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**GUIDELINE FOR THE IMPLEMENTATION OF
AIR STANDARDS IN ONTARIO
(GIASO)**

[GUIDELINE A-12]

Version 3.0

**Guidance to Support the Ministry of the Environment and
Climate Change's Risk Framework for
Air Standards, Site-Specific and Technical Standards and
Upper Risk Thresholds under**

**Ontario Regulation 419/05:
Air Pollution – Local Air Quality (as amended)**

made under the Environmental Protection Act

PIBS # 5166e03

FOREWORD

This “Guideline for the Implementation of Air Standards in Ontario” (GIASO) describes Ontario’s framework to manage risks under the Local Air Quality Regulation (Ontario Regulation 419/05: Air Pollution - Local Air Quality, or “the Regulation”). It deals with implementation including issues related to updating air standards and air dispersion models and other exceedences of air standards. Originally published in July 2005, GIASO was updated in 2009 and again in 2016 to reflect amendments that were made to Ontario Regulation 419/05: Air Pollution – Local Air Quality in 2007, 2009 and 2011.

This document should be used along with the Procedure for Preparing an Emission Summary and Dispersion Modelling Report (the “ESDM Procedure Document”) (PIBs #3614e04) as amended; the Air Dispersion Modelling Guideline for Ontario (ADMGO) (PIBs #5165e03) as amended; and the Guide for Requesting a Site-Specific Air Standard (GRSSS or the “Guide”) (PIBs #6322e02) as amended.

This Guideline is a technical document meant to ensure the fair and consistent implementation of the minimum requirements set out in Ontario Regulation 419/05: Air Pollution - Local Air Quality. This Regulation revoked and replaced Ontario Regulation 346: General - Air Pollution in 2005. To the extent that this guideline sets out that something is “required” or “shall” be done, it does so only to identify minimum expected requirements, the application of which remain subject to the discretion of the Director. During the review of a request for a site-specific standard or other legal instrument, the Director considers the requirements set out in relevant regulations as well as all applicable Ontario Ministry of the Environment and Climate Change (the ministry) guidelines and policies. Proponents should review this guideline with care while preparing reports and supporting information for consideration by the Director.

The ministry may periodically publish a list of questions and answers to assist in the interpretation of this and other documents. The contents of this document may also be updated from time to time based upon public consultation consistent with the Ontario Environmental Bill of Rights legislation. All web site addresses referred to in this document were current at the time of release.

While every effort has been made to ensure the accuracy of the information contained in this Guideline it should not be construed as legal advice. In the event of a conflict between the requirements identified in Ontario Regulation 419/05: Air Pollution – Local Air Quality and this document, the regulatory requirements shall determine the appropriate approach. For any addenda or revisions to this guideline please visit the [ministry website](#) or contact:

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1.0 INTRODUCTION

Ontario's Local Air Quality Regulation (Ontario Regulation 419/05: Air Pollution - Local Air Quality, or "the Regulation") made under the *Environmental Protection Act* works within the province's air management framework by regulating air contaminants released into air by various sources, including local industrial and commercial facilities. The Ministry of the Environment and Climate Change (MOECC) (hereafter referred to as "the ministry") regulates contaminants in air to protect communities who live close these sources. The Regulation aims to limit substances released into the air that can affect human health and the environment, and requires industry to operate responsibly under a set of rules that are publicly transparent.

The Regulation includes three compliance approaches for industry to demonstrate environmental performance, and make improvements when required. These approaches are:

1. Meeting a *provincial air standard* by the specified phase-in date, which is generally five years; or
2. Requesting and meeting a *site-specific standard*; or
3. Registering and meeting the requirements under a sector-based *technical standard* (if available).

All three approaches are allowable under the Regulation. The compliance approaches are part of a framework for managing risks within the Regulation.

Since 2010, new or updated air standards have been based on science and are set at concentrations that are protective against adverse effects. Air standards are used under the Regulation to identify facilities that need to take actions to address point of impingement concentrations and form the foundation of the framework for managing risks. Site-specific standards and technical standards are based on technology and define the actions that facilities must take to reduce risks to local communities. Risks are managed according to a framework that was developed and updated by ministry in cooperation with Public Health Units in Ontario and other stakeholders. The site-specific and technical standards processes consider technical and/or economic issues and provide a means of improving environmental performance and reducing risks to the local community while addressing technical, economic and time-related barriers to implementation.

This "Guideline for the Implementation of Air Standards" (GIASO) (hereafter referred to as this "Guideline" or GIASO) describes the framework to manage risks and focuses on the site-specific standard compliance approach (formerly referred to as alternative, altered, or alteration of standards process) under the Regulation. General information on the technical standards compliance approach, which was introduced in 2009, has also been added. This Guideline also describes how Upper Risk Thresholds (URTs) set out in Schedule 6 of the Regulation are part of the framework to manage risks. The requirements for URTs exist independent of the site-specific standards process (see section 30 of the Regulation).

Chapter 1 Introduction of this Guideline provides background information on air standards (and guideline values), the overall framework for managing risks and summarizes who is eligible to request a site-specific standard or register under a sector-based technical standard. Chapter 2 Review Of Site-Specific Standard Requests provides information on the site-specific standards process; how the risk management framework is used by the ministry in reviewing requests for site-specific standards; sets out a process to benchmark technical solutions to reduce contaminant concentrations; outlines how economics or costs can be considered (optional); and provides guidance on the stakeholder involvement process. Chapter 3 Upper Risk Thresholds describes how to assess exceedences of URTs and describes the actions required by a facility if it suspects that its emissions may result in an exceedence of a URT. Chapter 4 Factors To Consider When There Are Exceedences describes how the ministry assesses the magnitude and frequency of exceedences and the need for more timely action.

1.1 Ontario's Air Standards Setting Process

The ministry's Standards Plan (as amended) identifies high-priority contaminants for review based on a consideration of their volume of release in Ontario as well as toxicological and other information. Presently, each standard undergoes its own stakeholder consultation process before it is included in the Regulation.

In setting air standards, the ministry considers the available toxicological information as well as other relevant information to determine the potential adverse effects of exposure to a contaminant. Although there may be a variety of studies that identify a range of adverse effects, and a range of uncertainties associated with the information, the standards will be proposed based on one or more limiting or critical effects of that contaminant based on an averaging time. The limiting effect(s) could be based on health, environmental or nuisance effects although most air standards are based on health effects.

In general, the approach to setting air standards depends on whether a clear threshold can be identified below which adverse effects are not expected. Laboratory and/or epidemiological studies are reviewed to determine the highest level of exposure associated with no observable adverse effects ("NOAEL") or the lowest level of exposure that may be associated with an observable adverse effect ("LOAEL"). The air standard is then generally set at a concentration that is orders of magnitude below the NOAEL or LOAEL using factors that account for uncertainty in the data and variation within the population. This approach has been applied in the past to air standards for contaminants that cause effects other than cancer but may be considered for cancer effects if a clear threshold can be identified.

If no clear threshold can be identified, then the air standard is set at a concentration in air associated with a defined risk level. This approach has generally been used for cancer-causing substances but may be considered for non-cancer effects if no clear threshold of effect can be defined. An air standard for a carcinogen is normally set at a concentration equivalent to a lifetime incremental cancer risk of one-in-a-million (10^{-6}).

There are currently over 130 air standards under the Regulation in addition to a series of guideline values that are used for assessment of point of impingement (POI) concentrations. Guideline values are published by the ministry and may be used under the general provisions of the Environmental Protection Act (EPA) to indicate the potential for adverse effects. Computer-

based models, referred to as air dispersion models, are the primary tools used to estimate POI concentrations around a facility. Compliance with an air standard can be assessed using the POI concentrations estimated from modelling or based on a combination of both modelling and monitoring. The Regulation phases out, by sector, the older air dispersion models (referred to as Appendix A of Regulation 346) and replaces them with updated models from the United States Environmental Protection Agency (US EPA models).

For information on how to assess compliance with air standards (and conformance with other ministry POI Limits¹), please refer to the most recent versions of the “Procedure for Preparing an Emission Summary and Dispersion Modelling Report”, (hereinafter referred to as the ESDM Procedure Document); the “Air Dispersion Modelling Guideline for Ontario”, (hereinafter referred to as the ADMGO); and the Guide for Requesting a Site-Specific Standard (hereinafter referred to as GRSSS or the Guide). Where a conflict or ambiguity exists between this Guideline, or other ministry documents, and the requirements of the Regulation, the requirements of the Regulation will take precedence.

1.2 Upper Risk Thresholds

An upper risk threshold (URT) for a contaminant is set by the ministry at concentration in air greater than its corresponding air standard. It can be used to manage risks both during and after the phase-in period of an air standard and is also used during the evaluation of requests for site-specific standards. URTs are not standards. If a URT is exceeded anywhere off property, timely actions are required (see Chapter 3 Upper Risk Thresholds for more information on exceedences of URTs).

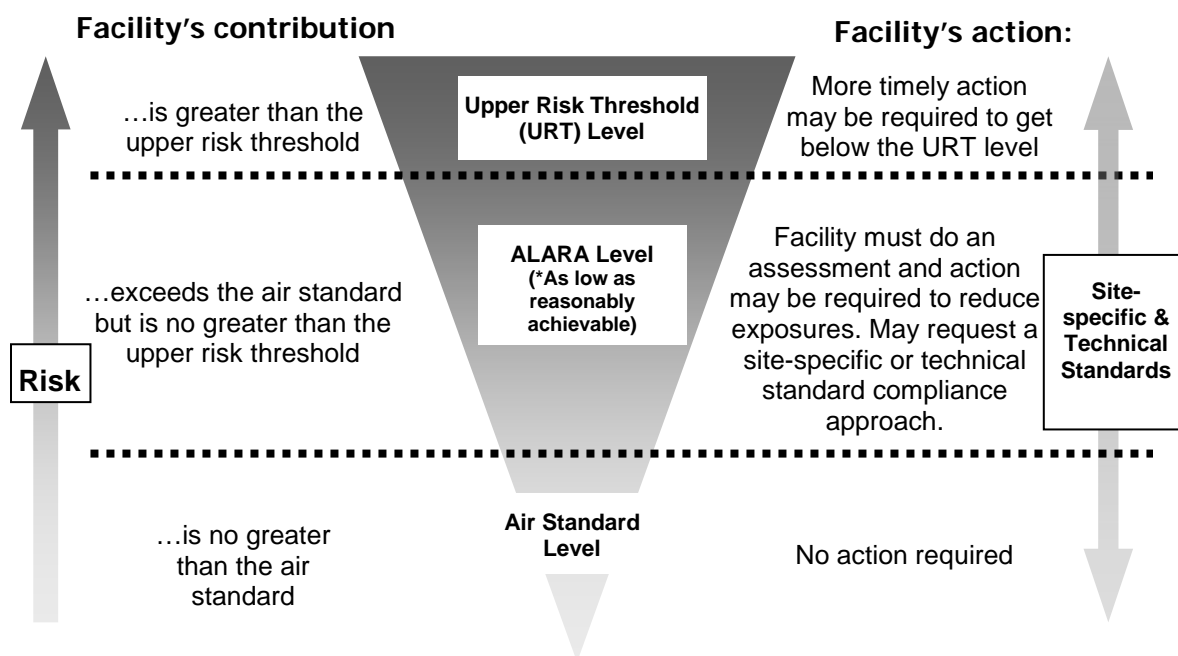
The ministry generally sets URTs for carcinogens at a concentration that is 100 times the corresponding air standard (or equivalent to a lifetime incremental cancer risk of 10^{-4}) and at 10 times the corresponding air standard for non-carcinogens. Exceptions exist, however, as other effects may be used to adjust the URT from the default levels.

