

# **Basic Comprehensive Certificates of Approval (Air)**

## **User Guide**

**Environmental Assessment and Approvals Branch**

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# **1. INTRODUCTION**

## **1.1 Purpose of User Guide**

The purpose of this User Guide is to outline to applicants and Comprehensive Certificate of Approval (Comprehensive CofA) holders in Ontario the requirements to demonstrate compliance with the terms and conditions of the Comprehensive CofA.

A Comprehensive CofA is a single Certificate of Approval (Air) that replaces existing Certificate(s) of Approval (Air) and includes new or historically unapproved sources of all emissions from the facility. The Comprehensive CofA requires that the Comprehensive CofA holder be accountable to demonstrate ongoing compliance with Regulation 419/05 - Air Pollution – Local Air Quality and other performance requirements in accordance with the conditions in the Comprehensive CofA. Further, a Comprehensive CofA permits modifications such as process changes, de-bottlenecking or the addition of new equipment subject to the limited Operational Flexibility conditions specified on the Comprehensive CofA.

Specific sections of this User Guide provide background information into the basis for the Comprehensive CofA, discuss the Limited Operational Flexibility provided by the certificate and outline the minimum requirements for the holder of a Comprehensive CofA.

## **1.2 Direction of EAAB**

The Environmental Assessment and Approvals Branch (EAAB) is responsible for reviewing applications for approval of facilities under the Environmental Protection Act (EPA) and related environmental legislation. The EAAB goals are to: maintain high standards for environmental protection, human health protection and resource conservation, provide fully integrated services that are continuously improving and support clear and productive relationships with all applicants. The Comprehensive CofA is in keeping with these goals and is the preferred approval for the Air Approval Program.

## **1.3 What is a Comprehensive CofA?**

Comprehensive CofAs improve the level of environmental protection of the Air Approval Program by requiring companies to focus on demonstrating ongoing compliance with the ministry's air quality standards and guidelines imposed by O. Reg. 419. Comprehensive CofAs reduce delay to industry associated with the traditional approvals process by allowing companies the opportunity to make some modifications to their facility with in the approved Limited Operational

Flexibility conditions specified in the Comprehensive CofA.

A Comprehensive CofA includes the following primary components:

- requirements to meet specific Performance Limits and documenting procedures including the need to maintain a current Emission Summary and Dispersion Modelling Report (ESDM Report) and a current Acoustic Assessment Report<sup>1</sup> that reflect the actual operation of the facility and document ongoing compliance;
- approval of modifications within the Limited Operational Flexibility Conditions (i.e., process changes, de-bottlenecking or addition of new equipment);
- limits on the operational flexibility up to an approved maximum production limit for the facility specified on the CofA;
- process to address contaminants with no ministry standards or guidelines;
- a five year renewal of operational flexibility conditions;
- a requirement that an annual Written Summary be submitted to the ministry; and
- standard and facility specific conditions that are considered necessary to protect the environment.

#### **1.4 Benefits**

The holder of a Comprehensive CofA will achieve the following benefits:

- ability to plan and to make production changes in a timely manner;
- ability to use an Environmental Management System, such as ISO 14000, as an integrated process to demonstrate compliance with Section 9 of the EPA;
- a predictable and routine process that can be integrated into core business procedures; and
- improved focus on compliance with ministry air standards, guidelines and site specific maximum concentration levels through the requirement for on-going and facility-wide maintenance of an ESDM Report and Acoustic Assessment Report.

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<sup>1</sup> Note: For the purposes of this document the term Acoustic Assessment Report will also mean Vibration Assessment Report or a combination of both as appropriate.

## **2. REGULATION OVERVIEW**

Section 9 of the EPA forms the basis for the Air Approval program in Ontario. First made in 1972, Section 9 requires companies to obtain an approval before construction, alteration, extension or replacement of any equipment or structure that may emit or from which may be emitted a contaminant into the natural environment, other than water. Approval is also required for the ongoing operation of any equipment that may discharge a contaminant to the atmosphere. The wording of Section 9 is broad with the result that most industrial processes or modifications to industrial processes and equipment require the submission of an application for a Certificate of Approval.

Under Section 9(2) the Director may require information related to the application prior to issuing a certificate. The Director has formalized the information requirements through a standard application form and in a number of guidance documents available from the EAAB. Applicants are accountable to submit applications that meet all published requirements.

### **2.1 Air**

In June 1998 the ministry released a document entitled *Procedure for Preparing an Emission Summary and Dispersion Modelling Report* (The Procedure Document). The Procedure Document was developed, and subsequently updated in March 2009 to provide clear instructions on the process required to demonstrate compliance with of O. Reg. 419.

O. Reg. 419 provides concentration-based limits for contaminants and outlines a dispersion modelling process to assess compliance with these limits based on the aggregate emission rate of a contaminant from the facility. It requires that where a facility emits a contaminant into the air from one or more sources, the concentration in the atmosphere resulting from that pollutant being emitted from all sources must be less than the appropriate air quality criteria. As O. Reg. 419 is currently structured, three key components need to be considered: emission summary (what a facility emits to the atmosphere); dispersion modelling (prediction of how the emitted material is diluted as it moves through the atmosphere); and the comparison of the predicted Point of Impingement (POI) concentrations to an appropriate limit on the concentration of the contaminant in the atmosphere.

In order to obtain approval, applicants are, as a minimum, required to demonstrate compliance with O. Reg. 419 by preparing an Emission Summary and Dispersion Modelling (ESDM) Report in accordance with the Procedure

Document for all contaminants emitted from the equipment and/or facility which is the subject of the application. Since October 1998 the ministry has required that a complete ESDM Report be submitted in support of an application for approval under Section 9 of the EPA. The Procedure Document requires applicants to assess all contaminants regardless of whether a ministry air standard or guideline is available for the contaminant. The Procedure Document provides clear direction on the preparation of an ESDM Report.

## **2.2 Noise and Vibration**

The EPA defines a contaminant to include sound or vibration. In order to obtain approval, applicants are, as a minimum, required to assess and document the impacts of the noise<sup>2</sup> emissions from their facility on Point(s) of Reception in comparison to specific sound level limits contained in published ministry Noise Pollution Control (NPC) guidance documents (see Section 4.2).

Impacts must be calculated at the time and location when the sound level produced by the source is at a maximum in relation to the background sound level. The applicable sound level limit is the greater of either:

- the minimum background sound level that occurs or is likely to occur during operation of the source under assessment; or
- an exclusionary limit described in applicable NPC document.

Depending on the type of equipment and nature of the activities taking place at a facility, a detailed Acoustic Assessment Report is not required if the facility is located further from the nearest point of reception than the minimum separation distance, as outlined in the "Guide to Applying for Approval (Air and Noise) s.9 EPA" November 2005 or the most current noise guideline at the time of application. In all other cases a detailed Acoustic Assessment Report must be submitted.

## **3. LIMITED OPERATIONAL FLEXIBILITY**

The Comprehensive CofA defines an Operating Envelope for the facility. Limited Operational Flexibility Conditions in the Comprehensive C of A provide the holder with flexibility to make modifications within the Operating Envelope, without the need to obtain an amendment to the approval. The Operating Envelope is limited by the following:

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<sup>2</sup> Note: For the purposes of this document the term noise will also mean vibration or a combination of both as appropriate.



- the Description Section that describes the processes in operation at the facility;
- the Facility Production Limit specified on the Certificate;
- the restriction on the installation or modification of Equipment with Specific Operating Limits;
- an expiry date to the Limited Operational Flexibility Conditions; and
- the requirement to be in compliance with the Performance Limits.

**The Comprehensive CofA holder is approved to make modifications within the Operating Envelope; modifications that would result in a change at the facility outside of this Operating Envelope requires an amendment to the Comprehensive CofA.**

The requirements of applicable environmental legislation and ministry policy always apply to the applicants despite the fact that they have been approved for a Comprehensive CofA.

### **3.1 Description Section**

A Comprehensive CofA holder may make modifications, as defined by the Comprehensive CofA, that do not change the nature of the operations of the facility as described in the certificate and in the original application as long as the effects of these modifications meet the requirements of all other conditions of the certificate, most notably compliance with the Performance Limits. Examples of modifications that may be approved by a Comprehensive CofA because they would not alter the Description Section include, but are not limited to:

- a relocation of an emission point;
- addition of pollution control equipment;
- product reformulation or model year updates such as paint colour change;
- an increase or change in the rate of use or composition of raw materials;
- debottlenecking;
- introduction of new product lines and related retooling and equipment installation; or
- changes to ancillary operations such as welding or non process heating.

In each case, the modification must not alter the facility to such an extent that the Description Section of the Comprehensive CofA, that lists the main processes that are conducted at the facility, is altered. Therefore, the Description Section must be developed with care so that the description is explicit enough to describe the operations that are conducted at the facility but allows for the Limited

Operational Flexibility.

Modifications that will alter the facility and will result in a change to the nature of emissions that was not considered by the Director in issuing the Comprehensive CofA are not approved by the Limited Operational Flexibility Conditions. Clearly, the installation of cogeneration equipment, if not included in the application, or fundamental shifts in production or business such as a change in operations from a manufacturing facility to waste processing facility are examples of modifications that would not be approved by a Comprehensive CofA because they alter the description section. Comprehensive CofA holders must assess each proposed modification to determine if the modification will require that the description section to be amended.

**The Comprehensive CofA does not allow a Comprehensive CofA holder to undertake modifications that would alter the original nature of the operations of the facility as described in the Comprehensive CofA and in the original application, without first obtaining an amendment to the Comprehensive CofA.**

### **3.2 Production Limit**

A Comprehensive CofA holder may make modifications, as defined by the Comprehensive CofA, up to an approved Facility Production Limit as described in the certificate and in the original application as long as the effects of these modifications meet the requirements of all other conditions of the certificate, most notably compliance with the Performance Limits. This production limit relates to the main product or product(s) produced at the facility and represents the design capacity of the facility's operations.

The intent for this limit is to require the Comprehensive CofA holder to apply for an amendment to the Comprehensive CofA for a significant production increase, which changes the rate of production as described in the CofA. Care must be taken in establishing the Facility Production Limit so as not to prevent an increase production from the actual level at the time of application to the existing design capacity.

The Comprehensive CofA approves modifications for ancillary operations such as welding or non process heating so long as any modifications do not alter the Description Section as noted above and are in compliance with the Performance Limits.

