumulative Air Emissions Assessment (CAEA) subgroup), with representatives of industry, some First Nations community members, environmental groups, public health units, and various branches and regions of the ministry.

The intent of this proposal is to strengthen and clarify the consideration of cumulative effects when making decisions related to environmental compliance approvals (ECAs) for activities governed by section 9 of the Ontario Environmental Protection Act (EPA). Please see the companion document *Discussion Paper: Cumulative Effects Assessment for Air Approvals* (Discussion Paper) for the framework and rationale underlying this proposal.

Briefly, the proposal will apply to new and expanding facilities that operate in selected areas of Hamilton/Burlington and Sarnia/Corunna. In these specific areas of Hamilton/Burlington and Sarnia/Corunna, ambient air quality levels of contaminants exceed Ambient Air Quality Criteria (AAQCs) and there is a concentration of industrial sources. In these areas, from 2009 to 2014 the AAQCs for benzene and benzo[a]pyrene were exceeded at monitoring locations based on annual average concentrations. In these areas, there are multiple industrial sources of those contaminants reported to the National Pollutant Release Inventory (NPRI).

For more information see Chapter 5 of the Discussion Paper. In some areas and for these contaminants, new and expanding facilities, would be required to conduct technology benchmarking assessments as part of an application for an Environmental Compliance Approval. The Director may require the facility to use best available control technology or technologies to achieve the lowest possible emission rates, depending upon the levels in an area. Under the proposed policy, enhanced air pollution controls may be required even if the facility meets the air standard under Ontario's local air quality regulation (O. Reg. 419/05: Air Pollution – Local Air Quality), depending on the action level identified.

## 1.2 The Local Air Quality Regulation

Through the local air quality regulation, the ministry regulates contaminants in air in order to be protective of communities who live close to industrial sources. The regulation works within Ontario's air quality framework to protect local communities from the effects of air pollution by regulating individual facilities and individual contaminants.

Air emissions are assessed using air dispersion models or a combination of modelling and monitoring. An Emission Summary and Dispersion Modelling (ESDM) Report is required to be prepared when applying for an ECA, and an Environmental Activity and Sector Registry (EASR) ESDM Report is required to be prepared by persons engaging in activities prescribed by O. Reg. 1/17 in order to register in the EASR.

O. Reg. 419/05 allows for three compliance approaches for a facility to demonstrate environmental performance and make improvements when required. A facility can:

- meet the general air standard
- request and meet a site-specific standard
- register and meet the requirements under a sector-based technical standard (if available).

The intent of the ministry's CEA proposal is to evaluate whether additional actions to manage local air quality are required by regulated facilities beyond those already taken to comply with the local air quality regulation.

## **2 Proposal Detail**

Details of the *Proposal for Cumulative Effects Assessment in Air Approvals* are outlined in this section. For further detail on the framework and rationale underlying this proposal, see the Discussion Paper.

### **2.1 Identification (area and contaminant of interest)**

This proposal applies to benzene and benzo[a]pyrene in some areas of Hamilton/Burlington and benzene in some areas of Sarnia/Corunna.

In these areas, ambient air quality levels of contaminants exceed Ambient Air Quality Criteria (AAQCs) and there is a concentration of industrial sources. In these areas, from 2009 to 2014 the AAQCs for benzene and benzo[a]pyrene were exceeded at monitoring locations based on annual average concentrations. In these areas, there are multiple industrial sources of those contaminants reported to the National Pollutant Release Inventory (NPRI).

For the purposes of this proposal benzene and benzo[a]pyrene will be referred to as Cumulative Effects Assessment (CEA) contaminants.

### **2.2 Assessment (methodology to define sources)**

In order to have a better understanding of the areas where the AAQCs were exceeded, multi-source modelling was carried out. This allowed for determination of the relative contribution of contaminants from industrial and non-industrial sources for those contaminants.

AERMOD, an air dispersion model used under the Local Air Quality Regulation, was used for the multi-source modelling. This model takes contaminant emission rates from identified sources (industrial and non-industrial), along with local meteorological data to predict air concentrations from the combined sources and how they are dispersed in an area.

For the Hamilton multi-source model, the emissions of benzene and benzo[a]pyrene were added together as these two contaminants are known carcinogens and may be considered additively. For the Sarnia multi-source model, only benzene was modelled. The ministry determined that industrial emissions of benzo[a]pyrene do not significantly contribute to modelled levels beyond the relevant industries' property lines.

Note that the ministry will maintain the multi-source models for Hamilton and Sarnia. Over time the ministry will continue to refine the models. See the *Discussion Paper* for additional detail. Technical background on the multi-source modelling is available from the ministry on request.

### **2.3 Management (action levels and associated requirements for approval)**

Once the modelling was completed, the ministry identified geographic areas where actions would be required to manage cumulative effects of contaminants on air based on Action Levels. Action levels are based on the ministry's *Framework for Managing Risk described in the Guideline for Implementation of Air Standards in Ontario* under the local air quality regulation. In this framework Ontario considers concentrations of carcinogens equivalent to a lifetime incremental cancer risk range of 1 in a million ( $10^{-6}$ ) to 1 part in ten thousand ( $10^{-4}$ ) for risk management. Within that range, four action levels are proposed, as described in Table 2-1 below:

**Table 2-1: Management actions associated with action levels for carcinogens**

<b>Concentration in Air and Action Level of CEA Contaminants</b>	<b>Management Actions</b>
Up to AAQC	Does not trigger further action
<b>ACTION LEVEL 1</b> AAQC to 10X AAQC	No further action for industry. <ul style="list-style-type: none"> <li>• Triggers periodic evaluation (by ministry)</li> </ul>
<b>ACTION LEVEL 2</b> 10X AAQC to 100X AAQC	ECA Applications for New or Expanding Facilities: <ul style="list-style-type: none"> <li>• must include a technology benchmarking report with some exceptions (see section 2.4)</li> <li>• may be required to include best available pollution control methods</li> </ul>
<b>ACTION LEVEL 3</b> Greater than 100 AAQC	ECA Applications for New or Expanding facilities must: <ul style="list-style-type: none"> <li>• include a technology benchmarking report with some exceptions (see section 2.4)</li> <li>• include pollution control methods to achieve the lowest possible emission rates as compared to an existing pollution source of the same kind in North America</li> </ul>

In the multi-source models, Action 1, Action Level 2 and Action Level 3 areas were identified in some areas of Hamilton/Burlington. Action Level 1 areas were identified in Sarnia/Corunna. The ministry is working on an interactive tool where a street address, or co-ordinates can be entered and the resulting action level will be provided.

## **2.4 Process for Applying for an Environmental Compliance Approval (ECA)**

The ministry proposes that this policy will apply to facilities that are applying for an ECA that:

- are new or expanding facilities, and
- emit benzene and/or benzo[a]pyrene to air in certain areas of Hamilton/Burlington, or emit benzene to air in certain areas of Sarnia/Corunna, and
- are located in the Action Level 2 or Action Level 3 areas

At this time Action Level 1, 2 and 3 areas were identified in some areas of Hamilton/Burlington. More detailed information on multi-source models for Hamilton and Sarnia, including action level areas is available on request.

A facility would be considered new under this proposal if no application for an ECA has been received by the ministry prior to the date of this proposal posting.

A facility would be considered expanding under this proposal if no application for an ECA amendment has been received prior to the date of this proposal posting in respect of a modification at the facility that will result in one or more of the following:

- i) an increase in production rate which may or may not lead to an increase in POI of benzo[a]pyrene and/or benzene; or
- ii) a net increase in the POI concentrations for benzene or benzo[a]pyrene compared to their ESDM report that was submitted for approval that was issued prior to the enactment date of the policy; or
- iii) an increase in emissions of benzene or benzo[a]pyrene, but a net reduction in POI concentrations of benzene or benzo[a]pyrene through pollution controls, or management practices on some sources; or
- iv) a restart of idled parts of a facility that emit benzene or benzo[a]pyrene.

The policy proposal is not triggered with respect to the modification of a source that is considered negligible for emissions of benzene and benzo[a]pyrene in accordance with the *Procedure for Preparing an Emissions Summary and Dispersion Modelling Report*.

For facilities, to which this policy applies, a Technology Benchmarking Report (TBR), conducted in accordance with the ministry's *Guide to Requesting a Site-Specific Standard*, Appendix A: Technology Benchmarking Reports (February 2017), must be submitted with an ECA application. Facilities should request a pre-submission consultation with the ministry at least 9 months in advance of an application submission.

The following information would be required for pre-submission consultation:

- i. Address of the specific location of the facility (or facilities if joint ESDM report) with the property and municipal boundaries.
- ii. Sector description and facility description including the primary six-digit NAICS code and any other applicable six-digit NAICS codes for the facility.
- iii. Descriptions of sources and processes that discharge the benzene and benzo[a]pyrene.
- iv. Any preliminary ESDM report/modelling of relevant CEA Contaminant.
- v. Discussion of data quality for emission rates.
- vi. Descriptions of current (or proposed) management methods (e.g. Material Substitution, Process Change, Add-on Controls) used for each relevant CEA Contaminant.

The ministry would review the information gathered during the pre-submission consultation and confirm whether a technology benchmarking assessment and/or other information is required with the ECA application. For example, there could be circumstances when an application for an ECA that is reducing overall contaminant loading and POI concentrations could be approved without a technology benchmarking assessment.

If, following the pre-submission consultation, the facility is required to submit a technology benchmarking assessment; the following should be submitted with the ECA application:

- a. A copy of the ministry's advice from the pre-submission consultation (Note: this is to be submitted with the ECA application even if the facility does not need to submit a technology benchmarking assessment).
- b. Technology Benchmarking Report (TBR) for all dominant sources of the CEA Contaminant(s). Dominant sources are those determined to contribute most to the maximum POI. (See ministry's *Guide to Requesting a Site-specific Standard, Appendix A: Technology Benchmarking Reports*). The proponent must identify the technology proposal on submission of TBR and ECA application.
- c. A description of the relevant CEA Contaminant(s) loading, maximum POI concentrations from the facility, including if the POI concentrations are increasing, decreasing or remain the same as a result of the ECA application.
- d. An indication of whether the dominant sources of the CEA Contaminant in the application will be the result of an investment of new capital or an increase in production.

Once the ECA application is received, the Technology Benchmarking Report review would be assessed by the ministry, in parallel with the ECA review. The proposal notice on the Environmental Registry for the ECA application would include reference to the application of the Cumulative Effects Assessment policy.

### **3 Next Steps**

In future, this proposal could be expanded to include other areas and other contaminants. The ministry will continue work to refine the multi-source models and review emissions inventories to build on this proposal.

In addition to input received from the CAEA subgroup, the ministry is seeking broad input on this proposal and future work (see Chapter 6 of the Discussion Paper). There are specific consultation questions at the end of the Discussion Paper on this proposal and on future work.

The ministry will consider all feedback received through this consultation on the proposal. With respect to the priorities for future work the ministry will continue discussions with the External Working Group in spring 2018.