1.3 Framework for Managing Risks

The exposures to a contaminant that result from a facility’s emissions are managed within the framework for managing risk (the framework). The framework helps manage risks to local communities from a facility’s contributions of a contaminant to air. The maximum level of a contaminant around a facility as a result of its emissions is defined within three ranges listed below (see Figure 1 MOECC’s Framework to Manage Risks under the Regulation): 1) the Air Standards Region; 2) the “As Low as Reasonably Achievable” (ALARA) Region; and 3) the Upper Risk Threshold Region. These regions serve to define the scope of assessment by the ministry and action that may be required by a facility.

¹ The ministry uses a combination of air standards in the schedules to the Regulation and a broader list of POI guideline values available on the ministry website (PIBs #2424e02). The generic term "ministry POI limits" used in the context of this Guideline means any numerical limit set by the ministry including standards in the schedules of the Regulation, guidelines and recommended screening levels for chemicals with no standard or guideline. The ministry [Air Contaminants Benchmarks List \(ACB List\)](#) summarizes standards, guidelines and screening levels used for assessing point of impingement concentrations of air contaminants.

Figure 1: The ministry’s Framework to Manage Risks under the Regulation



1.3.1 Air Standards Region

Chapter 1.1 Ontario’s Air Standards Setting Process describes the factors the ministry considers when setting an air standard. These standards are used to evaluate the contribution of a contaminant to air from a facility’s emission (i.e., the incremental exposure), as estimated by a POI concentration. If the maximum POI concentration does not exceed the air standard, then the contribution of the contaminant from the facility is generally considered to present negligible risk. Here the maximum POI concentration is used as a conservative estimate of the incremental exposure. It is a useful screen that allows facilities to demonstrate environmental performance without the need to fully characterize the exposure or associated effects of the contaminant around the facility.

1.3.2 ALARA Region

If the maximum POI concentration around a facility exceeds the air standard, the risk of an adverse effect may be increased. The goal of the framework is to manage the exposures to a contaminant resulting from the regulated facility’s emissions, incremental to any other background exposures. Further assessment is required to understand more about the potential incremental exposure and effects that may result from the facility’s emissions. This more

detailed assessment focuses first on the emissions from the facility (and how conservative or accurate their emission estimates may be) and the quality of meteorological data being used. For more information on how to assess air emissions, please refer to the ESDM Procedure Document.

The facility is expected to evaluate specific locations where human exposure is likely, such as schools, daycare facilities, hospitals and residences and includes consideration of the frequency, magnitude and duration of exposures above the air standard. The assessment then considers the potential for effects under the characterized exposure conditions (in addition to the basis of the air standard) in order to define appropriate actions to manage the risks.

Steps to reduce emissions that result in incremental exposures above the air standard may be carried out as part of abatement or may be part of a site-specific standard or technical standard process. These actions are designed to ensure that the incremental exposure estimated around the facility is managed effectively and that the facilities contribution to the risk is reduced as much as possible. The *As Low as Reasonably Achievable* (ALARA) principle is imbedded in the site-specific and technical standards compliance approaches, which are put in place with timeframes approved by the ministry. Where technically possible, continuous improvement is considered in the site-specific and technical standards processes, with reviews of new technologies and best practices that identify opportunities for environmental performance improvements where they are achievable. Proposed decisions on site-specific or technical standards are informed by input from the public, First Nations and local community stakeholders (see Chapter 2.6 Stakeholder Involvement for more information).

1.3.3 Upper Risk Threshold Region

The “Upper Risk Threshold Region” represents an incremental exposure above the Upper Risk Threshold (URT). As in the ALARA region, the potential for effects under the characterized exposure conditions (in addition to the basis of the air standard) can be considered in order to define appropriate actions to manage the risks. The facility is required to evaluate specific locations where human exposure is likely, such as schools, daycare facilities, hospitals and residences and includes consideration of the frequency, magnitude and duration of exposures above the air standard as well as the URT.

The assessment then considers the potential for effects under the characterized exposure conditions (in addition to the basis of the air standard) in order to define appropriate actions to manage the risks (e.g., abatement, site-specific or technical standard). Concentrations in this region require more timely action to confirm and if necessary reduce contaminant concentrations related to the regulated source. If there is any reason to believe that a URT may be exceeded, based on any relevant information, the ministry must be notified immediately in writing, and an ESDM report must be submitted to the ministry within three months of the discharge. For more information, please refer to Chapter 3 Upper Risk Thresholds of this Guideline and to section 30 of the Regulation.

Note: Elements of the ministry’s framework to manage risks may also be used at the discretion of the ministry for abatement purposes, to address an exceedence of a standard, guideline value and/or to deal with a contaminant that does not have a guideline value or standard that

may be causing an adverse effect. Similar information may also be requested to evaluate Assessment Values (associated with annual standards). For more information on Assessment Values, please see the ministry's Technical Bulletin "[Methodology For Using "Assessment Values" For Contaminants With Annual Air Standards](#)" dated September 2016, as amended.

1.4 Overview of the Site-specific Standard Process

For many facilities, the phase-in period for new or updated requirements provides time to assess, plan, budget and implement technical solutions to meet the air standards. The recommended phase-in period for new or updated air standards is normally 5 years unless otherwise prescribed by the Regulation. If a facility can identify feasible technical solutions that can be implemented within the phase-in period, then it should proceed to do so (subject to the necessary ECA requirements) in order to be able to meet the air standard by the time of phase-in.

Provincial air standards are used to assess a facility's individual contribution of a contaminant to air. They are set based solely on science and may not be achievable by some facilities or sectors due to unique technical or economic limitations. In these cases, industries or sectors look to technology and best practices to improve their environmental performance and comply with the Regulation.

If the technical solutions are not readily available to allow a facility to meet the air standard before the end of the phase-in period for new or updated standards or updated models, then these facilities may request a site-specific standard. A site-specific standard is an air concentration approved by an appointed director of the ministry for an individual facility that is challenged in meeting the air standard. This compliance approach focuses on actions an individual facility can take to reduce exposures to the contaminant from the air as much as possible, considering the technology that is available and best operational practices. Economic factors may also be considered.

Under this compliance approach, the individual facility would continue to assess compliance using modelling and/or a combination of modelling and measurement against a site-specific concentration for a particular contaminant.

The Regulation recognizes that sometimes significant investments may be needed to keep pace with new or updated requirements. The approach allows a facility the time needed to assess and implement possible technical or operational requirements to improve their environmental performance over time. The site-specific standard process includes a review of specific technical or operational requirements that can be put in place within timeframes approved by the ministry.

Subsection 35 (9) of the Regulation refers to the fact that a site-specific standard may be approved by the Director for period of 5 years to 10 years. Subsection 35 (10) states that it is possible to make subsequent requests to renew a site-specific standard, but that the Director may consider the number of previous requests that have been made for the source of contaminant that is the subject of the request. Upon each subsequent request, the facility will be required to submit all of the necessary information to support their request (see Chapter 1.4.3 Submission Requirements for Site-Specific Standards Requests of this Guideline). A

facility that meets a site-specific standard is in compliance with the Regulation. This process is further discussed in Chapter 2 Review of Site-Specific Standard Requests of this Guideline.

Approval of these site-specific standards is different than an Environmental Compliance Approval (ECA, formerly referred to as a Certificate of Approval) under section 20.3 of the EPA. With certain exceptions, an ECA is required for new sources of air emissions or proposed alterations to existing sources. For more information on the ECA process, please refer to the document: “Guide to Applying for Approval (Air and Noise)” (as amended).

This Guideline describes the process used to help make a decision on requests for site-specific standard approvals. The requirements for site-specific standards are set out in sections 32, 33, 34, 34.1 and 35 of the Regulation and were developed with regard to the following:

- Provincial air standards are set at concentrations that are protective against adverse effects;
- The Regulation aims to limit exposure to substances released into air that can affect human health and the environment, and requires industry to operate responsibly under a set of rules that are publicly transparent;
- Site-specific standards may be considered based on technical and economic feasibility;
- Companies must demonstrate that they are doing the best they can reasonably do today to reduce their POI concentrations;
- Local stakeholders must be given an opportunity to be made aware of the issue and potential incremental health and/or environmental risks associated with a site-specific standard for a facility;
- Local stakeholders must be given an opportunity to understand the options that were considered including the nature of the technical (and optionally, the economic) challenges reviewed;
- The company must develop and implement an action plan (subject to Director’s approval) that strives for improvement of concentrations over time;
- As site-specific standards expire, and subsequent requests are considered, the action plan will be revisited in order to re-evaluate technical (or economic) considerations which evolve over time;
- Some minimum level of risk reduction should be considered in a timely manner if emissions result in incremental exposure that not only exceeds a standard, but also exceeds the URT. The Director cannot approve a request for a site-specific standard if there are likely to be frequent² exceedences of a prescribed URT at a specified

² The Director will assess the frequency of exceedences on a case-by-case basis and will consider site-specific factors such as the nature of the contaminant and local receptors before making a decision.

human receptor (see Chapter 3 Upper Risk Thresholds of this Guideline and subsection 35 (2) of the Regulation).

This Guideline does not replace the practices set out in the ministry's Compliance Policy Applying Abatement and Enforcement Tools (Compliance Policy) (as amended). The ministry's Compliance Policy documents the ministry's approach to dealing with compliance issues and provides guidance to staff for achieving and maintaining province-wide compliance with its legislation and regulations for the protection and improvement of the environment. If compliance issues are identified after the phase-in period, and no action has been taken to pursue other compliance approaches, then the facility may be subject to abatement/enforcement measures. When non-compliance is identified with any one of the three compliance approaches, in addition to the specific requirements included in the Regulation, the ministry follows the Compliance Policy and can request that a facility develop a plan to address identified issues and achieve compliance with the Regulation. Where appropriate, this would involve the issuance or amendment of control documents such as orders or authorizing documents such as ECAs. The ministry's Compliance Policy considers the purposes of the Environmental Bill of Rights (EBR) and sets out the means by which the ministry provides public notification and consultation respecting its abatement and enforcement.