**The Comprehensive CofA does not allow a Comprehensive CofA holder to undertake modifications that would increase the Facility Production Limit**

**above the value specified on the Comprehensive CofA, without first obtaining an amendment to the Comprehensive CofA**

### **3.2.1 Maximum Emission Rate Scenario**

The Facility Production Limit is linked to the assumptions used to develop the Maximum Emission Rate Scenario described in the ESDM Report, however, they do not have to be the same. The Maximum Emission Rate Scenario is used to assess compliance with the Performance Limits (See Section 5.1). At the time of application and for each subsequent modification, the Maximum Emission Rate Scenario should be reflective of the actual operating conditions of the facility which may be less than the Facility Production Limit set at the time of application in order to allow for debottlenecking and production increases that are the subject of the application for a Comprehensive CofA.

An example of how the Facility Production Limit and the Maximum Emission Rate Scenario relate is provided below.

A manufacturing facility produces sprockets. When the facility was built the design capacity was one million sprockets per year which is set as the Facility Production Limit. However, the facility has not been able to produce sprockets at this capacity. In this case the Maximum Emission Rate Scenario would be based on the actual sprocket production, say 100 sprockets per half hour. Assuming linear production and that the facility operates on two, 40 hour shifts for 52 weeks a year, this would equate to 832,000 sprockets per year as calculated below:

100 Sprockets	40 Hours	52 Weeks	2 Shifts	= 832,000 sprockets/year
0.5 hour	1 week	1 year		

At no time can the Maximum Emission Rate Scenario be above a rate that would exceed the Facility Production Limit. Comprehensive CofA holders are responsible to track both the Facility Production Limit and the Maximum Emission Rate Scenario.

### **3.3 Equipment with Specific Operational Limits**

The Limited Operational Flexibility conditions do not apply to a limited number of types of equipment that may be present at a facility. The Director in reviewing these types of equipment considers specific criteria in addition to O. Reg. 419 compliance during the CofA review process. The Comprehensive CofA uses a defined term “Equipment with Specific Operational Limits” to identify this type of equipment considered as part of the Comprehensive CofA application. This type

of equipment includes: equipment related to the thermal oxidation of waste or waste derived fuels, fume incinerators or any equipment specifically referenced in any published ministry policy or guideline document that specifies criteria that the Director must consider in the Section 9 approval process. An example of a ministry policy document is Guideline A-9 regarding large boilers subject to the CCME Canada Wide NOx standards. A list of ministry policy and guideline documents along with other information is available on the ministry web site at <http://www.ene.gov.on.ca/environment/en/resources/index.htm>.

The Comprehensive CofA holder shall operate this Equipment with Specific Operational Limits in accordance with the conditions on the certificate and the information submitted with the original ESDM Report included with the application for a Comprehensive CofA.

If a Comprehensive CofA holder wishes to add any Equipment with Specific Operational Limits, for example wishes to add a large boiler subject to the CCME Canada Wide NOx standards, then the Comprehensive CofA holder must first obtain an amendment to this Certificate.

If a Comprehensive CofA holder wishes to modify any Equipment with Specific Operational Limits, for example wishes to alter a paint used in a line controlled by a fume incinerator, then this alteration must be within the specific operating envelope defined by the limited operational conditions in the Comprehensive CofA and in the original application. This specific operating envelope may possibly be defined by the destruction efficiency, mass loading, volumetric flow rate, time and temperature requirements and total hydrocarbon emissions of the fume incinerator. If modifications are proposed outside this equipment specific operating envelope then the Comprehensive CofA holder must first obtain an amendment to this Certificate.

**The Comprehensive CofA does not allow a Comprehensive CofA holder to add Equipment with Specific Operational Limits or modify approved Equipment with Specific Operating Limits outside a specific operating envelope defined by the Comprehensive CofA and in the original application, without first obtaining an amendment to the Comprehensive CofA.**

### **3.4 Expiry Date**

The conditions that permit the Limited Operational Flexibility have an expiry date, typically set five years from the date of the CofA. The approval, aside from the Limited Operational Flexibility conditions remains in force after this expiry date and operations can continue, however, if the Comprehensive CofA holder wishes to continue to operate with Limited Operational Flexibility then the

Comprehensive CofA holder must submit an application to extend the expiry date for the Limited Operational Flexibility conditions.

If the Comprehensive CofA holder does not submit the application to extend the expiry date for the Limited Operational Flexibility conditions, then the Comprehensive CofA holder will no longer have the ability to make modifications without submitting an application for amendment to the CofA. In this case the ESDM and Acoustic Assessment Report that describe the facility at the time of the expiry will serve as the documentation of the Equipment approved by the expired Comprehensive CofA. The Comprehensive CofA holder will then be required to make application and obtain approval prior to any further modifications to the facility, as required by Section 9.

#### **4. PERFORMANCE LIMITS**

A Comprehensive CofA has specific conditions that place Performance Limits on the facility that restricts the facility's emissions of any "Compound of Concern" as defined by the Comprehensive CofA as well as any noise and vibration emissions that may be emitted. Failure to meet these Performance Limits or any other condition on the Comprehensive CofA can result in the revocation of the conditions that provide Limited Operational Flexibility and may result in enforcement proceedings that could include prosecution.

##### **4.1 Air**

Air quality standards are included within Schedule 1, 2, and 3 of Reg. 419 as Point of Impingement Standards (POI Standards). All sources are required to comply with the POI Standards in O. Reg. 419 unless they are specifically exempt by regulation. In addition to POI Standards, the ministry also has a large number of air quality guidelines (POI Guidelines). These POI Guidelines are used by the ministry to assess general air quality and the potential for causing adverse effect. Like the POI Standards, POI Guidelines are used in reviewing applications for Certificates of Approval.

Together these POI Standards and POI Guidelines (Ministry POI Limits) form the basis for demonstrating ongoing compliance with the Performance Limits of the Comprehensive CofA. Additional information on Ministry POI limits is available in the following documents:

- Summary of Standards and Guidelines to support Ontario Regulation 419: Air Pollution - Local Air Quality (including Schedule 6 of O. Reg. 419 on Upper Risk Thresholds) - Sorted by Chemical Name (February 2008) and,

- Summary of Standards and Guidelines to support Ontario Regulation 419: Air Pollution - Local Air Quality (including Schedule 6 of O. Reg. 419 on Upper Risk Thresholds) -Sorted by CAS Number (February 2008)

Available on the Ministry's website:

<http://www.ene.gov.on.ca/environment/en/resources/index.htm>

The Comprehensive CofA requires ongoing demonstration of compliance with the Ministry POI Limits.

The Ministry POI Limits are typically derived by mathematical scaling, from Ambient Air Quality Criteria (AAQCs) which represents human health or environmental effect-based values. Effects-based standards are based on a scientific evaluation of the likelihood of adverse effects due to exposure to a substance and are set at a level that minimizes the occurrence of adverse effects or unreasonable risk to health or the environment.

## **4.2 Noise and Vibration**

The ministry has published documents that outline the noise and vibration requirements that facilities must demonstrate they are capable of meeting in order to obtain a Certificate of Approval. These requirements are included in the Noise Pollution Control (NPC) documents as follows:

- Publication NPC-205, "Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban)", October, 1995, as amended;
- Publication NPC-207 draft technical publication "Impulse Vibration in Residential Buildings", November 1983, as amended, supplementing the Model Municipal Noise Control By-Law, Final Report, August 1978, published by the Ministry; and
- Publication NPC-232, "Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)", October, 1995, as amended.

These documents are available at:

<http://www.ene.gov.on.ca/en/publications/forms/index.php#PartAir>

The specific noise requirements will be determined during the assessment of the application for the Comprehensive CofA. The Comprehensive CofA requires ongoing demonstration of compliance with appropriate noise limits.

## **4.3 Facility Specific Limits**

Facility specific performance limits may be added through additional conditions based on the requirements of ministry Guidelines, published EAAB direction or local issues. For example Equipment with Specific Operational Limits such as a fume incinerator will include monitoring requirements and time and temperature performance limits.

## **5. COMPLIANCE WITH PERFORMANCE LIMITS**

A Comprehensive CofA requires the Comprehensive CofA holder to assess the impacts of all proposed modifications on the aggregate emissions from the facility to determine if the facility, after the proposed modification has been conducted, will continue to be in compliance with the Performance Limits. If the Comprehensive CofA holder cannot document (as outlined in Section 6.0) this compliance then the Comprehensive CofA holder cannot make the modification. Proceeding with such a modification without a compliance assessment will violate the terms and conditions of the Comprehensive CofA.

### **5.1 Air**

The Comprehensive CofA holder must be in compliance with the Ministry POI Limits outlined in Section 4.0 at all times.

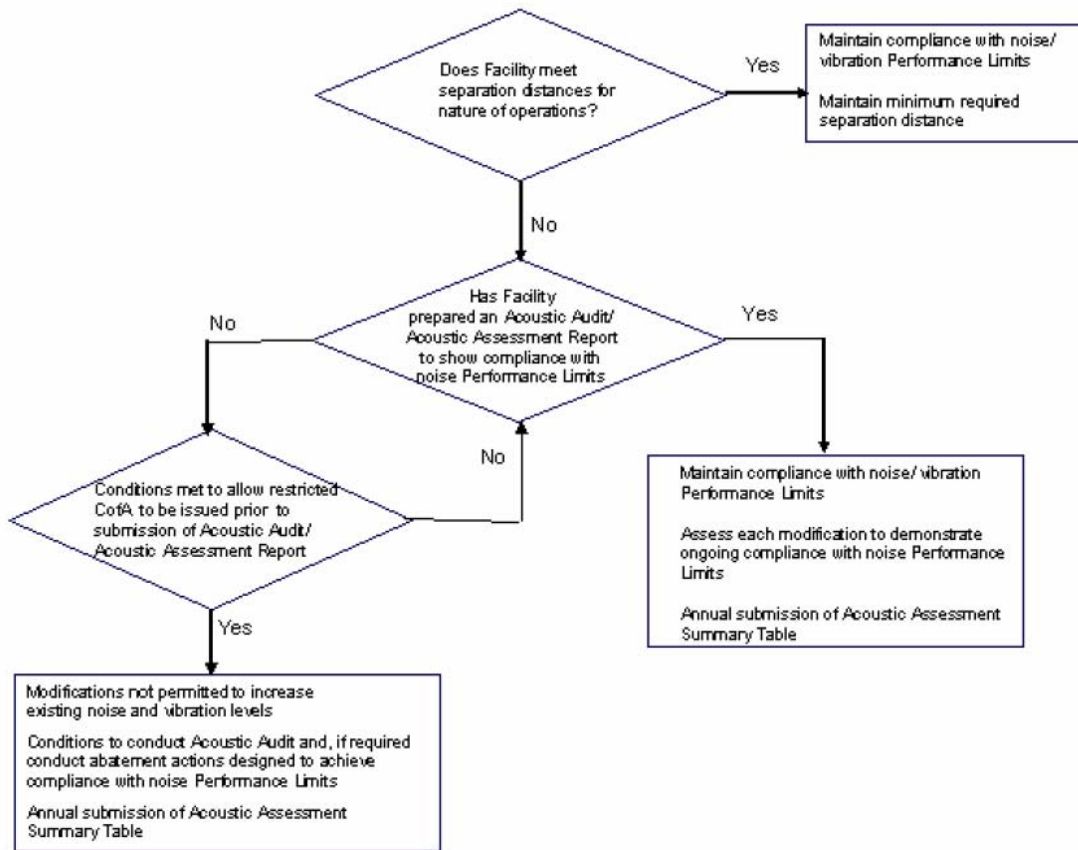
The Comprehensive CofA prescribes a specific procedure if the Comprehensive CofA holder introduces a new contaminant used or produced at the facility that does not have a Ministry POI Limit or for an increase in the emission rate of a contaminant with no Ministry POI Limit above the level that was assessed as part of the application. For further information see Section 7.0 titled Contaminants with no Ministry POI Limits in this User Guide.

### **5.2 Noise and Vibration**

The Comprehensive CofA holder must be in compliance with the appropriate noise limits outlined in Section 4.0 at all times.

Figure 1 describes the requirements for noise and vibration compliance. The minimum requirements to assess compliance with the Performance Limits are based on the distance to the closest Point of Reception, and the type and number of noise sources at the facility. The details of noise and vibration assessment required to be submitted at the time of application for Certificate of Approval for Stationary Sources of Sound are summarized in Publication NPC-233.

**Figure 1: Requirements for Noise/Vibration Compliance**



The assessment and subsequent documentation requirements for modifications that involve noise and vibration emissions are minimal if the applicant demonstrates that the facility meets the minimum separation distance to the nearest Point of Reception, as described in the “Guide to Applying for Approval (Air and Noise) s.9 EPA” November 2005. In this case, modifications permitted under the Limited Operational Flexibility conditions that would not alter the description section would not involve the installation of noise sources that would alter the minimum separation distance requirements. Companies are required to assess each proposed modification for changes at the facility as required by the conditions on the Comprehensive CofA. If changes are proposed that would require the description section to be updated then the Comprehensive CofA holder will be required submit an application to amend the Comprehensive Certificate of Approval. A noise assessment may be required at this time.

When the applicant cannot demonstrate that the facility meets the minimum separation distance to the nearest Point of Reception, the applicant is required to submit a detailed Acoustic Assessment Report, demonstrating that the facility is capable of operating in



compliance with the applicable Performance Limits at the time of application. The Comprehensive CofA holder will have to update this Acoustic Assessment Report to assess ongoing compliance prior to making a modification that may affect noise emissions.

In special cases, an accommodation may be made to an applicant that has not assessed facility wide noise emissions and not yet prepared the required Acoustic Assessment Report at the time of application. The Director may consider issuing a Comprehensive Certificate of Approval (Air) with Limited Operational Flexibility for air only, through an additional set of conditions that would:

- restrict the Comprehensive CofA holder from making modifications that would increase the existing noise emissions from the Facility;
- require the Comprehensive CofA holder to submit, by a specified date, an Acoustic Audit to the Director and the District Manager for review;
- require the Comprehensive CofA holder to develop a Noise Abatement Action Plan if the Acoustic Audit demonstrates that the Facility is not in compliance with the applicable sound level limits. The Noise Abatement Action Plan would include a timetable for implementing Noise Control Measure(s) designed to achieve compliance with the applicable sound level limits and would be submitted to the Director and the District Manager for review and approval;
- require the Comprehensive CofA holder to keep the Director and the District Manager informed on the status of the Noise Abatement Action Plan and the noise impacts on nearby Point(s) of Reception.

In this case, if a Comprehensive CofA holder wishes to make a modification that will increase the existing levels of noise emissions from the facility, the Comprehensive CofA holder would have to submit an amendment to the Comprehensive CofA supported by an Acoustic Assessment Report. If the Comprehensive CofA holder wishes to extend the Limited Operational Flexibility to include noise modifications then the Comprehensive CofA holder will be required to submit an application for an amendment, supported by a complete Acoustic Assessment Report documenting compliance with the noise Performance Limits.

The Director will only consider issuing a Comprehensive CofA with the above conditions if the facility meets all of the following requirements:

- the application identifies all nearby Points of Reception;
- the application is for an existing facility and the application does not include any new noise sources or modifications to existing noise sources;
- the facility does not have a history of noise complaints; and
- the application receives support from the local ministry District Office.

This type of Comprehensive CofA will not be issued to new or greenfield sites or for an expansion at an existing facility.

## **6. DOCUMENTATION REQUIREMENTS**

A Comprehensive CofA has specific conditions that require the Comprehensive CofA holder to keep detailed documentation that documents compliance with all Performance Limits and shows the facility continues to operate in the envelope defined by the Limited Operational Flexibility Conditions. The requirements are ongoing and must be available, for inspection by the ministry, at any time.

### **6.1 Maintaining an Updated ESDM Report**

The Comprehensive CofA holder must at all times have an up-to-date ESDM Report that reflects current operations. Prior to making any modifications, the Comprehensive CofA holder will be required to update the ESDM Report, as necessary, to document that the facility, after the proposed modification has been conducted, will continue to be in compliance.

The ESDM Report must be updated as necessary based on the proposed modification. Comprehensive CofA holders must exercise document control to link the updates to the ESDM Report with the required Modification Log as outlined in Section 6.3. The ESDM Report must show that:

- the nature of the operations of the facility continues to be consistent with the Description Section of the Comprehensive CofA;
- the production at the facility continues to be below the Facility Production Limit specified on the Comprehensive CofA; and
- the Performance Limits are met.

Although the updated ESDM Report is not required to be submitted to the ministry, it must be, at all times made available for review by ministry personnel upon request. The ministry will develop an ongoing verification plan for Comprehensive CofA holders as outlined in Section 9.0.

### **6.2 Maintaining an Updated Acoustic Assessment Report**

Prior to making any modification that may alter the noise emissions from the facility, the Comprehensive CofA holder will have to demonstrate that the noise Performance Limits will continue to be met after implementing the modification.

When the Comprehensive CofA holder cannot demonstrate that the minimum separation distance is achieved (see Section 5.2) then the Comprehensive CofA holder must document that the impact of modifications on the overall noise emissions from the facility by updating the detailed Acoustic Assessment Report submitted with the application. A key component of the updated report is the Acoustic Assessment Summary Table that summarizes the results of the Acoustic Assessment Report and documents the facility meets the Performance Limits for the facility regarding noise emissions. A suggested format and minimum information requirements for the Acoustic

Assessment Report and accompanying Acoustic Assessment Summary Table are outlined in Appendix A of this User Guide. The noise assessment must be conducted by a qualified individual, preferably a Professional Engineer with experience in environmental acoustics.

A modification that will not result in an increase the sound level at a Point of Reception at one facility, may require noise control equipment at another facility due to various factors including: the facility size, noise source location and distance to receptor. The Comprehensive CofA holder must ensure that the overall noise or vibration emissions from the facility continue to be in compliance with the Performance Limits. Modifications that result in a significant increase in the sound level at a Point of Reception, but are still in compliance with the Performance Limits require compliance be verified through measurement and/or acoustic modelling.

Companies must be prepared to defend their assessment of each modification and the need to conduct measurement or acoustic modelling as necessary to document compliance based on the significance of each modification that involves noise emissions.

Although the updated Acoustic Assessment Report is not required to be submitted to the ministry it must be, at all times, made available for review by ministry personnel upon request. The ministry will develop an ongoing verification plan for Comprehensive CofA holders as outlined in Section 9.0.

### **6.3 Modification Log**

The Comprehensive CofA holder is required to keep a Log that describes all modifications undertaken under the Limited Operational Flexibility conditions. This Log will be used by both the ministry and the Comprehensive CofA holder to track the changes to the facility and compliance with the Comprehensive CofA.

The Modification Log must contain documentation record on each modification, the date the modification was made and reference the corresponding changes to the ESDM Report. Comprehensive CofA holders must utilize document control so that each modification recorded in the Modification Log can be linked with the required update to the ESDM Report.

For example:

- A Comprehensive CofA holder wishes to relocate the stacks serving a manufacturing process but will make no changes to the emissions from the source. In this case the modification log must indicate that the Site Plan showing the stack location has been updated and if required the dispersion modelling and Emission Summary Table has been updated.
- A Comprehensive CofA holder wishes to add a dust collector system on expanded grinding operations at the facility. In this case the modification log

must indicate the necessary revisions to the ESDM Report including, but not limited to: an updated Site Plan showing the stack location, updated Source Summary Table, dispersion modelling output and Emission Summary Table as well as any required changes to the text of the report.

For smaller facilities this Log may be simple to maintain; for larger facilities tracking may be more complicated. Applicants may simplify the ESDM updating exercise by structuring the ESDM Report to include classes or equipment or types of modifications. Classes of modifications should be summarized in an Appendix to the ESDM or Acoustic Assessment Report along with any sources considered insignificant.

In each case the Comprehensive CofA holder will be required to assess each modification on a facility specific basis. This requirement is in keeping with the concept of emitter accountability and the requirements of the Procedure Document. Comprehensive CofA holders are accountable to defend and document their assessment for all modifications described as a class of activities. Updating procedures for the ESDM Report or Acoustic Assessment Report and documentation must be available for inspection. The ministry will develop an ongoing verification plan for Comprehensive CofA holders as outlined in Section 9.0.

#### **6.4 Public Communication**

The Comprehensive CofA holder is required to keep the public informed of the facility's compliance with the Performance Limits by making the ESDM Report Emission Summary Table and Acoustic Assessment Summary Table available for inspection by the public, during regular business hours, at the facility. The Emission Summary Table is specifically required by the Procedure Document and compares the predicted POI concentration from the aggregate emission from all sources to the appropriate Ministry POI Limit. The Acoustic Assessment Summary Table is specified in Appendix A and summarizes the facility's compliance with the Performance Limits.

The Comprehensive CofA does not require the Comprehensive CofA holder to make the entire ESDM Report or Acoustic Assessment Report public.

#### **6.5 Annual Written Summary**

The Comprehensive CofA includes the requirement that the Comprehensive CofA holder submit an annual Written Summary. The content of this Written Summary is set out in a condition of approval in the Comprehensive CofA. The purpose of the summary is to enable the ministry to track the modifications conducted over time at a facility and assess the impacts of these modifications.

## 7. CONTAMINANTS WITH NO MINISTRY POI LIMITS

MOE POI Limits are available for approximately 350 contaminants used or produced by industry in Ontario as listed in the MOE publication, “Summary of Standards and Guidelines to Support Ontario Regulation 419: Air Pollution – Local Air Quality (including Schedule 6 of O. Reg. 419 on Upper Risk Thresholds)”, as amended.