Note: Elements of the process outlined in this Guideline may be considered in the development of an action plan for facilities dealing with exceedences of standards, guideline values or other possible adverse effects caused by the discharge of contaminants with no guideline values or standards. Participation in this process does not negate any additional responsibilities and actions that a facility may be subject to under applicable Acts and Regulations.

1.4.1 Who is eligible to Request a Site-Specific Standard?

The Regulation sets out who is eligible to request a site-specific standard. Facilities affected by a change in the standard, a change in the requirements to use an approved US EPA or alternative air dispersion model, or are ordered under the EPA are eligible to submit a request to the Director for a site-specific standard in the Regulation. Subsections 32 (1) to (12) of the Regulation specify who can request a site-specific standard and when they can submit their request. This is summarized in Table 1 Summary of who can request a site-specific standard and when (subsection 32(1) to (11) of the Regulation) of this Guideline. A request can be approved for a period of five years to 10 years. If approval of a site-specific standard is granted, a proponent may make a subsequent request to renew the site-specific standard. This decision would be reviewed upon request to ensure that the technical (or economic (optional)) issues considered at the time are still relevant for that particular facility or whether or not technology or economic circumstances have changed.

Table 1: Summary of who can request a Site-Specific Standard and the timing of such requests (subsections 32(1) to (12) of the Regulation)

	Request Scenario	Opportunity to Make a Submission for a Request for a Site-Specific Air Standard
1.	An existing facility [†] within a sector identified in Schedule 4 is affected by a newer model listed in s. 6. [s.32(1)1 - revoked]*	February 1, 2007 – October 31, 2008 [s.32(5) revoked]*
2.	An existing facility [†] within a sector identified in Schedule 5 is affected by a newer model listed in s. 6. [s. 32(1)2]*	February 1, 2010 – October 31, 2011 [s.32 (6)]*
3.	A facility [†] that is not in Schedule 4 or 5 is affected by a requirement to use a newer model (i.e. section 20 applies). [s.32(1)3]	February 1, 2013 – October 31, 2017 [s.32(7)]
4.	A new facility [†] that is affected by a standard for a contaminant listed in Schedule 7. [s. 32(1)4]	Concurrent with initial ECA application or, if the standard has not yet come into force, 15 months before the new standard comes into effect or 12 months after the new standard is introduced, whichever is later. [s.32 (8) and (9)]
5.	An existing facility [†] that is affected by a standard for a contaminant listed in Schedule 7. [s. 32(1)5]	15 months before the new standard comes into effect or 12 months after the new standard is introduced, whichever is later. [s.32(9)] Note: For example, a request with respect to a standard that takes effect July 1, 2016 must have been made by April 1, 2015.
6.	A facility [†] is given a notice under s.7 by the Director before February 1, 2020 specifying that there is only one model that is able to be used. [s.32(1)6]	Within 3 years of the Director giving the notice [s.32(10)]
7.	A facility [†] is given a notice under s.7 by the Director on or after February 1, 2020 specifying that there is only one model that is able to be used and the model is not listed in s.6. [s.32(1)7]	Within 3 years of the Director giving the notice [s.32(10)]
8.	A facility [†] is given a notice under s. 20(4) or an order under s.20 (5) by the Director for the early application (“speeding up” before February 1, 2020) of the Schedule 3 standards and the newer models listed in s. 6. [s.32(1)8]	Within 3 years of the Director giving the notice or making the order [s.32(11)]
9.	A person making a subsequent request (i.e. requesting a renewal of) with respect to a site-specific standard. [s.32(1)8.1]	The subsequent request be made at least 15 months before the expiry date of the site-specific standard approval. [s.32(12)]
10.	A facility is required to make a request under this subsection as part of a plan developed or amended pursuant to an order under section 7 or 17 of the Act or paragraph 7 or 8 of subsection 18 (1) of the Act.	As specified in the order.

Note: * Dates for these items have passed but remain in the table for reference since some decisions are still current.

† Although the Regulation does not define the term ‘new facilities’, it does refer to facilities where construction of the facility began after November 30, 2005 and no application for an ECA (air) was made on or before that date.

Please note that the phase-in period for new or updated standards would normally be 5 years unless otherwise prescribed by the amending regulation that adds the new standards to the Regulation. As new standards are added to Schedule 7 of the Regulation, the window to request a site-specific standard is as set out in subsection 32(9) of the Regulation.

1.4.2 Site-specific Standards for New Facilities

In Table 1 Summary of who can request a site-specific standard and when (subsection 32(1) to (11) of the Regulation), a new facility means a facility where construction of the facility began after November 30, 2005 and no application was made for an ECA on or before that day. New facilities do not include alterations, extensions or replacements of existing facilities. The following is a further explanation of requirements that apply to new facilities:

- As of November 30, 2005, new “greenfield” facilities within sectors identified in Schedules 4 and 5 of the Regulation (see Appendix I) were required to use the more advanced approved models (see section 6 of the Regulation) to show compliance with the standards listed in Schedule 3. Where a contaminant in Schedule 3 has multiple standards with different averaging periods, the facility must show they meet all standards by the date that standard takes effect.
- A new “greenfield” facility may request a site-specific standard provided that the contaminant is listed in Schedule 7 of the Regulation. Schedule 7 will continue to be updated as new air standards are introduced. Most of the contaminants added to Schedule 7 will have phase-in periods associated with them if the standard is new or more stringent.
- In general, new facilities planning to request a site-specific standard must request it before their initial ECA is issued (see subsection 32 (8) of the Regulation). However, if contaminants are added to Schedule 7 after the new facility is in existence, a new facility may request a site-specific standard either: a) 15 months before a standard listed in Schedule 7 takes effect, or b) 12 months after the standard is added to Schedule 7, whichever is later (see subsection 32 (9) of the Regulation).
- The Regulation does not allow economic feasibility to be considered for new facilities (see subsection 33 (5) of the Regulation).

For more information regarding new facilities, please refer Chapter 2.2.2 CAMMs and 2.4 Technology Benchmarking (Risk Control) of this document.

1.4.3 Submission Requirements for Site-Specific Standards Requests

Eligible facilities must submit the following information to support their request for a site-specific standard. The request requirements are set out in section 32, 33, 34 and 34.1 of the Regulation, a broad overview of which includes:

- An Emission Summary and Dispersion Modelling (ESDM) report for all contaminants emitted from the facility prepared in accordance with section 26 of the Regulation (see ESDM Procedure Document, ADMGO and GRSSS) (see Chapter 2.2.1 ESDM

- Reports to Support a Request for a Site-Specific Standard of this Guideline and paragraph 1 of subsection 33 (1) of the Regulation);
- An Assessment of Feasible Technologies (see GRSSS (Appendix A), Chapter 2.4 Technology Benchmarking (Risk Control) of the Guideline and subsection 33 (1), paragraphs 3, 4, 5 and 6 of the Regulation) which lists, analyzes and ranks all of the methods that are used by other persons, or are available for use, to reduce the concentrations of the contaminant at POIs, including methods such as the use of pollution control technology or changes to equipment, processes or materials;
 - An Economic Feasibility Analysis (**Optional**) (see GRSSS, Chapter 2.5 Economic Considerations of this Guideline and subsection 33 (4) of the Regulation);
 - A report summarizing pre-submission consultation with affected local stakeholders including a list of the questions asked and comments made by persons who attended the public meeting and the responses of the person making the request (see Chapter 2.6 Stakeholder Involvement of this Guideline and subsection 33 (1), paragraph 8 of the Regulation);
 - An Action Plan to implement and monitor progress (see Chapter 2.7 The Action Plan and 2.8 Continuous Improvement of this Guideline and subsection 33 (1) paragraph 7 or subsection 33(4) paragraph 4 of the Regulation).

In addition, the facility is required to provide the ministry follow up verification that the steps outlined in the action plan that are imposed as conditions in the approval, have been implemented (see Chapter 2.9 Verification/Monitoring of this Guideline and subsections 35 (6) and 35 (7) of the Regulation).

This Guideline supports requirements set out in the Regulation for requests for a site-specific standard(s) and provides more detail on the information required to be submitted. This information will be considered as part of a framework for managing risks in order to determine whether or not a site-specific standard is acceptable. This Guideline also sets out factors to consider when evaluating exceedences in the “ALARA Region” depicted in Figure 1 MOECC’s Framework to Manage Risks under the Regulation and assessing the need for more timely action in the Upper Risk Threshold Region.

1.4.3.1 Sector-based approaches for Site-Specific Standards

The Regulation requires that each facility submit individual requests for a site-specific standard. All components of the request for a site-specific standard (e.g. ESDM report, stakeholder consultation, etc.) must meet the requirements of the Regulation (sections 32 to 35). In some cases, a sector may want to develop components of a technology benchmarking or economic feasibility analysis (optional) as a sector. Responsibility for stakeholder consultation may also be shared by a sector so long as individual facilities meet the requirements of the Regulation (e.g. notification of local stakeholders, etc.). Each facility may attach this sector-based information as part of their individual requests for a site-specific standard. Pre-submission consultation with the ministry is required before proceeding with a sector-based approach for site-specific standards. Stakeholders may also contact the ministry to discuss the possibility of developing a sector-based technical standard compliance approach. Further guidance on the

sector-based approach is provided in Chapters 2.4 Technology Benchmarking (Risk Control), 2.5 Economic Considerations and 2.6 Stakeholder Involvement.

1.5 Overview of Technical Standards Process

As provincial air standards are set based solely on science, in some cases they may not be achievable by a facility or a sector due to unique technical or economic limitations. Similar to site-specific standards, the Regulation allows those industries or sectors that are challenged in meeting an air standard to be regulated by technology-based solutions and best practices. Some facilities may never meet the air standard and instead will be regulated under a site-specific or technical standard compliance approach under the Regulation.

Development of a technical standard includes an analysis to have a better understanding of the specific sources of contaminant(s) for that sector, benchmarking technology to address the key sources of the contaminant(s), and consideration of economic issues that relate to the sector. When the ministry develops a technical standard, representative facilities in the sector are compared to what other facilities in the world are required or capable of achieving to determine whether or not the same can be required of Ontario facilities. The goal is to have a more efficient tool to better manage emissions from certain industry sectors, and reduce overall exposure to industrial air pollution in the community. A facility that meets its obligations under a technical standard is in compliance with the Regulation for the registered contaminants.