However, there are many more compounds that meet the definition of a contaminant under the Ontario EPA than there are contaminants with MOE POI Limits. Persons preparing an ESDM report are accountable for the assessment of all contaminants that are discharged from the facility regardless of whether or not a MOE POI Limit is available.

The MOE has published a “Jurisdictional Screening Level (JSL) List – A Screening Tool for Ontario Regulation 419: Air Pollution – Local Air Quality” (PIBs # 6547e) to assist in the assessment of contaminants with no MOE POI Limits.

The ESDM report must provide an indication of the likelihood and nature of any adverse effect that may be caused by a contaminant with no MOE POI Limit. This may be addressed as follows:

1. If a facility emits a contaminant that does not have an MOE POI Limit, it is strongly recommended that the modelled POI concentration be compared to the JSL list. A contaminant that has a POI concentration below its respective JSL does not require further assessment but must be documented in the Emission Summary Table of the ESDM Report. If the JSL is exceeded, or the contaminant is not listed on the JSL, further assessment must be done.
  - a. If the ESDM Report is submitted as part of the CofA process, this further assessment will occur with input from MOE scientists as part of the MOE’s review and acceptance of a Maximum Ground Level Concentration (Maximum GLC) Acceptability Request. This value then appears in the Emission Summary Table of the original ESDM upon completion of the review process.
  - b. If the ESDM Report is being updated as per the Limited Operational Flexibility conditions of the Comprehensive CofA, this further assessment will occur with input from MOE scientists as part of the MOE’s review and acceptance of a Maximum Concentration Level Assessment. This value then appears in the updated Emission Summary Table upon completion of the process.
2. If the ESDM Report is being prepared under sections 23 and 25 of the Regulation (i.e., a facility within a targeted sector where the ESDM report is kept on-site and is up-dated annually); or under section 24 of the Regulation (i.e., a facility required to submit an ESDM report based upon a Notice from a MOE Director); or under section 32 (application for Alteration of Schedule 3

Standards), then the information on these contaminants without MOE POI limits should also be assessed against the JSL list. If there is no value on the JSL list or the JSL is exceeded, then this can be dealt at the next available opportunity for MOE review. The next review could occur as part of an application for a CofA, or if MOE requests a copy of the ESDM report prepared under sections 23 or 25 of the Regulation.

3. The de minimus or threshold concentrations were also developed to screen out contaminants that are emitted in negligible amounts. Details on this screening tool are outlined in Appendix B of this ESDM Guideline Document.

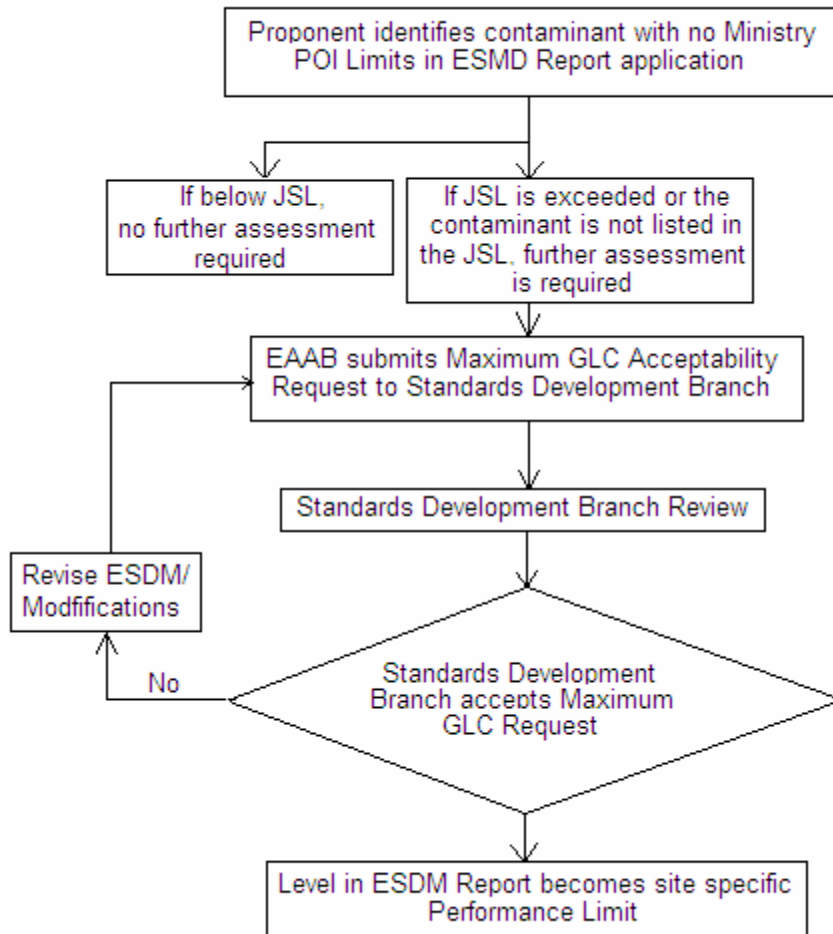
### **7.1 Maximum GLC Acceptability Requests**

All contaminants with no Ministry POI Limits identified in the original ESDM Report that supported the application for a Comprehensive CofA are assessed as part of the ministry's review of the original ESDM Report.

Part of the CofA Review Process for a Comprehensive CofA application EAAB staff complete a form similar to the attached Contaminants with no Ministry POI Limits Summary Form (included in Appendix B) along with all supporting information to form a Maximum GLC Acceptability Request for review by the Air Standards Manager, or designate, of the SDB. The CofA is not issued until the Air Standards Manager indicates to the Section 9 Director that the Maximum GLC proposed in the application is acceptable and is not likely to cause an adverse effect. The Air Standards Manager will not make recommendations to the Section 9 Director on a specific Maximum GLC for a site, but may recommend a lower concentration if the submitted Maximum GLC is deemed unacceptable.

This process is outlined in Figure 2.

**Figure 2: Maximum GLC Acceptability Request**



Once a Maximum GLC Acceptability Request is accepted, the predicted POI concentration(s) becomes the facility specific Performance Limit for the purposes of determining compliance with the Comprehensive CofA upon approval of the application.

Applicants wishing to expedite the initial review process for a Comprehensive CofA may include with the application a completed Contaminants with no Ministry POI Limits Summary Form, (Appendix B) including all applicable supporting information listed in Appendix C - Supporting Information for a Maximum GLC Acceptability Request. This will allow the EAAB to forward, in a more timely manner, the required information for a Maximum GLC Acceptability Request to SDB for review.

Applicants who wish to further expedite the process may also submit all applicable supporting information listed in Appendix D - Supporting Information for a Maximum Concentration Level Assessment. This process described in the following section allows

the applicant to assess if the proposed concentration will be acceptable to the ministry prior to submission of the application. The ministry will still review the information as part of the application package.

## **7.2 Process to Prepare a Maximum Concentration Level Assessment**

When operating under the Limited Operational Flexibility conditions of the Comprehensive CofA, the Comprehensive CofA holder may consider:

- A modification that introduces a new Compound of Concern used or produced at the facility that does not have a Ministry POI Limit; or
- A modification that increases the emission rate of an existing Compound of Concern that does not have a Ministry POI Limit above the Maximum GLC Acceptability Request that was assessed as part of the initial application.

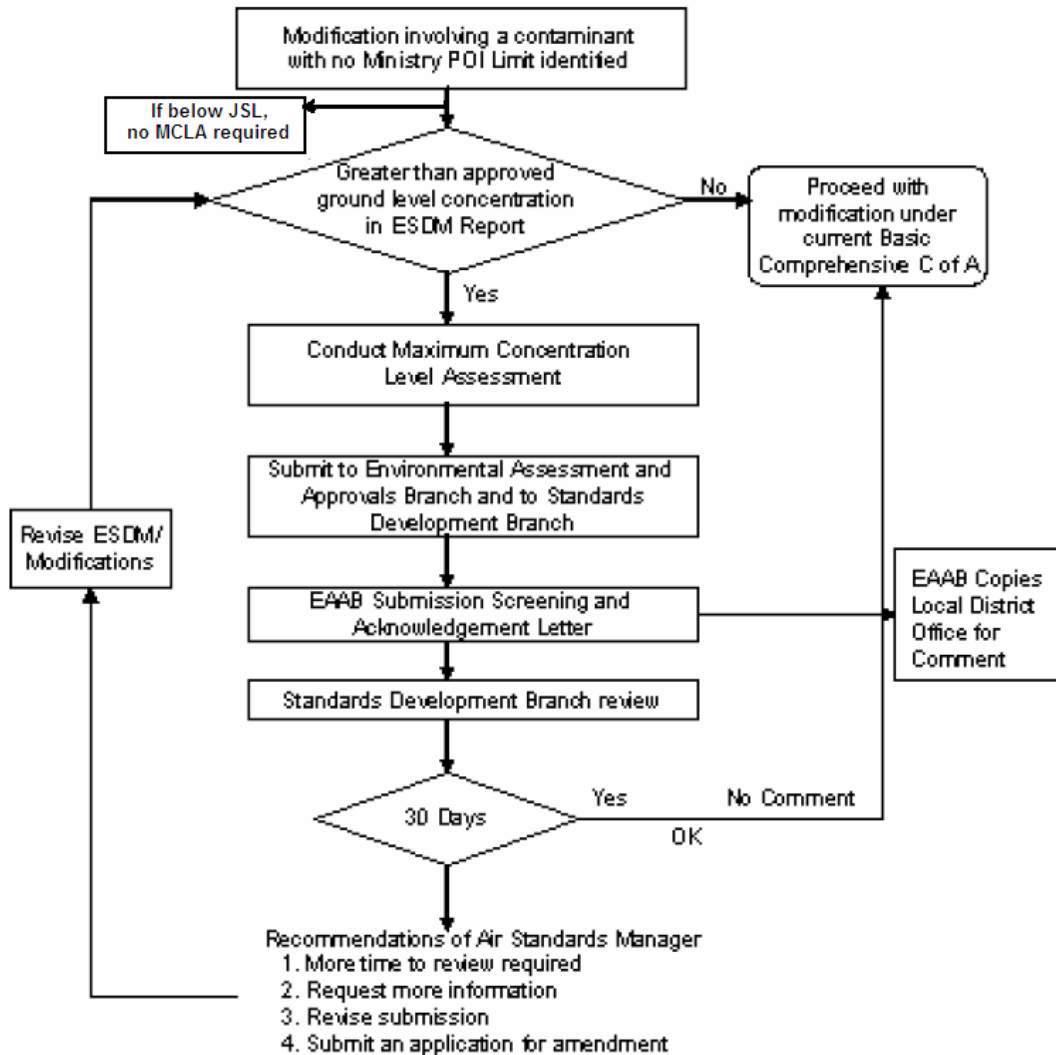
Once a Comprehensive CofA has been issued and a contaminant with no Ministry POI Limit (or is above the JSL value) is identified or the emission rate changes as outlined above, the Comprehensive CofA requires the Comprehensive CofA holder to conduct a Maximum Concentration Level Assessment of the predicted concentration at POI as a result of the proposed modification. (This process was also referred to as Maximum Concentration Level Derived by the Company). The conditions require a Comprehensive CofA holder to:

- provide a Maximum Concentration Level Assessment for the facility based on the revised Maximum Emission Rate Scenario for the contaminant(s) in question;
- submit the Maximum Concentration Level Assessment to the ministry for review; and
- refrain from making the modification for a 30-day period from acknowledgment of the submission of the Maximum Concentration Level Assessment to the ministry unless specifically permitted by the ministry in writing.

This process is outlined in the Figure 3.



**Figure 3: Maximum Concentration Level Assessment**



The Maximum Concentration Level Assessment is not a process to allow changes outside the operating envelope described by the Limited Operational Flexibility conditions. Submissions of Maximum Concentration Level Assessments that are indicative of compounds not associated with the approved operations at the facility will trigger a request by the Section 9 Director to submit an amendment to the Comprehensive CofA.

The Maximum Concentration Level Assessment must include minimum specified information requirements in order to be considered acceptable. These detailed specifications are included in the information contained in Appendix D - Supporting Information for a Maximum Concentration Level Assessment. The Maximum Concentration Level Assessment submission must include:

- a complete Contaminants with no Ministry POI Limits Summary Form (included in Appendix B);
- the required supporting information for a Maximum GLC Acceptability Request as outlined in Appendix C;
- a maximum one page written summary supporting assessment that the predicted concentration at POI as a result of the proposed modification will not result in an adverse effect;
- a summary of the relevant physical and chemical properties of the contaminant(s) (including odour characteristics and thresholds, where available);
- a jurisdictional review of other available air quality standards/guidelines for the contaminant(s); and
- an assessment of the toxicological basis of existing air quality guidelines in other jurisdictions, occupational exposure limits and the details of any other toxicity data deemed relevant by the Comprehensive CofA holder to support the Maximum Concentration Level Assessment.

Comprehensive CofA holders will be held accountable to follow the requirements of this User Guide and the Appendices in preparing the supporting information for a Maximum Concentration Level Assessment. Comprehensive CofA holders that do not follow these minimum requirements will be required to hold off on making the modifications until the information which meets these requirements is submitted. The Director will revoke the Limited Operational Flexibility conditions in the Comprehensive CofA for holders who do not follow these requirements.

### **7.2.1 Who can provide information?**

The Comprehensive CofA requires that a Toxicologist prepare the assessment that supports the Maximum Concentration Level Assessment submission. The Comprehensive CofA defines a Toxicologist. The intent of this definition is to hold the Comprehensive CofA holder accountable for the submission of a Maximum Concentration Level Assessment, so that only persons that have the specific education and training required to qualify them to prepare this information are retained by the Comprehensive CofA holder. At the current time there is no formal professional designation that meets these requirements, however, people that are qualified to do this work are generally referred to as Toxicologists or Risk Assessors. Companies, when determining who will prepare the necessary submissions should carefully consider the qualifications of the persons retained to assess if they meet these requirements.

As a requirement in preparing the Maximum Concentration Level Assessment, the Toxicologist must submit a summary (maximum one page) of their qualifications, demonstrating that they meet the qualification requirements.

Submissions from persons that do not meet the qualification requirements of a Toxicologist, as defined by the Comprehensive CofA, will not be accepted by the Air Standards Manager and Comprehensive CofA holders will be directed to hold

modifications until an acceptable submission is received. By accepting the submission the ministry is not making any statement on the acceptability of the Toxicologist's qualifications.

### **7.2.2 Maximum Concentration Level Assessment Submission Details**

Proponent must supply two copies of the Maximum Concentration Level Assessment submission and all supporting information to:

Director, Section 9 Environmental Assessment and Approvals Branch Ministry of the Environment 2 St. Clair Avenue West, Floor 12A Toronto, Ontario M4V 1L5	and	Manager, Human Toxicology and Air Standards Standards Development Branch 40 St. Clair Avenue West Floor 7 Toronto, Ontario M4V 1M2
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The submitted Maximum Concentration Level Assessment must reference the Comprehensive CofA reference number.

The EAAB will forward a copy of the acknowledgment letter along with the Contaminants with no Ministry POI Limits Summary Form to the local District Office for their comment. Companies are not required to submit a complete assessment to the district but are encouraged to keep local staff informed of the process.

### **7.2.3 Recommendations of Air Standard Manager**

After review of the submission, the Air Standards Manager will either accept the proposed Maximum Concentration Level Assessment or will make specific recommendations. This review is not a standard setting process, rather it is a formalization of the current ministry practice of assessing contaminants that do not have Ministry POI Limits prior to making a modification at a facility. The purpose of the ministry review is not to make recommendations of a specific numerical criteria for a site but rather to determine whether or not the Maximum Concentration Level Assessment is acceptable. Recommendations of the Air Standards Manager could include:

- request to submit additional information and assessment;
- direction to hold-off proposed modifications because the resultant concentrations are not acceptable and request that proposed modifications be revised and the submission be resubmitted so that the emission estimates are lower in order to prevent possible adverse effects; or
- request to hold-off proposed modifications to allow further review based on the complexity or number of compounds under review; or

The Comprehensive CofA holder may also be directed to submit an amendment for the Comprehensive CofA. The Section 9 Direction will require an amendment if the compound identified in the Maximum Concentration Level Assessment is not similar to the compounds included in the original ESDM Report that accompanied the application or if not produced by similar facilities with similar processes. For example, if a Maximum Concentration Level Assessment included the emission of a pesticide from a surface coating facility then the Comprehensive CofA holder will be required to show how the proposed modification is consistent with the Limited Operational Flexibility Conditions. If the proposed modification is outside the approved operating envelope, the Air Standards Manager will recommend to the Section 9 Director that the Comprehensive CofA holder submit an application for amendment to the Comprehensive CofA for the modification in question.

The Air Standards Manager will not make recommendations for a specific Maximum Concentration Level Assessment for a site to the Section 9 Director, but may recommend a lower concentration if the submitted Maximum Concentration Level Assessment is deemed unacceptable.

Companies are encouraged to make their submission as soon as possible once the proposed modifications are identified before the minimum 30-day period required by the Comprehensive CofA. SDB will endeavour to complete the review of all submissions within the 30-day period specified on the Comprehensive CofA and will only make recommendations to the Comprehensive CofA holder to hold off on the proposed modifications when necessary. This process is consistent with the principles of emitter accountability; Comprehensive CofA holders are required to assess the impacts of the proposed modification prior to submitting the request for review of the Maximum Concentration Level Assessment.

If no other ministry direction is received, the Comprehensive CofA holder may complete the modifications 30 days after the date of the acknowledgment letter for the submission.

### **7.3 Need to keep updated with Standards Development Process**

The ministry has identified the need to develop and/or update air standards/guidelines for priority contaminants. The ministry's Standards Plan (revised October 1999) ([www.ene.gov.on.ca/envision/env\\_reg/er/documents/2000/pa9e0004.pdf](http://www.ene.gov.on.ca/envision/env_reg/er/documents/2000/pa9e0004.pdf)) identifies 70 high priority substances where standards have been developed or are being developed, while the limits for 75 lower priority substances have been reaffirmed as protective at their current values. Factors used by the ministry to determine which contaminants require priority include potential degree of exposure, volume of use, toxicity, Federal/Provincial commitments and sensitive sub-populations, including children.

The Comprehensive CofA places specific requirements on companies to monitor progress with the Standards Plan that result in changes to air quality standards and their implementation. Companies will be required to comply with any new air standards

as part of the overall implementation plan developed as part of the air standard setting process. As a minimum, compliance with the new standards or guidelines emitted by the facility must be reported to the ministry in the annual Written Summary required by the Comprehensive CofA.

For further information on the Standard setting process please contact SDB at 416-327-5519 or visit the ministry web site at <http://www.ene.gov.on.ca>.

## **8. OTHER CONDITIONS**

The Comprehensive CofA also contains a number of standard conditions listing specific operating requirements considered necessary to minimize impact on the environment from the facility. The CofA may also include other conditions to address local and facility specific issues which are considered necessary based on conditions identified during the review of the application or the type of pollution control equipment used at the facility.

### **8.1 Operation and Maintenance**

This section requires the Comprehensive CofA holder to identify processes with significant environmental aspects and then prepare operating procedures and maintenance programs and manuals for the equipment related to these processes. The focus of the manuals should be on the required actions necessary to maintain normal operation and minimize potential for environmental impacts. As a minimum, the manuals shall include the following:

- routine operating and maintenance procedures in accordance with good engineering practices, recommendations of the equipment suppliers and Comprehensive CofA holder specific protocols as appropriate;
- procedures to minimize upset conditions, fugitive emissions and other environmental impacts; and
- procedures for any record keeping activities relating to operation and maintenance of the equipment.

### **8.2 Notification Requirements**

This section requires the Comprehensive CofA holder to provide notifications to the ministry regarding ongoing activities within the facility.

### **8.3 Record Keeping Requirements**

This section stipulates the minimum records and information which must be retained and the minimum time frame for which the records and information must be retained. These records are to be made available for review by ministry personnel upon request.

#### **8.4 Revocation of Previous Certificates of Approval (Air)**

This section is included to emphasize that the Comprehensive CofA is intended to replace all CofAs that have been previously issued for this facility.

#### **8.5 Facility Specific Conditions**

The Comprehensive CofA may include other conditions from historic approvals issued to the Comprehensive CofA holder, specific testing or monitoring conditions as required by EAAB Operational Practice or to further document ongoing compliance with the performance limits. Additional confirmatory activities, such as source testing, acoustic audit, vibration audit, ambient monitoring, phytotoxicity/soil studies and field verification of key information, may be required through facility specific conditions as required to confirm the emission estimates provided in the original ESDM Report or Acoustic Assessment Report that supported the application for a Comprehensive CofA and provide further assurance of compliance with the Performance Limits.

### **9. ONGOING VERIFICATION PROGRAM**

The ministry has committed to an ongoing verification program to assess individual Comprehensive CofA holder's compliance with Comprehensive CofA conditions and continuously monitor the collective implementation of the Comprehensive CofA Program. The purpose of ongoing verification will be to assess companies' individual compliance with the requirements of the Comprehensive CofA and take action against any companies that are found in violation. A percentage of Comprehensive CofA holders will be selected each year some time after they have been issued the CofA. This program will allow the ministry to focus resources on facilities and projects that are environmentally significant. The ministry will use Written Summaries as a basis to select companies for an audit.