1.5.1 Who is eligible to Request a Technical Standard?

In 2009, the technical standards compliance approach was introduced into the Regulation to address sector-wide issues. The Minister now has the authority to establish technical standards for any sector, provided certain criteria are met. Technical standards are technology-based approaches to managing air emissions. They allow for sector-wide management of air pollution issues rather than a facility-by-facility approach. Once the technical standard is published, any facility within that same sector has the option to register under it. There are two types of technical standards:

- Industry standards (deals with all sources of specified contaminants from a specific sector)
- Equipment standards (only addresses one source of contaminant, but may apply to one or multiple sectors)

Sectors are eligible to request an industry standard if there are at least two facilities in a sector that cannot meet at least one air standard; an equipment standard may be requested if at least two facilities in the class that are located in Ontario have the source of contaminant. Once this criterion is met, the technical standard can include a wide range of contaminants. The Minister's authority to publish a technical standard for a sector is set out in section 38 of the Regulation.

Technical Standards publication

38. (1) The Minister shall ensure that, with respect to the Technical Standards publication, all of the following criteria are met:

- 1. Every technical standard set out in the Technical Standards publication is specifically identified in the publication as an industry standard or an equipment standard.***
- 2. For each industry standard that is set out in the Technical Standards publication,***
 - i. the Technical Standards publication specifies which classes of facilities the industry standard applies to, and those classes are identified with reference to NAICS codes,***
 - ii. the Technical Standards publication specifies which contaminants the industry standard applies to,***
 - iii. the Technical Standards publication sets out the steps that shall be taken to comply with the industry standard, and***
 - iv. the Technical Standards publication sets out the time periods, if any, within which the steps specified under subparagraph iii shall be taken.***

One of the criteria to consider for an industry standard is whether or not the Technical Standards publication is more efficient than having the Director consider separate requests under section 32 to set site-specific standards for the contaminant that would otherwise apply to facilities in the class.

An industry sector may request the ministry develop a technical standard, or the ministry may identify certain sectors with emission sources that would be better controlled, monitored or managed by the technical standard compliance approach.

Once developed, a technical standard specifies the classes of facilities and the contaminants to which it applies, prescribes the steps to be taken to address the sources of a contaminant and timeframes for implementation. A facility can also choose the contaminants for which it registers. When a facility is registered for a technical standard, it must adhere to the technical and operational requirements that are published in the technical standard for managing emissions of the contaminant(s). If all sources of a contaminant from a facility are addressed by the technical standard, and the facility is registered under this compliance approach, then the facility is deemed to be in compliance with the Regulation for the contaminant. If not, the additional sources will need to be modelled under the air standard compliance approach.

Reporting requirements may also be included in the technical standard that is developed so facilities can demonstrate that they are maintaining an expected level of environmental performance. Technical standards do not expire. The decision to update a technical standard

may be based on the availability of newer technologies, or updated science on a contaminant that suggests more controls are needed, or at the request of the sector. For more information on public consultation, please see “Guide to Applying for Registration to the Technical Standards Registry – Air Pollution”, September 2016, version 2.0, as amended.

Facilities in a sector that are operating under a technical standard may not meet one or more of the air standards; however, the focus on best practices and lower emissions reduces risks to local communities. In addition, the implementation of emissions controls in multiple facilities may contribute to regional air quality goals for criteria air contaminants and persistent pollutants. This approach also supports a transition to cleaner production in Ontario.

2.0 REVIEW OF SITE-SPECIFIC STANDARD REQUESTS

A site-specific standard is a standard for an individual facility that is approved by a Director, as appointed under the Regulation (i.e., an authorized official of the ministry). The site-specific standard approach focuses on actions to reduce emissions to air as much as possible considering the technology that is available and best operational practices. Economic factors may also be considered. A facility that meets its site-specific standard is in compliance with the Regulation.

This Chapter discusses the site-specific standards process and how risk management concepts are used to guide decision making. The Canadian Standards Association’s “Q850 Risk Management: Guideline for Decision Makers” and other similar documents were considered and adapted as a guide to manage risks. The process for site-specific standards (SSS) is outlined in Figure 2: Risk-Based Decision Making Framework for Site-Specific Standard. It consists of the following key elements which are further described in this Chapter:

- Initiation and Scope Definition (Chapter 2.1)
- Preliminary Analysis (Scientific and Technical Assessment) (Chapter 2.2)
- Risk Evaluation (Chapter 2.3)
- Risk Control (Technology Benchmarking) (Chapter 2.4)
- Economic Considerations (optional) (Chapter 2.5)
- Action/Monitoring (Chapter 2.7)
- Stakeholder Involvement (Chapter 2.6)

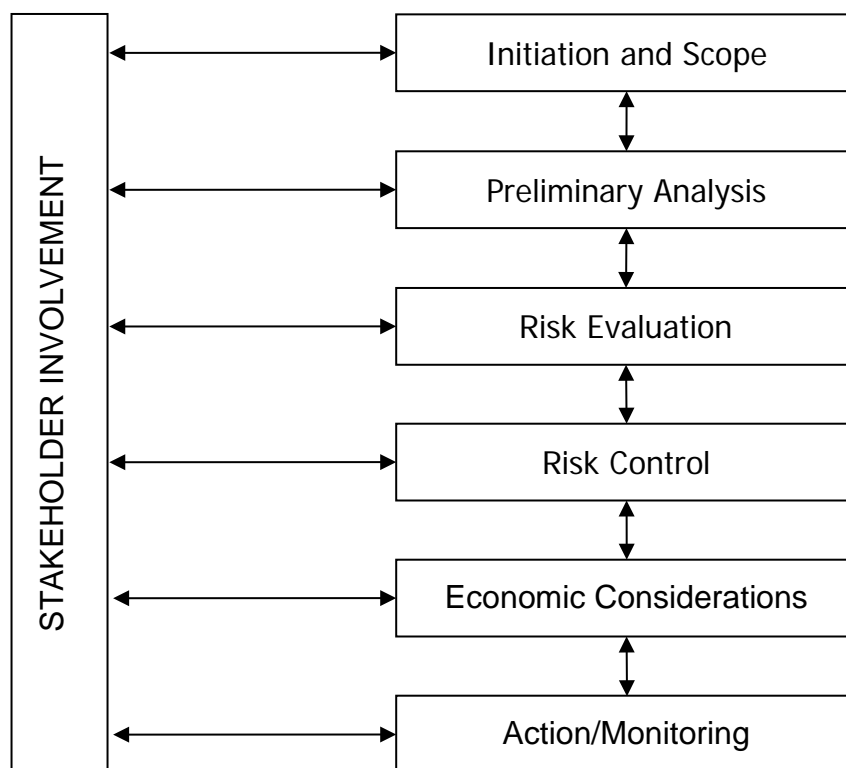
The site-specific standard process sets out the need for timely action to be taken to reduce emissions, where necessary, from key contributing sources of a contaminant, thereby reducing risks to local communities. Each step plays an important part in determining the appropriate plan of action for those eligible to request a site-specific standard (as outlined in Chapter 1.4.1 Who Is Eligible To Request a Site-Specific Standard? of this Guideline and subsection 32 of the Regulation).

Stakeholder participation is essential for success and should be kept in mind throughout all of the steps of the risk-based decision-making process. Stakeholder involvement should promote

development of a meaningful understanding by all stakeholders, and through this understanding, promote implementation of viable risk treatment solutions. Stakeholders may include industry, local community associations, public health agencies, and Environmental Non-Government Organizations (ENGOS). First Nation representatives may also have an interest in these requests. For more information, see Chapter 2.6 Stakeholder Involvement of this Guideline.

Guidance for each of the decision steps identified in Figure 2 Risk-Based Decision Making Framework for Site-Specific Standards is contained in this Chapter. This is the information that will be used to support requests to the Director for a site-specific standard.

Figure 2: Risk-Based Decision Making Framework for Site-Specific Standards



2.1 Initiation and Scope Definition

The process is normally initiated when an air standard exceedence is confirmed and a site-specific standard compliance approach is being considered. The assessment of an estimated POI concentration is typically done using an approved dispersion model as set out in the Regulation and is normally documented in an ESDM report. This assessment can also be done by using both monitoring and modelling together. ESDM reports are required to be prepared in accordance with section 26 of the Regulation, with guidance from the ESDM Procedure Document, the ADMGO, and GRSSS. A facility may have been required to do or submit an ESDM report under the following scenarios:

- submitted as part of the ECA application process in accordance with section 22 of the Regulation;
- prepared and submitted to the ministry Director (local District Office) if there is any reason to believe there may be an exceedence of a URT in Schedule 6 as per subsection 30 (4) of the Regulation;
- prepared by facilities in sectors listed in Schedules 4 and 5 (see Appendix I). These reports must also be updated and maintained on site in accordance with sections 23, 25 and 27 of the Regulation;
- submitted to the ministry if required by the Director in accordance with section 24 of the Regulation;
- submitted as part of a request for a site-specific standard in accordance with paragraph 1 of subsection 33 (1) of the Regulation.

ESDM reports prepared for the purposes of sections 24, 30, and 33 (1) must also be updated and maintained on site in accordance with sections 25 and 27 of the Regulation unless, in some cases, the Director is satisfied that there is not likely to be a contravention or adverse effect.

It is recommended that the facility identify key stakeholders early in the process and begin planning for stakeholder participation. While it is desirable to involve all of the stakeholders in the process as early as possible, it is likely that the primary stakeholders initially will include, as a minimum, the facility, the ministry and other regulatory agencies. Once the information to support the request for a site-specific standard is available, section 34, and, if required by the Director, section 34.1 of the Regulation require consultation with specific local stakeholders (for more information see Chapter 2.6 Stakeholder Involvement of this Guideline).

Note: Elements of the framework for managing risk may also be used at the discretion of the ministry for abatement purposes, to address an exceedence of a standard, guideline value and/or to deal with a contaminant that does not have a guideline value or standard that may result in an adverse effect.

2.2 Preliminary Analysis

Chapter 2.1 Initiation and Scope Definition of this Guideline summarizes who is required to prepare, submit, update and maintain ESDM reports. If a preliminary analysis of the information shows an exceedence, the Regulation sets out requirements to refine the information and modelling inputs. Examples of information contained in the ESDM report that can be refined include:

- Emissions Estimates - Higher data quality can be developed using:
 - validated source testing, in accordance with paragraph 2 of subsection 11 (1) of the Regulation, for sources with stacks or vents (see guidance in the ministry's ESDM Procedure document); and/or
 - a combined assessment of modelled and monitoring results (CAMM) in accordance with a plan approved under paragraph 3 of subsection 11 (1) of the Regulation. CAMMs are typically done for sources of fugitive air emissions

(see guidance in GRSSS and the Technical Bulletin “Combined Assessment of Modelled and Monitored Results (CAMP) as an Emission Rate Refinement Tool” available from the ministry’s website);

- Operating Conditions – More precise operating condition(s) of the facility can be used (sections 10 and 12 of the Regulation) (see guidance in ESDM Procedure document);
- Approved Dispersion Model – A more appropriate approved dispersion model can be used to assess concentrations (sections 6 and 7 of the Regulation) (see guidance in ADMGO document); and
- Meteorological Data - Site-specific meteorological data must be used as inputs to the model (section 13 of the Regulation) (see guidance in ADMGO document).

2.2.1 ESDM Reports to Support a Request for a Site-Specific Standard

Facilities preparing ESDM reports to support a request for a site-specific standard should refer to the ESDM Procedure Document, ADMGO and GRSSS for more information. These ESDM reports would be “refined” ESDM reports. Subsection 33 (6) of the Regulation requires that the contaminant(s) that are the subject of the request be modelled using an approved US EPA model (e.g. AERMOD) as if section 20 and Schedule 3 standards in the Regulation³³ applied. This is required even though a facility may not be yet be required to use the more advanced US EPA approved models listed in paragraphs 1 to 4 of subsection 6 (1) for compliance assessment for other contaminants it emits. The facility would be required to use the approved US EPA models to assess compliance for the contaminant(s) that are the subject of the request. Section 33 also requires that an ESDM report submitted in support of a site-specific standard request include both operational scenarios in section 10 of the Regulation as well as site-specific meteorological data approved by the Director.

The Regulation states:

Under Section 33 of the Regulation – Information to be included with request:

... “33(6) If a person makes a request under section 32 and section 20 does not apply to the person in respect of the contaminant that is the subject of the request, section 20 shall be deemed to apply to the person in respect of the contaminant for the purpose of preparing the report required by paragraph 1 of subsection (1).

(7) Despite subsections 10 (1) and (2), a person who prepares a report required by paragraph 1 of subsection (1) shall, for the contaminant that is the subject of the request, use an approved dispersion model in accordance with both of the scenarios described in subsection 10 (1), and the report shall set

³ If section 7 of the Regulation applies to the facility, the contaminant must be modelled using the model that has been required under that section.

out separately the information relevant to each scenario.

(8) Paragraphs 1 and 2 of subsection 11 (1) do not apply to a person who prepares a report required by paragraph 1 of subsection (1).

(9) Despite subsection (8), a person who prepares a report required by paragraph 1 of subsection (1) may use an approved dispersion model with an emission rate determined in accordance with paragraph 2 of subsection 11 (1), if the Director is of the opinion that the report will accurately determine the concentrations of contaminants.

(10) Paragraphs 1, 1.1, 2 and 2.1 of subsection 13 (1) do not apply to a person who prepares a report required by paragraph 1 of subsection (1)”...

Sections 32 to 35 of the Regulation provide the authority for the site-specific standards process. To be clear, a facility that cannot meet a new Schedule 2 air standard (i.e. the contaminant is listed in Schedule 7 to the Regulation) is also eligible to request a site-specific standard. For the contaminant that is the subject of the request, the more advanced US EPA model (AERMOD) will be required and assessed against Schedule 3 standards. While the facility is encouraged to use the approved US EPA model for all contaminants, it is possible to use the models in the Appendix to Regulation 346 (if applicable) to assess contaminants that are not the subject of the request (up until February 1, 2020).

Subsection 33 (10) of the Regulation also sets out that the most site-specific meteorological data must be used, as approved by the Director, to support the request for a site-specific standard. This means meteorological data referenced in subsection 13 (1), paragraphs 3 or 4 of the Regulation must be used and approved by the Director. Where regional meteorological data is the best data available, this will be considered but is subject to approval by the Director. Site-specific meteorological data is important because a request for a site-specific standard will also consider the frequency of exceedences of the standard (see Chapter 4.0 Factors To Consider When There Are Exceedences of this Guideline). As per subsection 35 (12) paragraph 2, frequency shall be considered in the decision for approval of a site-specific standard. Site-specific meteorological data is also important in assessing the pattern and geographic extent of exceedences. For more information, see Chapters 2.3.1 Identification of Receptors and 4 Factors to Consider When There Are Exceedences of this Guideline.

All ESDM reports submitted to support requests for a site-specific standard would also be required to be updated annually and maintained as per sections 25 and 27 of the Regulation (unless the Director is satisfied that there is not likely to be a contravention or adverse effect).

2.2.2 CAMMs

Section 12 of the Regulation requires all facilities, including new facilities, who model an exceedence of a standard to “refine” their emissions as described in this Chapter and the ESDM Procedure Document or proceed directly to abatement (subsection 12 (3)). Refinement

under section 12 would involve submission of plan under paragraph 2 or 3 of subsection 11(1) of the Regulation.

If the request for a site-specific standard is for a new facility that has not yet been constructed, then the plan submitted under subsection 11(1) paragraph 2 or 3 would obviously not include existing monitoring data since it would not be possible to undertake a CAMM. Hence, plans submitted for new facilities that have yet to be constructed could include a proposal to undertake source testing or a CAMM once the facility is operating. This would likely be considered in the final approval documents for this type of facility especially if there were stack or fugitive sources that were not well characterized in the ESDM report. It may also be useful to look for data from other similar facilities that may be used to refine emission inputs from the model.

Source of contaminant emission rates

“11. (1) An approved dispersion model that is used for the purposes of this Part shall be used with an emission rate that is determined in one of the following ways for each source of contaminant and for each averaging period applicable to the relevant contaminant under section 19 or 20, whichever is applicable:

- 1. The emission rate that, for the relevant averaging period, is at least as high as the maximum emission rate that the source of contaminant is reasonably capable of for the relevant contaminant.***
- 2. The emission rate that, for the relevant averaging period, is derived from site-specific testing of the source of contaminant that meets all of the following criteria:***
 - i. The testing must be conducted comprehensively across a full range of operating conditions.***
 - ii. The testing must be conducted according to a plan approved by the Director as likely to provide an accurate reflection of emissions.***
 - iii. The Director must be given written notice at least 15 days before the testing and representatives of the Ministry must be given an opportunity to witness the testing.***
 - iv. The Director must approve the results of the testing as an accurate reflection of emissions.***
- 3. The emission rate that, for the relevant averaging period, is derived from a combination of a method that complies with paragraph 1 or 2 and ambient monitoring, according to a plan approved by the Director as likely to provide an accurate reflection of emissions. O. Reg. 516/07, s. 7 (1); O. Reg. 507/09, s. 9 (1).”***

2.3 Risk Evaluation

Air standards are generally assessed the maximum POI concentration of a contaminant because if compliance is achieved at the maximum concentration, it is reasonable to assume that it will be achieved at all other locations as well. However, when dealing with requests for a site-specific standard, facilities are required to provide more information to support their request by identifying potential receptors, the magnitude of the exceedence, and the frequency of the exceedence (see Chapters 2.2.1 ESDM Reports To Support a Request For a Site-Specific Standard and 4 Factors To Consider When There Are Exceedences of this Guideline). A request for a site specific standard must include the information set out in subsection 33 (1). Subsection 33 (1) begins as follows:

Under Section 33 of the Regulation – Information to be included with request:

“(1) A person who makes a request under section 32 shall include the following in the request:

0.1 A statement specifying an averaging period for the purpose of the request in accordance with subsection (1.1).

1. A report prepared in accordance with section 26.

2. If, according to the approved dispersion model that was used for the purpose of preparing the report referred to in paragraph 1, discharges of the contaminant may result in a contravention of section 20 because of the concentration of the contaminant at a point of impingement,

- i. a written statement or map identifying the location of the point of impingement,***
- ii. a written statement specifying the highest concentration of the contaminant that the approved dispersion model predicts for the point of impingement, and***
- iii. a written statement specifying the number of averaging periods for which the approved dispersion model predicts that discharges of the contaminant may result in a contravention of section 20 because of the concentration of the contaminant at the point of impingement, expressed as a percentage of the number of averaging periods in,***
 - A. a period equal to the length of the period over which the meteorological data was collected, if the approved dispersion model was used in accordance with local or site-specific meteorological data described in paragraph 3 of subsection 13 (1), or***
 - B. a period equal to the length of the period that was used for the purposes of the computational method, if the approved dispersion model was used in accordance with meteorological data obtained from a computational method in accordance with paragraph 4 of subsection 13 (1). ...”***

The additional information identified in subsection 33 (1) paragraph 2 must be submitted with a request for a site-specific standard. In deciding whether or not to grant a site-specific standard, the Director will consider receptors and frequencies as per subsection 35 (2) as well as paragraph 2 of subsection 35 (12) of the Regulation. In most cases, the inclusion of the following information should satisfy the requirements of paragraph 2 of subsection 33 (1) of the Regulation:

- A written statement or contour map that identifies the location and magnitude of the POI concentrations for the scenario that results in the maximum POI concentration for the contaminant(s);
- A written statement of the frequency of occurrence of the exceedences and the magnitude at all of the locations set out in subsection 30(8) of the Regulation as well as at the maximum POI concentration based upon the use of Director approved site-specific meteorological data in conjunction with an approved dispersion model (see ADMGO for more information on the appropriate use of an approved dispersion model).

The ESDM reports must include, among other things, the following information:

- Incorporation of emission rates determined as part of a combined modelling/monitoring assessment (section 11 of the Regulation) (subsection 33 (8) – see also subsection 33 (9) which allows for source testing under paragraph 2 of subsection 11 (1) if the Director is of the opinion that the report will accurately determine the concentrations of contaminants);
- Assessment of the frequency of exceedences based on any available monitoring data as well as the final approved dispersion model in the ESDM report (s. 33 (1) 2);
- Assessment of the operating condition(s) that gives rise to the maximum POI concentration as required by subsection 33 (7) of the Regulation. These scenarios as well as the future operating condition based on the facility's request must be summarized in the ESDM report (s.33 (7));
- A review of the contribution and significance of various sources to total emissions and maximum POI concentrations (see also Chapter 2.4.3 Step 3: Technically Feasible Options That Are Ranked/Benchmarked of this Guideline and GRSSS);
- Information on the frequency of exceedences (see Chapter 2.3.1 Identification Of Receptors) should be summarized in a separate section or chapter of the ESDM report which will be provided to ministry toxicologists for their review.

This information is reviewed as part of the site-specific standard request.