The program will be conducted in cooperation with the larger ministry wide audit and inspection program of industrial facilities. EAAB staff will work with the District Offices to coordinate site visits. Companies will be required to document compliance with both the Performance Limits and the terms and conditions of the Comprehensive C of A based on information contained in the ESDM Report, Acoustic Assessment Report and the other documentation requirements.

A failure to document compliance may result in various abatement and enforcement measures such as orders to comply with the conditions or take preventative measures, amendments of the Comprehensive CofA that results in the revocation of the conditions that provide the Limited Operational Flexibility and prosecution.

## 10. CLOSURE

This User Guide has been provided to assist companies to comply with the requirements of a Comprehensive CofA. Comprehensive CofA holders must determine for themselves the specific actions they must take to maintain compliance with the terms and conditions in their Comprehensive CofA.

The ministry will update this document to reflect the most current requirements and supporting information.

For any questions regarding the Comprehensive CofA, contaminants with no Ministry POI Limits, addenda or revisions to this User Guide please contact:

Environmental Assessment and Approvals Branch  
Ministry of the Environment  
2 St. Clair Avenue West, Floor 12A  
Toronto, Ontario  
M4V 1L5

Telephone: 416-314-8001  
or: 1-800-461-6290  
Fax: 416-314-8452

or visit the ministry website for general information on the Approvals program at:  
[www.ene.gov.on.ca](http://www.ene.gov.on.ca)

## **Appendix A**

### **Supporting Information for an Acoustic Assessment Report or Vibration Assessment Report Required by a Basic Comprehensive CofA**

Conditions in a Comprehensive CofA may require the holder of the certificate to prepare an “Acoustic Assessment Report” or a “Vibration Assessment Report”<sup>3</sup> that demonstrates compliance with the Performance Limits in the Comprehensive CofA. Central to these reports is the preparation of Summary Tables to present the results of the report in a tabular manner and to confirm continued compliance with the Performance Limits. The Acoustic Assessment Summary Table and/or the Vibration Assessment Summary Table will be a requirement of the Annual Written Summary.

This Appendix to the User Guide is designed to assist the individual who is responsible for preparing an Acoustic Assessment Report or Vibration Assessment Report. Reports should be prepared and documented in accordance with the format described in this Appendix.

#### **1. References**

- NPC-205 - Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban)
- NPC-232 - Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)
- NPC-207 - Impulse Vibration in Residential Buildings (draft)
- NPC-206 - Sound Levels Due to Road Traffic
- NPC-233 - Information to be Submitted for Approval of Stationary Sources of Sound

#### **2. Documentation Requirements**

The Acoustic Assessment Report and the Vibration Assessment Report must include sufficient information and analysis to demonstrate the facility’s compliance with the noise and/or vibration Performance Limits in the Comprehensive CofA. The report should be linked with the ESDM Report for consistency in identifying sources of air, noise and/or vibration emissions. This Appendix provides a suggested format that will meet the minimum documentation requirements of the Comprehensive CofA.

The suggested format and content for the reports is provided in the following section. The person preparing the report must be able to defend the accuracy of the data presented in the report and tables.

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<sup>3</sup>When references are made within this document to Acoustic Assessment Reports and other requirements relating to sources of noise emissions, it should be noted that there are similar requirements for Vibration Assessment Reports and summary tables for facilities with significant sources of vibration emissions.



### **3. Acoustic Assessment Reports**

#### **3.1 Introduction**

The purpose of the Introduction is to provide an overview of the facility, list the objectives of the report and identify its relationship to the Certificate of Approval application. Specific information in the introduction should include the site location, facility overview and the type and number of sound and/or vibration sources at the facility. The introduction should also provide detailed information on the environmental noise climate surrounding the facility and should include:

- An up-to-date land use zoning designation plan of the surrounding area, complete with legend and scale. The zoning plan will be required within a radius of either 500 metres or 1,000 metres depending on the type of equipment and nature of the activities taking place at a facility.
- Scaled area location plan, indicating the topography and nature of the neighbourhood surrounding the facility, including the location of adjacent buildings and structures, and the nearest Point(s) of Reception. As with the zoning plan, the area location plan will be required within a radius of either 500 metres or 1,000 metres depending on the type of equipment and nature of the activities taking place at a facility.
- The location of the nearest Point(s) of Reception that may be impacted by the facility in relation to the equipment/facility must be clearly shown on the scaled area location plan. Point(s) of Reception include any of the following existing or zoned for future use premises:
  - permanent, seasonal or rental residences;
  - hotels/motels;
  - nursing/retirement homes;
  - hospitals;
  - campgrounds; or
  - noise sensitive buildings such as schools, day care facilities and places of worship

#### **3.2 Facility Description**

The purpose of the Facility Description is to provide a detailed description of the facility, processes and types of equipment that may produce noise and/or vibration emissions. The information listed in the ESDM Procedure Document should be included or referenced, along with the following information:

- Operating hours of the equipment/facility (including start time and stop time) and sequence of operation of multiple and/or intermittent sources.
- Relevant architectural and mechanical drawings (scaled plans, elevations and sections) of the equipment/facility. Drawings should show:

- Size and location of all exterior openings in the building(s) housing the equipment/facility;
- Details of the construction materials forming the exterior envelope of the building(s) (e.g. concrete block, brick, etc.);
- Details of the construction materials forming the interior surfaces of the building(s) (e.g. dry wall, concrete, etc.);
- Orientation of, and distance from, all exterior openings with respect to the nearest Point(s) of Reception.

### 3.3 Noise Source Summary

The Noise Source Summary should identify all noise and vibration sources at the facility and provide all required technical information to predict the worst case noise impacts from the facility. Each source must be assigned a unique identifier and be clearly located on the site drawings included in the Facility Description. Where possible, the Noise Source Summary should use the same identification system used in the ESDM Report.

The use of source description sheets summarizing the following information for each source is encouraged. Sufficient information must be provided for each source to calculate the worst case noise impact from the facility. The following information should be provided as required:

- Manufacturer's make and model number, power rating, flow rate or other specifications to uniquely identify the source and calculate the sound level emissions;
- Time varying characteristics of generated sound (steady or intermittent);
- Tonal characteristics;
- Impulsive characteristics;
- Directivity pattern of the source;
- Measurement techniques and equipment used for evaluation of source emission;
- Octave or 1/3 octave sound power levels for the sources where available;
- Octave or 1/3 octave sound pressure levels generated by the sources including measurement conditions, procedure and location of measurement points; or
- Noise/vibration control equipment or measures designed to reduce the noise/vibration emissions.

Detailed information may not be required for noise sources that are insignificant in comparison to the overall facility noise levels. However, noise sources that are considered insignificant should be listed as such in an appendix to the report.

Selected details relating to sources of noise emissions must be documented in the form of a Noise Source Summary Table. An example of a completed Noise Source Summary Table is included as Table A1. The following information should be included in the Noise Source Summary Table:

Source Identifier	A unique identifier for each source. Wherever possible this identifier should be the same as used in the ESDM Report.
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Source Description	A brief description of the source.
Sound Power Level	A measurement in decibels of the acoustical power radiated by a given source with respect to the international reference of $10^{-12}$ Watts.
Sound Characteristics	Acoustical characteristics of the source that affect the measurements, including Tonal, Impulsive, or Quasi-Steady Impulsive.
Source Location	An indication of where the source is located, either inside a building (I) or outside (O).
Noise Control Measures	An indication of the type (if any) of Noise Control Measures that are applied to the noise source or are used to control the noise emissions from the source. The following codes should be used: <ul style="list-style-type: none"> <li>S: silencer, acoustic louvre, muffler</li> <li>A: acoustic lining, plenum</li> <li>B: barrier, berm, screening</li> <li>L: lagging</li> <li>E: acoustic enclosure</li> <li>O: other</li> <li>U: uncontrolled</li> </ul>

### 3.4 Point of Reception Summary

The Point of Reception Summary should identify all required Point(s) of Reception in the vicinity of the facility. At a minimum, the closest Point(s) of Reception in each cardinal direction should be identified. For more complex facilities, additional Point(s) of Reception may be required to determine the critical Point(s) of Reception. Each Point of Reception must be assigned a unique identifier and located on the scaled area location plan included in the Introduction.

Sufficient information must be provided to assess the impacts of each source identified in the Source Summary Section on each Point of Reception. The following information should be provided as required:

- One Hour Equivalent Sound Level ( $L_{eq}$ ) of the source. For multiple sources or sources generating intermittent or time-varying sound, the hourly  $L_{eq}$  over a minimum period of 24 hours or for the operating cycle of the source, whichever is shorter, should be provided;
- Logarithmic Mean Impulse Sound Level ( $L_{LM}$ ) of the source, if applicable;
- Prevailing meteorological conditions such as wind direction and speed, percent relative humidity, temperature;
- For a location in a Class 3 Area, the existing One Hour Ninetieth Percentile Sound Level ( $L_{90}$ ) of the background sound level at Point(s) of Reception, obtained through monitoring over a minimum period of 48 hours. The monitoring should be conducted

- during times when the background sound level is at its lowest level. The lowest hourly  $L_{90}$  value should be selected to represent the background sound level;
- For all Areas, the existing One Hour Equivalent Sound Level ( $L_{eq}$ ) of the background sound level obtained either by prediction or through monitoring over a minimum period of 48 hours. The monitoring should be conducted during times when the background sound level is at its lowest level. The lowest hourly  $L_{eq}$  value should be selected to represent the background sound level; or
- Sound level using other specialized descriptors.

The relationship between the sources identified in the Noise Source Summary section and the Point of Reception Summary section should be documented in the form of a Point of Reception Noise Impact Table. An example Point of Reception Noise Impact Table is included as Table A2. The table requires a separate heading for each identified Point of Reception.

The following information should be included in the Point of Reception Noise Impact Table:

Source ID	The unique identifier used in the Source Summary Section.
Distance to Point of Reception	The distance in metres from each individual source to the Point of Reception.
Sound Level at Point of Reception	The predicted or measured sound level ( $L_{eq}$ or $L_{LM}$ ) identified as units of dBA or dBAI at the Point of Reception resulting from the individual source.

### 3.5 Mitigation Measures Summary

The Mitigation Measures Summary should identify the noise mitigation measures that are used to control the noise emissions from the facility. This section identifies common mitigation measures such as berms or enclosures that are used to control more than one source. Individual mitigation measures may be detailed in the Source Summary Section.

The following information is should be provided as required when noise mitigation measures are used:

- Where sound sources are silenced, enclosed or shielded by barriers, indicate the location, dimensions, structural details, materials used and the specification of abatement equipment and materials, such as transmission loss, insertion loss, noise reduction or barrier attenuation;
- If the devices are standard catalogue items, indicate the type, manufacturer's make and model number and spectral acoustic performance specification data, such as insertion loss, transmission loss, absorption coefficient values, noise reduction; or
- If alternative measures for noise abatement are proposed, provide a full description of the alternatives, administrative steps, changes in operational procedure or structural alterations.