2.3.1 Identification of Receptors

One of the first steps in the assessment process is the identification of the areas of interest based on where the modelling shows exceedences of the ministry's air standards. The areas of interest include all areas where an exceedence is modelled or monitored. The maximum POI concentration and its location must always be used in an assessment. If the maximum concentration for an exceedence is located in an area with no human or specified receptors, there is still an expectation that it be assessed. As part of a request for a site-specific standard, the ministry may consider an additional amount of time to address these exceedences provided the land-use or receptors in this area do not change, the facility can demonstrate that there are no known or anticipated adverse effects on the receptors during the period of the approval, and the property owner and occupants are notified in writing. If the facility can demonstrate that

there are no known or anticipated adverse effects on the receptors during the duration of the approval period, it's possible that no further action will be requested. The affected property owner and occupants must also be identified as a key stakeholder and be made aware of the situation and the decision made as part of the site-specific standards process.

If there are exceedences of the ministry's air standards at places where members of the public may be exposed to the contaminant, these must also be assessed and addressed as part of the action plan. Subsection 33(1) paragraph 2 of the Regulation requires frequency of exceedence at all POIs to be assessed. However, in most cases, assessment of frequency of exceedences at the locations set out in subsection 30 (8) of the Regulation as well as at the maximum POI concentration will suffice. Frequency and related information for exceedences at such locations must be included in the ESDM report (see also Chapter 4 Factors To Consider When There Are Exceedences of this Guideline). Information on human receptors listed in subsection 30 (8) of the Regulation, and their frequency of exceedences at those locations as well as at the maximum POI should be summarized in a separate section or chapter of the ESDM report which will be provided to our toxicologists for their review.

Under Subsection 30 (8) of the Regulation – Upper Risk Thresholds:

“(8) The following places are the places referred to in subsection (7) and in subsection 35 (2):

- 1. A health care facility.***
- 2. A senior citizens' residence or long-term care facility.***
- 3. A child care facility.***
- 4. An educational facility.***
- 5. A dwelling.***
- 6. A place specified by the Director in a notice under subsection (9) as a place where discharges of a contaminant may cause a risk to human health.***

(9) For the purpose of paragraph 6 of subsection (8), the Director may give written notice to a person who is required to notify the Director under subsection (3) stating that the Director is of the opinion that the discharge may cause a risk to human health at a place specified in the notice.”

Paragraph 6 of subsection 30 (8) above allows the Director to specify by notice a place where the discharge may be of concern to human health. If the Director specifies such a location, then that location must be assessed in terms of its POI concentrations and frequency of exceedences of the standard(s).

As part of the consultation process associated with site-specific standards, a facility requesting a site-specific standard is required to host a public meeting and notify certain stakeholders of the process (see Chapter 2.6 Stakeholder Involvement). Stakeholders to be notified include the

local medical officer of health, the public health unit, municipalities and any property owner where an exceedence of the standard is predicted by the approved model. The community meeting is a good opportunity to suggest that additional locations be assessed for frequency of exceedences.

As required by subsections 35 (1) and (2) of the Regulation, the information on frequency of exceedences will be one of the factors that the Director will consider in determining whether or not an approval of a site-specific standard will be granted (see also Chapter 4 Factors To Consider When There Are Exceedences of this Guideline).

Under Section 35 of the Regulation – Approval of site-specific standard:

“35. (1) The Director may approve a request under section 32 and set a site-specific standard for the contaminant that is the subject of the request if,

.... (b) the Director is of the opinion that,

...

(ii) the difference between the standard set out in Schedule 3 for the contaminant for the averaging period specified in paragraph 0.1 of subsection 33 (1) and the site-specific standard set by the Director for the contaminant is the minimum difference necessary to enable the person to comply with section 20 with respect to the contaminant, and

(iii) there is no public interest reason sufficient to require the denial of the request.

(2) Despite subsection (1), the Director shall not approve a request under section 32 to set a site-specific standard for a contaminant if the contaminant is listed in Schedule 6 and the Director is of the opinion that the site-specific standard is likely to permit discharges of the contaminant that too frequently result in the concentration of the contaminant at a point of impingement located on a place referred to in subsection 30 (8) exceeding the other time period upper risk threshold set out for the contaminant in Schedule 6.”

2.4 Technology Benchmarking (Risk Control)

Technology benchmarking is a key component of both the site-specific standard and technical standards process. The purpose of a technology benchmarking assessment is to ensure that the action taken represents best practices in limiting off-site impacts of a contaminant(s). One of the first steps is to identify the key sources that contribute most to local exposures or the POI concentrations. In the context of this Guideline, managing risks depends to a large extent, on

the identification of applicable and feasible technical solutions or operational practices for key sources, and the benchmarking of these solutions against: (i) other facilities that emit the same contaminant; (ii) other facilities that are in the same business sector; and (iii) requirements in other jurisdictions.

The technology benchmarking and the identification of best practices is a regulatory requirement of the site-specific standards process as set out in paragraphs 3 through 6 of subsection 33 (1) (see below). It is recommended that the required information be compiled into a technology benchmarking report that is submitted in support of a request for a site-specific standard.

Under Section 33(1) of the Regulation – Information to be included with request:

- “... 3. A list of all the methods that are used by other persons, or are available for use, to reduce concentrations of the contaminant at any point, including methods such as the use of pollution control technology or changes to equipment, processes or materials.***
- 4. An analysis of the methods identified under paragraph 3, and combinations of those methods, to determine which are technically feasible with respect to the sources of contaminant to which the request relates.***
- 5. A list of the methods and combinations of methods that are determined under paragraph 4 to be technically feasible.***
- 6. A ranking of the methods and combinations of methods identified under paragraph 5, based on the maximum concentration of the contaminant that, according to an approved dispersion model, would result at a point of impingement if each method or combination of methods were used with respect to the sources of contaminant to which the request relates.***
- ...”***

Options to control or reduce air emissions can vary for different sectors as well as for facilities within the same sector. They can range from cleaner production, to pollution prevention, to end-of-pipe (add-on controls), each with inherently different qualities, costs, and environmental performance. While end-of-pipe options are essential for many industries and processes, preference should always be given to cleaner production options. Efficiency, resource conservation, raw material substitution, process modification, product substitution, and incorporating environmental principles into designing and delivering services are valued higher than end-of-pipe controls. Sometimes improved operational practices can also be effective.

As described in Chapter 1.4.3 Submission Requirements For Site-Specific Standards Requests, a request for a site-specific standard, under subsection 32 (1) of the Regulation must include the information set out in subsection 33 (1). In general, a technology benchmarking report can

be used to achieve the information requirements of paragraphs 3 through 6 of subsection 33 (1) of the Regulation using the following approach. Further guidance on completing a Technology Benchmarking Report is provided in GRSSS (Appendix A). The approach is briefly summarized below.

- Step 1. Developing a list of all methods available for use to reduce POI concentrations based upon,
- a comparison of methods used by other facilities within the same or similar industrial sector to reduce concentrations of the contaminants. This must consider both significant sources and overall facility reduction methods;
 - a review of requirements and pollution control options, from other jurisdictions (e.g., the United States and Europe, etc.) that are relevant to the facility and will reduce air emissions and contribute to reduced POI concentrations of the contaminant;
 - an assessment of the possibility of transferring technology and pollution control options from other industrial sectors using the same or similar contaminants; and
 - a consideration of inherently less polluting processes/practices, including pollution prevention and changes in materials used within and produced by the facility.
- Step 2. Analyzing the methods identified under Step 1 and (if applicable) combinations of those methods which are technically feasible; and an explanation of why other viable options are not feasible for that facility.
- Step 3. Rank technically feasible options and combinations of options that are based upon a top-down analysis approach⁴ to reduce air emissions that will in turn contribute to reduced POI concentrations for the contaminant(s) that are the subject of the request.
- Step 4. Document and Report findings.

A primary objective of assessing pollution control options is to ensure consideration of all available and emerging technical solutions. The identification of all available options ensures that the maximum reduction in concentrations is identified. Technology benchmarking also allows for the relative comparison of environmental performance of current and proposed pollution control options within a given industrial sector.

⁴ “Top-down analysis” is an approach developed by the US EPA that can be used to identify, in a systematic manner, the most effective pollution control strategy for a source or combination of sources. See the US EPA document, [“New Source Review Workshop Manual Prevention of Significant Deterioration and Nonattainment Area Permitting”](#), Draft, October 1990.

Subsection 35 (9) of the Regulation allows a Director to approve a facility to operate with a site-specific standard for a minimum of 5 years and up to 10 years. Under subsection 35 (10), a facility can make a subsequent request for renewal of a site-specific standard. As such, regular up-dates to the technology benchmarking assessment will be necessary for each subsequent request. The Director may consider the number of previous requests and the extent of the up-dates to the technology benchmarking reports may depend upon the completeness and success of earlier technology benchmarking assessment in reducing off-site impacts, local input, and demonstrating that best practices are employed to reduce POI concentrations and limit off-site impacts as much as possible.

Technically feasible pollution control strategies or combinations that result in a POI concentration that is either as close to the standard as possible or results in meeting the air standard is always the preferred approach. The economic implications of implementing the *preferred technically feasible pollution control combination* may be considered in a separate economic feasibility analysis (see Chapter 2.5 Economic Considerations of this Guideline, GRSSS and subsection 33 (4) of the Regulation).

Note: Sector-based Approaches

Subsection 33 (1) of the Regulation sets out the requirement for assessing *preferred technically feasible pollution control combinations*. An analysis of all available technically feasible alternatives must be submitted by a facility to support a request for a site-specific standard. Technology benchmarking reports may be developed for a sector (or part of a sector) if the facilities in the sector share common technical challenges in reducing contaminant concentrations. Individual facilities in that sector may then use this technology benchmarking report to support their own individual requests for a site-specific standard.

Alternatively, the sector may request the ministry develop a Technical Standard (see Chapter 1.5 Overview Of Technical Standards Process of this Guideline). Technical standards are technology-based approaches to managing air emissions. They allow a sector-wide approach to managing air pollution rather than a facility-by-facility approach. For more information on sector-based technical standards, please refer to the Technical Standard Publication (and sections 38 to 44 of the Regulation).

Technology benchmarking is a key part of the development of a proposed technical standard. Hence, similar principles would apply.

Pre-submission consultation with the ministry is required for sector-based approaches.

2.4.1 Step 1: Identify Technical Options for Contaminant(s)

All technical options available to reduce concentrations of contaminants that are the subject of the request (both from all dominant sources of these contaminants and overall facility-wide reduction options) must be documented. This requires the development of technical methods that consider:

- a) Materials: The assessment shall consider the various raw materials and how they affect emissions of the contaminant(s) that are the subject of the request.
- Are there product substitution opportunities?
 - Are there raw material substitution opportunities?
- b) Processes: The assessment shall consider a comprehensive review of both the process and operating practices in order to determine:
- Are there opportunities for emission reductions through a change in the overall approach to production?
 - Are there inherently less polluting processes/practices or pollution prevention options?
- c) Add-On-Controls: The assessment shall include a review of add-on controls for each dominant source of the contaminant(s) that is the subject of the request.

The identification of pollution control options shall include a review of requirements from other jurisdictions to reduce concentrations; a review of other facilities that emit the same contaminant or that may use similar technology; and other related industries where information to control similar emissions may be relevant. An important part of the analysis is to determine which source(s) of the contaminant are contributing most to the POI concentrations or exposures in the community. A review of monitoring data and modelling information can be used to help determine this information. For more information, see GRSSS.

The review of options shall include applicable codes of practice, guidelines and best practices, established or recommended by any provincial or federal authority, local or international organization and industry association. One of the primary sources of information is the [United States Environmental Protection Agency](#) (US EPA). For example, the Maximum Achievable Control Technologies (MACT) standards for hazardous air pollutants and National Emission Standards for Hazardous Air Pollutants (NESHAP) are good sources of information for comparison of US technology requirements for specific sector processes. For criteria pollutants, the US EPA's regulatory framework requires facilities to install and/or determine Best Available Control Technology (BACT); Reasonably Available Control Technology (RACT); or Lowest Achievable Emission Rates (LAER) technologies for their facilities depending on whether or not they are located in an airshed that exceeds or meets the prescribed National Ambient Air Quality Standards. Along with the US EPA RACT-BACT-LAER Clearinghouse (which lists previously used technology solutions for criteria pollutants), the New Source Performance Standards (NSPS) are also valuable sources of information for benchmarking assessments.

In benchmarking and assessing the environmental integrity of the technically feasible options, the following sources of information benchmarks must be considered where available. Other possible sources of information are identified in Table 2 Other Sources of Information for Benchmarking Analysis.

MACT – Maximum Achievable Control Technology

LAER - Lowest Achievable Emission Rate

BACT - Best Available Control Technology

RACT - Reasonably Available Control Technology

Environment Canada and the [Canadian Council of Ministers of the Environment \(CCME\)](#) documents where several sector-specific codes of best practices and emissions guidelines have been developed with some minimum environmental performance targets.

Table 2: Other Sources of Information for Benchmarking Analysis

The following information sources are available for the technology benchmarking review process. This list of agencies/information is provided here for reference only and is not intended to be all inclusive.

- a) [Pollution Prevention](#), Environment Canada
- b) [Environmental Technology Verification](#), Environment Canada
- c) [Clean Air Technology Center](#), United States Environmental Protection Agency
- d) [Compliance Assistance Program](#), California Environmental Protection Agency
- e) [Best Available Control Technology \(BACT\) Clearinghouse Database](#), Air Resources Board, California Environmental Protection Agency
- f) [Clean Air Assistance Program](#), Department of Environmental Quality, State of Michigan
- g) [Pollution Prevention Technical Assistance](#), Compliance Assistance Center, Texas Commission on Environmental Quality
- h) [Division of Technology, Industry and Economics, United Nations Environment Programme](#)
- i) [Air Pollution Control Cost Manual, United States Environmental Protection Agency](#)
- j) [International Institute for Applied Systems Analysis](#)
- k) [Department for Environment, Food and Rural Affairs, United Kingdom](#)
- l) [German Federal Environment Ministry](#)
- m) [National Association of Clean Air Agencies \(NACAA\)](#)

2.4.2 Step 2: Eliminating Options that are not Technically Feasible

Feasibility means that the technology can be reasonably installed and operated on the source under consideration. A preliminary screening of identified technologies must be performed to identify viable technical solutions to reduce POI concentrations. For example, screening-out technically infeasible options might consider site-specific technical issues or space limitations; and/or a significant lack of performance data for options that are based upon new or emerging

technologies. This review shall be supported by an explanation of why eliminated options are not technically feasible for that facility or sector. In particular, a detailed analysis is required to support eliminating options that would otherwise be commonly considered applicable to processes within the same industrial sector or to sources emitting similar contaminants.

2.4.2.1 Multiple Dominant Sources: Identifying Combinations

In situations where there are multiple dominant sources of the contaminant(s) of interest, the facility shall identify combinations of technologies that could be used to control the various sources at the facility that are contributing significantly to the POI concentrations. In such cases, each technology combination shall be treated as a pollution control strategy to be assessed. For more information, please refer to GRSSS.

2.4.3 Step 3: Technically Feasible Options are Ranked/Benchmarked

Once all technically feasible pollution control strategies have been identified, the next step is to determine the combination of methods for all the sources that reduces the overall POI concentrations at a facility. Each technically feasible pollution control combination is then ranked from the most to least effective at reducing the maximum POI concentration. The default technically feasible pollution control combination is the best of all technically feasible pollution control strategies for each source once it has been assessed for feasibility. The Subsection 33 (1) paragraph 2 of the Regulation requires the facility to submit information on the extent or geographic footprint of the exceedences as well as the frequency of exceedences (see also Chapter 2.3.1 Identification Of Receptors of this Guideline).

In most cases, the ranking requirements of paragraph 6 of subsection 33 (1) would be satisfied when the technology benchmarking report includes the following information:

- i. A list of technically feasible pollution control combinations that are ranked, using a top-down analysis approach, based on their maximum POI concentrations (or other agreed to surrogate measure as described in GRSSS);
- ii. For each technically feasible pollution control combination, a description of the effectiveness of reducing concentrations (including geographic extent and frequency of exceedences in accordance with subsection 33 (1) paragraph 2 of the Regulation. See also Chapter 2.3.1 Identification Of Receptors of this Guideline); expected emission reductions that lead to the maximum POI concentration reductions (including information regarding reduction in maximum emissions in grams per second; reduction in kilograms per tonne of product; and reductions in emissions in tonnes per year);
- iii. A review of the contribution to the POI of various sources, including the dominant sources, to total emissions and maximum POI concentrations; and
- iv. A summary of any relevant information on any other health or environmental issues. For more information, see Chapters 2.3.1 Identifying Receptors and Chapter 4 Factors To Consider When There Are Exceedences of this Guideline.

It is recommended that the technology benchmarking report also include a review and summary (where information is available through surveys or published data) of:

- the overall performance of the facility (i.e., in terms of emissions per tonne produced) relative to other similar facilities; and
- the performance of unit processes and/or source types relative to other similar processes/source types (e.g., process fugitive emissions per tonne produced).

The technically feasible pollution control combination that either provides the greatest level of reduction in concentrations or shows the air standard can be met is the preferred technically feasible pollution control combination. If the analysis of the technical options shows the air standard cannot be met and an economic feasibility analysis is not provided, then the technically feasible pollution control combination option that achieves the lowest maximum POI concentration is required to be included in the implementation plan as set out in paragraph 7 of subsection 33 (2) of the Regulation. Maximizing reduction in concentrations means that the ministry is encouraging facilities to achieve the lowest possible concentrations for their processes.

If facilities are not able to implement the preferred technically feasible pollution control combination that achieves the lowest maximum POI concentration due to economics or cost effectiveness reasons, an economic feasibility analysis may be submitted to support another option for a site-specific standard (see Chapter 2.5 Economic Considerations of this Guideline and GRSSS).

2.4.3.1 Ranking Technically Feasible Options

Potential reductions in maximum concentrations of contaminants affected by each option are identified through remodelling operational scenarios for each technically feasible pollution control combination and obtaining a maximum concentration for each contaminant of interest. For requests for a site specific standard, the contaminants of interest are the ones that are the subject of the request. The options are then ranked based on the ability to achieve the maximum reduction of POI concentrations. The preferred technically feasible pollution control combination is the combination which gets the facility closest to achieving the standard or meeting the standard by a certain date. In some cases, it may be more appropriate to use metrics other than the POI concentrations for ranking of the technically feasible options.

Note: In most cases, if two or more technical options are within 15% of each other in terms of maximum POI concentrations, then the one with the lowest cost may be accepted based on a simple economic analysis. The ministry may consider this as an acceptable solution to maximize risk reduction without the need for a more detailed economic analysis. Such a decision, however, must be documented with rationale and is subject to the ministry's discretion and approval.

2.4.3.2 Technology Benchmarking for New Facilities

Technology benchmarking for new facilities are likely to be different than for existing facilities. It is not uncommon for jurisdictions to distinguish between best available technologies for new sources as being different than feasible technologies for existing sources. For example, in

some of the technical standards compliance approaches, requirements for new facilities or equipment are more stringent than for existing facilities or equipment. Hence, when proponents are undertaking a technology benchmarking review for a new facility, special attention should be given to requirements for new versus existing facilities in other jurisdictions. (Note: a modification or expansion of a facility is not considered a “new facility” under the Regulation). In the context of the Regulation, a new facility is one where construction of the facility began after November 30, 2005, and no application was made on or before that day for an ECA in respect of the facility, for a contaminant listed in Schedule 7. However, for the purposes of a technology benchmarking report, a new facility is not restricted to contaminants in schedule 7. For example, building a new facility may mean that space limitations are not as much of an issue as it would be for an existing facility that is being retrofitted. New facilities may also review information from other existing facilities to help determine which sources are likely to contribute most to the POI concentrations. These are the sources that should be targeted at these facilities. If this not possible to rank the available technical methods, then new facilities need to consider installation of the *preferred technically feasible pollution control combination*.

The ESDM report submitted in support of a site-specific standard for a new facility would be done as if these technologies were in place. For pre-feasibility studies, it may be useful for proponents to cost the technologies based on the US EPA technology standards for similar contaminants. However, the final request for a site-specific standard may vary from this preliminary assessment if it can be determined the dominant sources contributing to the POI concentration are different.

2.4.4 Step 4: Reporting and Documentation of the Technology Benchmarking Process

Once all of the information is gathered and considered, it must be documented in a report format that can be shared with the ministry and other stakeholders (see Chapter 2.6 Stakeholder Involvement). Paragraphs 3 through 6 of subsection 33 (1) of the Regulation sets out the information required to be submitted to document the technology benchmarking assessment. The information requirements in paragraphs 3 through 6 of subsection 33 (1) of the Regulation must be provided but, in most cases, these information requirements are satisfied when a Technology Benchmarking Report includes the following information:

- a) A summary of Steps 1 through 4, described in Chapters 2.4.1 Step 1: Identify Technical Options For Contaminants through 2.4.4 Step 4: Reporting and Documentation Of The Technology Benchmarking Process of this Guideline as well as GRSSS including,
 - i. a listing of all methods identified for use (with all dominant sources of the contaminants, that are relevant to the request, at the facility) to reduce concentrations of the contaminants;
 - ii. a summary of the analysis of the methods identified in the above paragraph, and combinations of those methods, to determine which are technically feasible with respect to the sources of contaminant to which the request relates; and

- iii. a description of the “top-down analysis” and a listing and ranking of the methods and combinations of technically feasible methods.
- b) A summary of the ESDM report and supplemental information required by paragraphs 1 and 2 of subsection 33 (1) and paragraph 6 of 33 (1) of the Regulation for each technically feasible pollution control option (see also Chapter 2.2.1 ESDM Reports To Support a Request For a Site-Specific Standard, 2.2.2 CAMMs and 2.3.1 Identification of Receptors).
- c) A section that outlines the reference material used to develop a full range of pollution control option(s).
- d) A Conclusion and Recommendation section that summarizes the selection of the preferred technically feasible pollution control combination.