### 3.6 Assessment Criteria (Performance Limits)

The Assessment Criteria section should indicate the applicable Performance Limit at each Point of Reception and the method used to determine that limit. The noise assessment process relates to the worst-case noise impact of the facility at Points of Reception. This means that the applicable Performance Limit at a Point of Reception is determined by identifying the time when the sound level produced by the source is at a maximum in relation to the background sound level.

The resulting Performance Limit at the Point of Reception is then based on the background sound level in accordance with Publications NPC-205 or NPC-232 and is the greater of either:

- the sound level limit based on the minimum background sound level that occurs or is likely to occur during operation of the source under assessment; or
- the exclusionary limit, as indicated in Table 205-1 for urban areas and Table 232-1 for rural areas.

Depending on the characteristics of the noise sources and the location of Point(s) of Reception, the Performance Limit may be expressed in terms of:

- $L_{eq}$  - One Hour Equivalent Sound Level;
- $L_{LM}$  - Logarithmic Mean Impulse Sound Level; or
- $L_{90}$  - One Hour Ninetieth Percentile Sound Level.

The Performance Limit may be expressed in units of dBA or dBAI.

### 3.7 Impact Assessment

The Impact Assessment section should describe the method used to calculate the noise levels at the individual Points of Reception<sup>4</sup> and compare them to the applicable assessment criteria for the individual Point of Reception Performance Limits. The section should also outline the results of pre- and post-abatement assessment at Point(s) of Reception.

The noise impact assessment must also be presented in an Acoustic Assessment Summary Table, summarizing the results of the Acoustic Assessment Report and demonstrating compliance with the Performance Limits for the Facility regarding noise emissions.

An example Acoustic Assessment Summary Table is included as Table A3. The following information must be included in the Acoustic Assessment Summary Table:

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<sup>4</sup> Large manufacturing and/or process plants or industrial complexes where a multitude of sources exist may require a more detailed analysis of the noise impact. The impact reports should include sound level mapping in addition to the information specified above. The sound level mapping should include the existing level of road traffic in the vicinity of the proposed installation.

Point of Reception Identifier	A unique identifier for each receptor used in the Point of Reception Summary section.
Point of Reception Description	A brief description of the Point of Reception to assist in the Identification of the Point of Reception on the table.
Sound Level at Point of Reception	The predicted or measured sound level at the Point of Reception, in terms of $L_{eq}$ or $L_{LM}$ and reported in units of dBA or dBAI.
Performance Limit	The prescribed Performance Limit required by the Comprehensive CofA, in terms of $L_{eq}$ , $L_{90}$ or $L_{LM}$ and reported in units of dBA or dBAI.
Compliance with Performance Limit	Indication that the predicted sound level at the Point of Reception is below the Performance Limit. The response should be Yes. No is not an acceptable response.

### **3.8 Conclusions and Recommendations**

The Conclusions and Recommendations section should provide a written statement of compliance with the Performance Limits, signed by the qualified professional that completed the assessment. This section should also include an overview of the effects of the control measures employed at the facility and a description verification activities conducted at the site.

### **3.9 Supporting Information**

All supporting information necessary to support the conclusions of the report, but not specifically referenced as required in the above sections, should be referenced and attached as appendices to the report. Supporting information could include any information used to assess the impact of noise sources on Point(s) of Reception, such as details of measurements and calculations, specifications, plans, engineering drawings, etc.

## Acoustic Assessment Summary Tables

**Table A1**  
**Noise Source Summary Table**

Source ID <sup>1</sup>	Source Description	Sound Power Level (dBA)	Source Location <sup>2</sup>	Sound Characteristics <sup>3</sup>	Noise Control Measures <sup>4</sup>
1	Diesel Generator Exhaust Stack	128	O	S	S
2	Diesel Generator Casing	111	I	S	S,A
3	Compressor	105	O	S	E
4	Exhaust Fan	101	O	S,T	U

**Notes:**

1. Wherever possible, the Source ID must be identical with that used in the ESDM report.
2. Source Location:  
O - located/installed outside the building, including on the roof  
I - located/installed inside the building
3. Sound Characteristics:  
S: Steady  
Q: Quasi Steady Impulsive  
I: Impulsive  
B: Buzzing  
T: Tonal  
C: Cyclic
4. Noise Control Measures  
S: silencer, acoustic louvre, muffler  
A: acoustic lining, plenum  
B: barrier, berm, screening  
L: lagging  
E: acoustic enclosure  
O: other  
U: uncontrolled

**Table A2**  
**Point of Reception Noise Impact Table**  
(add columns or tables to address additional Points of Receptions)

Source ID <sup>1</sup>	Point of Reception 1		Point of Reception 2		Point of Reception 3		Point of Reception 4	
	Distance to POR1 (metre)	Sound Level at POR1 <sup>2</sup> (L <sub>eq</sub> )	Distance to POR2 (metre)	Sound Level at POR2 <sup>2</sup> (L <sub>eq</sub> )	Distance to POR3 (metre)	Sound Level at POR3 <sup>2</sup> (L <sub>eq</sub> )	Distance to POR4 (metre)	Sound Level at POR4 <sup>2</sup> (L <sub>eq</sub> )
1	100	41 dBA	110	40 dBA	180	36 dBA	90	42 dBA
2	95	38 dBA	100	34 dBA	180	28 dBA	85	35 dBA
3	130	37 dBA	150	36 dBA	150	36 dBA	50	45 dBA
4	90	42 dBA	80	43 dBA	190	36 dBA	120	40 dBA

**Notes:**

1. Wherever possible, the Source ID must be identical with that used in the ESDM report.
2. Indicate sound level format (L<sub>eq</sub> or L<sub>LM</sub>) and units (dBA or dBAI).





**Table A3 Acoustic Assessment Summary Table**

Point of Reception ID	Point of Reception Description	Sound Level at Point of Reception <sup>1</sup> (L <sub>eq</sub> )	Verified by Acoustic Audit (Yes/No)	Performance Limit <sup>2</sup> (L <sub>eq</sub> )	Compliance with Performance Limit <sup>3</sup> (Yes/No)
POR1	House to North	46 dBA	Yes	54 dBA	Yes
POR2	House to East	46 dBA	Yes	52 dBA	Yes
POR3	Nursing Home to South	41 dBA	Yes	50 dBA	Yes
POR4	School to West	48 dBA	Yes	50 dBA	Yes

**Notes:**

1. Indicate sound level format (L<sub>eq</sub> or L<sub>LM</sub>) and units (dBA or dBAI).
2. Indicate sound level format (L<sub>eq</sub>, L<sub>90</sub> or L<sub>LM</sub>) and units (dBA or dBAI).
3. The response should be “Yes”. “No” is not an acceptable response.

## Vibration Assessment Summary Tables

**Table A4**  
**Vibration Source Summary Table**  
(add columns or tables to address all receptors)

Source ID <sup>1</sup>	Source Description	Vibration Control Measures <sup>2</sup>	Distance to R1 (metre)	Distance to R2 (metre)	Distance to R3 (metre)	Distance to R4 (metre)
A	Stamping press A	V	100	140	100	92
B	Stamping press B	V	120	146	80	90

**Notes:**

1. Wherever possible, the Source ID must be identical with that used in the ESDM report.
2. Vibration Control Measures  
V: vibration isolation such as springs, pads, etc.  
P: path interruption such as trench  
O: other  
U: uncontrolled

**Table A5**  
**Vibration Assessment Summary Table**

Receptor ID	Receptor Description	Vibration at Receptor (mm/s)	Verified by Vibration Audit (Yes/No)	Performance Limit (mm/s)	Compliance with Performance Limit <sup>1</sup> (Yes/No)
R1	House to North	0.21	Yes	0.30	Yes
R2	House to East	0.17	Yes	0.30	Yes
R3	Nursing Home to South	0.22	Yes	0.30	Yes
R4	School to West	0.27	Yes	0.30	Yes

**Notes:**

1. The response should be "Yes". "No" is not an acceptable response.

APPENDIX B

**CONTAMINANTS WITH NO MINISTRY POI LIMITS SUMMARY FORM**

For Office Use Only			
Reference Number	Acknowledgement Letter Sent	Date (y/m/d)	Initials

**General Information and Instructions**

**General:**

Information requested in this form is collected under the authority of the *Environmental Protection Act*, R.S.O. 1990 (EPA) and the *Environmental Bill of Rights, C. 28, Statues of Ontario, 1993*, (EBR) and will be used to evaluate ongoing compliance with a Basic Comprehensive CofA issued under Section 9 of the EPA.

**Instructions:**

- When completing this form, please refer to the Basic Comprehensive Certificates of Approval (Air) User Guide, Version 2.0 dated June 2003. Questions regarding completion and submission of this form should be directed to the Approvals Branch, 2 St. Clair Avenue West, Floor 12A, Toronto, Ontario, M4V 1L5, telephone number 1-800-461-6290 or (416) 314-8000.
- This form must be completed with respect to all requirements identified in the User Guide in order for it to be considered. INCOMPLETE SUBMISSIONS WILL BE RETURNED TO THE APPLICANT.
- This summary and supporting information should be submitted to:
 

Director Environmental Assessment and Approvals Branch Ministry of the Environment 2 St. Clair Avenue West, Floor 12A Toronto, Ontario M4V 1L5	AND	Manager, Human Toxicology and Air Standards Standards Development Branch Ministry of the Environment 40 St. Clair Avenue West - 7 <sup>th</sup> Floor Toronto, Ontario M4V 1M2
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- Information contained in this application is not considered confidential and will be made available the public upon request. Information submitted as supporting information may be claimed as confidential but will be subject to the *Freedom of Information and Protection of Privacy Act* (FOIPPA) and *EBR*. If you do not claim confidentiality at the time of submitting the information, the Ministry may make the information available to the public without further notice to you.

**1. Company Information (Owner of facility)**

Company Name (legal name of individual or organization as evidenced by legal documents)	
Business Name (the name under which the entity is operating or trading if different from the Company Name - also referred to as trade name)	
Business Identification Number	Activity Classification Code/NAICC (if unknown please complete Business Activity Description)
Business Activity Description (a narrative description of the business endeavour, this may include products sold, services provided or machinery/equipment used, etc.).	

**2. Submission Information - Type of Request**

<input type="checkbox"/> Maximum Ground Level Concentration Acceptability Request	<input type="checkbox"/> Maximum Concentration Level Assessment
Ministry Reference No (if known)	Comprehensive CofA Reference No.

### 3. Site Information - (location of the facility)

Site Name		MOE District Office		Legal Description	
Site Address - Street information ( <i>applies to an address that has civic numbering and street information - includes street number, name, type and direction</i> )				Unit Identifier ( <i>identifies type of unit, such as suite &amp; number</i> )	
Survey Address ( <i>used for a rural location specified for a subdivided township, an unsubdivided township or unsurveyed territory</i> )					
Lot and Conc.: used to indicate location within a subdivided township and consists of a lot number and a concession number.		Lot	Conc.	Part and Reference: used to indicate location within an unsubdivided township or unsurveyed territory, and consists of a part and a reference plan number indicating the location within that plan. Attach copy of the plan.	
				Part	Reference Plan
Non Address Information ( <i>includes any additional information to clarify clients' physical location</i> )					
Geo Reference					
Map Datum	Zone	Accuracy Estimate	Geo Referencing Method	UTM Easting	UTM Northing
Municipality/Unorganized Township		County/District		Postal Code	
Adjacent Land Use					
<input type="checkbox"/> Industrial <input type="checkbox"/> Commercial <input type="checkbox"/> Recreational <input type="checkbox"/> Residential <input type="checkbox"/> Agricultural <input type="checkbox"/> Other( <i>specify</i> ):					

### 4. Toxicologist Contact

Name		Company			
Contact Address Civic Address - Street information ( <i>includes street number, name, type and direction</i> )					Unit Identifier ( <i>identifies type of unit, such as suite &amp; number</i> )
Delivery Designator: <input type="checkbox"/> Rural Route <input type="checkbox"/> Suburban Service <input type="checkbox"/> Mobile Route <input type="checkbox"/> General Delivery				Delivery Identifier ( <i>a number identifying a Rural Route, Suburban Service or Mobile Route delivery mode</i> )	
Municipality	Postal Station	Province/State	Country	Postal Code	
Telephone Number ( <i>including area code &amp; extension</i> )		Fax Number ( <i>including area code</i> )		E-mail Address	

### 5. Statement of Toxicologist

The attached Maximum Concentration Level Assessment (MCLA) was prepared in accordance with the guidance in the User Guide, Version 2.0 for Basic Comprehensive Certificates of Approval (Air) dated June 2003 and the minimum required information identified above has been submitted.

Toxicologist Name ( <i>please print</i> )	Title
Signature	Date ( <i>y/m/d</i> )



<b>COMPANY NAME</b>	<b>Reference #:</b>
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**Contaminants with no MOE POI Limits Summary Table**

<b>Contaminant<sup>(a,b,c)</sup></b>	<b>CAS<sup>(d)</sup> Number</b>	<b>Maximum ½ Hour Emission Rate (g/s)</b>	<b>Emission Type Continuous (C) Intermittent (I)</b>	<b>Predicted Maximum ½ Hour average POI<sup>(e)</sup> Concentration (ug/m<sup>3</sup>)</b>
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				

**NOTES:**

- (a) Proper Chemical Name should be given (Abbreviations, acronyms, numeric codes, trade names and mixtures NOT ACCEPTABLE).
- (b) All chemicals associated with the same process/operation should be grouped together.
- (b) If complete speciation of a mixture is not provided, the unspecified fraction will be assumed to be the most toxic compound, consistent with the available description.
- (c) CAS Number : Chemical Abstracts Services Number (UNIQUE Identifier for a chemical).
- (d) POI Concentration : Point of Impingement Concentration.





## Appendix C

### Supporting Information for a Maximum Ground Level Concentration Acceptability Request

Environmental Assessment and Approval Branch (EAAB) staff will forward a completed Contaminants with no Ministry POI Limits Summary Form as part of a Maximum Ground Level Concentration (GLC) Acceptability Request to the Standards Development Branch (SDB) when a contaminant with no Ministry POI Limit is identified as part of an Emission Summary and Dispersion Modelling (ESDM) Report. An application for a Certificate of Approval will not be recommended for approval until SDB indicates that the concentration at POI proposed in the application is acceptable and is not likely to cause an adverse effect.

The following information should be included on the Contaminants with no Ministry POI Limits Summary Table included on the Form:

- The chemical name for each contaminant with no Ministry POI Limit identified in the ESDM Report. Standard nomenclature should be provided and the use of abbreviations or trade names should be minimized.
- The CAS number for each contaminant identified. The Chemical Abstracts Services (CAS) number is a unique identifier for a chemical. The following web sites may provide a convenient way to obtain specific CAS numbers:
  - <http://www.chemfinder.com>
  - <http://webbook.nist.gov/chemistry> - Scroll down to Search Options
  - <http://www.toxnet.nlm.nih.gov> - Click on ChemIDplus
- The Maximum half-hour aggregate emission rate, expressed in grams per second, for each contaminant identified. The emission rate must consider all sources for the contaminant from the facility and be calculated using the Maximum Emission Rate Scenario provided in the ESDM Report.
- The nature of the emission for each contaminant identified whether the emission is continuous or intermittent.
- The predicted maximum half hour POI concentration, expressed in micrograms per cubic metre ( $\mu\text{g}/\text{m}^3$ ) for each contaminant identified. This includes a POI concentration calculated using the models outlined in Reg 346. Other models may be considered on a case-by-case basis.

Information attached to the Form as supporting information should include:

- Information that was used to identify the contaminant at the facility. This information may include but not be limited to:
  - a copy of the MSDS from the product identifying the contaminant(s) (if available);
  - the Emission Factor used, with proper references, to calculate the emission rate for the contaminant(s);
  - Source Assessment Testing results indicating the presence of the contaminant(s); or
  - any other information used by the applicant to identify the contaminant(s).
- Information on the surrounding area, which describes the type of land use (e.g., industrial, commercial, recreational, residential, agricultural etc.) and the estimated distance to the closest receptor (in metres)
- Information on the main Process(es) that give rise to the emission of each contaminant identified.
- Information on the control equipment used to reduce the emission of each contaminant identified.
- Information on the handling guidelines and/or Codes of Practice that are used to control the emission for each contaminant identified. Codes of Practice followed that are recommended by a business or government organization should be specifically referenced.

## Appendix D

### **Minimum Supporting Information for Preparing a Maximum Concentration Level Assessment for the purposes of the Basic Comprehensive Certificate of Approval (Maximum Concentration Level Assessment)**

Comprehensive CofA holders are accountable to follow the requirements of the User Guide and this Appendix in preparing the supporting information for a Maximum Concentration Level Assessment. Comprehensive CofA holders that do not follow these minimum requirements will be required to hold off on making the modifications until the information which meets these requirements is submitted.

Proponents must complete a Contaminants with no Ministry POI Limits Summary Form (Appendix A) and include all applicable information listed in Appendix B.

In addition to the completed Form the following minimum supporting documentation must be included for each identified contaminant with no Ministry POI Limit is as follows:

- A maximum one page written summary to support the assessment that the Maximum Concentration Level is not likely cause an adverse effect at the level proposed by the company.
- A summary of relevant physical and chemical properties including (if available) the accepted air odour thresholds (including geometric means, if available and applicable), ranges of acceptable values, and odour characteristics. The review of odour thresholds must include, but does not need to be limited to, the American Industrial Hygiene Association (AIHA)<sup>5</sup>.
- A tabular summary of the air quality guidelines from other regulatory/advisory agencies. The review of the air quality guidelines must include, but does not need to be limited to, those agencies listed in Table 1. The summary should include information on the averaging times, basis of the guideline (toxicological endpoint considered), and any comments that may assist in interpreting the guideline. Table 2 includes conversion factors for different averaging times to compare to the predicted half-hour ground level concentration. Where a proposed Maximum Concentration Level Assessment exceeds an air quality guideline from another jurisdiction, then the rationale for the exceedance must be provided.

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<sup>5</sup> AIHA. 1989. Odor thresholds for chemicals with established occupational health standards. American Industrial Hygiene Association, Akron, OH.



- A written summary of any occupational exposure limits, specifically those from the American Conference of Governmental Industrial Hygienists (ACGIH), Occupational Safety & Health Administration (OSHA), and the National Institute for Occupational Safety and Health (NIOSH).
- Reference(s) of any recent toxicological studies that were identified and were used in assessing the acceptability of the submitted Maximum Concentration Level Assessment.

The Maximum Concentration Level Assessment to be submitted to the ministry must incorporate sound scientific judgement based on the weight of scientific evidence and must minimize the likelihood for adverse effects to humans and/or the ecosystem. All information in the submitted Maximum Concentration Level Assessment must be up-to-date, including the air quality criteria from other jurisdictions.

**Table 1: Minimum Required Agencies for Review for the Assessment Report**

<b>Agency</b>	<b>Website(s) for Information</b>
<b>Canada - Federal (Health Canada and Environment Canada) -</b> Tolerable Concentration (non-cancer) and Tumorigenic Concentration (cancer) (TC <sub>05</sub> )	<a href="http://www.hc-sc.gc.ca/index-eng.php">http://www.hc-sc.gc.ca/index-eng.php</a>
<b>United States of America - Federal (US EPA) Reference Concentration (RfC)</b>	<a href="http://www.epa.gov/iris/index.html">http://www.epa.gov/iris/index.html</a>
<b>California -</b> REL - Reference Exposure Levels (acute and chronic)	<a href="http://www.oehha.ca.gov/air/hot_spots/index.html">http://www.oehha.ca.gov/air/hot_spots/index.html</a>
<b>Massachusetts -</b> AAL - Allowable Ambient Level TEL - Threshold Effects Exposure Limit	<a href="http://www.mass.gov/dep/">http://www.mass.gov/dep/</a>
<b>Michigan -</b> ITSL - Initial Threshold Screening Level and IRSL - Initial Risk Screening Level	<a href="http://www.michigan.gov/deq/0,1607,7-135-3310_4105---.00.html">http://www.michigan.gov/deq/0,1607,7-135-3310_4105---.00.html</a>
<b>North Carolina</b> AAL - Acceptable Ambient Level	<a href="http://www.ncair.org/toxics/">http://www.ncair.org/toxics/</a>
<b>Texas</b> ESLs - Effects Screening Levels (short- and long-term)	<a href="http://www.tceq.state.tx.us/implementation/tox/esl/list_main.html">http://www.tceq.state.tx.us/implementation/tox/esl/list_main.html</a>
<b>World Health Organization (including WHO-Europe)</b>	<a href="http://www.who.dk/air/Activities/20020620_1">http://www.who.dk/air/Activities/20020620_1</a>

<i>Table 2: Conversion Factors for Different Averaging Times</i>	
<i>Guideline Averaging Time</i>	<i>Multiplying Factor (for equivalent half-hour value)</i>
<i>1-hour</i>	<i>1.2</i>
<i>8-hour</i>	<i>2</i>
<i>24-hour</i>	<i>3</i>
<i>Annual</i>	<i>15</i>