The *preferred technically feasible pollution control combination* that maximizes the reduction in the POI concentrations is the one to be included in the implementation plan. A schedule to implement the *preferred technically feasible pollution control combination* should be included separately (see Chapter 2.7 The Action Plan and subsection 33 (1), paragraph 7 of the Regulation). If the facility requests that economic information be a consideration in the decision making, appropriate economic information as described in Chapter 2.5 Economic Considerations of this Guideline and set out subsection 33 (4) of the Regulation may be submitted. For more information on technology benchmarking reports, please see the GRSSS (PIBs # 6322) (as amended).

2.5 Economic Considerations

A request for a site-specific standard under subsection 32 (1) of the Regulation must include the information set out in subsection 33 (1) of the Regulation and discussed in Chapter 2.4 Technology Benchmarking (Risk Control) of this Guideline. After completing a technology benchmarking report, facilities may claim the *preferred technically feasible pollution control combination* is cost prohibitive or not cost-effective. If that is the case, a facility may choose to bring forward an economic feasibility analysis to support another *technically feasible pollution control combination* in their request. This is allowed under subsections 33 (4) of the Regulation.

Under Section 33 of the Regulation – Information to be included with request:

“(4) A person who makes a request under section 32 may include the following in a part of the request that is separate from the part of the request that contains the material required by subsection (1):

- 1. An analysis of the economic feasibility of the methods and combinations of methods that are determined under paragraph 4 of subsection (1) to be technically feasible.***
- 2. A list of the methods and combinations of methods that are determined***

under paragraph 1 to be economically feasible.

- 3. A ranking of the methods and combinations of methods identified under paragraph 2, based on the maximum concentration of the contaminant that, according to an approved dispersion model, would result at a point of impingement if each method or combination of methods were used with respect to the sources of contaminant to which the request relates.**
- 4. A plan on how to implement,**
 - i. the method or combination of methods that is ranked under paragraph 3 as the method or combination of methods that predicts the lowest maximum concentration of the contaminant at a point of impingement, or**
 - ii. a method or combination of methods that, according to an approved dispersion model, would not result in a contravention of section 20.**

(5) Subsection (4) does not apply to a person who makes a request under section 32 that relies on paragraph 4 of subsection 32 (1)..."

Note: Subsection 33 (5) of the Regulation states that a new facility may not use economic arguments to support a request for a site-specific standard but is allowed to make a request based on technical issues as set out in Chapter 2.4 Technology Benchmarking (Risk Control) of this Guideline. In the context of the Regulation, a new facility is one where construction of the facility began after November 30, 2005, and no application was made on or before that day for an ECA in respect of the facility, for a contaminant listed in Schedule 7.

If the recommended option is not based on maximum reduction of POI concentrations but, instead, is based on economic arguments, then an economic feasibility analysis must be submitted as part of the request. A thorough analysis of available pollution control options, strategies and combinations must always be included in the request (as set out in subsection 33 (1) of the Regulation, Chapter 2.4 Technology Benchmarking (Risk Control) of this Guideline and GRSSS). Technology benchmarking is a critical decision point in this process. The logic used in the analysis, and the costs associated with those alternatives must be defensible in a publicly transparent forum. This information leads to more informed decision-making for all affected stakeholders. Under subsections 34 (3) and (4) (as well as subsections 34.1 (5) and (6)) of the Regulation, all of the information submitted as part of the request must also be made available to other stakeholders upon request. Economic arguments can be made either on the basis of how costs are unreasonably prohibitive or based on cost-effectiveness. Some may be able to show that the costs of implementing the *preferred technically feasible pollution control combination* are so prohibitive that they would unreasonably affect the future viability of that facility. Others may argue that the cost of implementing the *preferred technically feasible pollution control combination* are not cost-effective or are unreasonable costs relative to the expected outcomes or anticipated reductions.

The cost of each technically feasible pollution control combinations can be established on a Net Total Annualized Cost (NTAC) basis, relative to current, or baseline operations, and actual baseline values. These costs would be summarized in Table 3 Sample Technology and Costing Template. NTAC is calculated using the following approach:

$$NTAC = (O\&M - SAV) + \frac{K i}{1 - \frac{1}{(i+1)^n}} - REV$$

where,

NTAC =	Net Total Annualized Cost in the period t = 1, ..., n years
O&M =	Annual Operating and Maintenance Costs
SAV =	Annual cost savings (e.g., in energy, chemicals, etc.) resulting from implementing the risk treatment alternative
K =	One-time Capital Cost
i =	Annual interest rate (borrowing cost)
n =	Life of equipment or system (amortization period, years)
REV =	Revenues from by-products of risk treatment, including revenue increases due to productivity improvements resulting from implementing the risk treatment alternative

An annual interest rate and amortization period that is agreed to by the ministry shall be used in the cost calculation. This is to ensure consistency in terms of borrowing costs, and to avoid potential issues regarding how individual facilities may consider environmental investments with respect to their internal return-on-investment targets.

The recommended economic parameters are:

a) the interest rate $i = 6\%$; and b) the amortization period $n = 10$ years.

Alternate values may be requested by the ministry or the facility (subject to ministry approval). If a facility would like to suggest alternate values, pre-submission consultation is recommended.

Table 3: Sample Technology and Costing Template

Facility Name:

Date:

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6	Column 7	Column 8	Column 9	Column 10	Comments
Emission Reduction Option	Abatement Technology Type/Name	Operating Life ⁽¹⁾ (Years)	Capital Costs (\$)	Operating Costs (\$)	NTAC (\$)	Contaminant 1 – POI Concentration (µg/m ³)	Contaminant 1 – Predicted Emissions Reduction (%)	Contaminant 1 – Final Maximum Emission Rate (g/s)	Contaminant 1 – Final Max Annual Avg. Emission Rate (Tonnes/yr)	Uncertainty
Current Status (Base Case)										
Option A – Source 1										
Option A - Source 2										
Option A - Source n										
Option B – Source 1										
Option B - Source 2										
Option B - Source n										

COLUMN DESCRIPTIONS:

- 1) List and, if necessary, describe the prevention technologies in each technology (combination) option consisting of a group of sources. For current status, please enter the current POI concentrations with the appropriate averaging time.
- 2) Type of technology proposed.
- 3) Predicted Equipment Operating Life.
- 4) One-time costs include equipment costs, installation, design and engineering and consulting costs. If any capital items require periodic replacement, note in “comments column”.
- 5) Recurring operating costs include at least energy, labour, materials and supplies and any other recurring costs. Express as an annual cost.
- 6) NTAC – Net Total Annualized Costs.
- 7) POI Concentration (µg/m³).
- 8) Predicted Percentage Reductions from Current Status (First Row).
- 9) Current status and final predicted Emission Rate in g/s after implementation of control technology, representing a maximum averaging time period that corresponds to the standard/limit.
- 10) Current status and final predicted Emission Rate in Tonnes/year, reflecting operating days and conditions.
- 11) Comments and level of uncertainty (e.g. ±30%) in the estimates of costs, loading reductions & concentrations changes, and any information relating to the calculation of the annualized costs for other rows.

NOTES:

- i) Impact of using a fixed Operating Life (e.g. 10 years) for evaluation purposes will be assessed. ii) Ministry acceptable discount rate is 6%.

At this stage, the identified technical methods have been assessed for their technical feasibility with no economic considerations (see Step 4 of Chapter 2.4 Technology Benchmarking (Risk Control) of this Guideline). Feasibility means that the technology can be reasonably installed and operated by the source type under consideration. Once all technically feasible pollution control combinations are identified and ranked based on their ability to reduce POI concentrations, their NTACs are calculated for each source and contaminant assessed. The NTAC is the sum of individual combinations added together to obtain the total cost for the *technically feasible pollution control combination(s)*.

In general, an Economic Feasibility Report can be used to achieve the information requirements of subsection 33 (4) of the Regulation, with the request for a site-specific standard. This report should provide a clear explanation of why a facility cannot allocate sufficient funds for compliance activities within the relevant time period. As per the ministry Procedure F-14 (Economic Analysis of Central Documents on Private Sector and Municipal Projects) (as amended), a regulated party must provide sufficient financial data to document and substantiate such claims. It is recommended that this report include the information discussed in this Chapter as well as the information set out in Table 4: Indicators of Financial Hardship. In situations where economics is an issue brought forward by the company, the ministry will consider the ratios outlined in Table 4 Indicators of Financial Hardship as well as other information to assess their situation on a case-by-case basis.

Regulated parties who opt to submit economic analysis are expected to provide such financial and other types of information to ministry personnel, as needed, to carry out the analyses. Therefore, companies who claim potential financial hardship must provide evidence in support of such hardship. For companies, such evidence should include at least 5 years (10 years preferred) of audited financial statements and copies of corporate income tax returns. Individuals would need to provide copies of personal income tax returns and statements of personal assets as evidence.

Companies may also provide copies of completed Statistics Canada surveys of the annual Census of Manufacturers. Evidence must also show how potential compliance costs from the Least Cost Abatement Cost Functions (LCACF) might change key financial indicators and ratios. Furthermore, financial performance data for a single year are not sufficient to reveal financial health of a corporation or individual. For a corporation, trends in financial indicators over an entire business cycle should be reviewed. That is why 10 years of financial data are preferred.

Note: Sector-based Approaches

Under subsection 33 (4) of the Regulation, an economic feasibility analysis may be submitted by a facility to support a request for a site-specific standard. Economic Feasibility Reports may also be developed on a sector basis (or part of a sector) if the facilities in the sector share common economic challenges in reducing concentrations. Individual facilities in that sector may then use the information to support their own individual requests for a site-specific standard. These reports can be used to support the development of a sector-based Technical Standard

under section 38 of the Regulation. If a sector-based approach is contemplated, it is important that pre-submission consultation with the ministry occur.

2.5.1 Financial Hardship Indicators

The US EPA and other sources have suggested various financial ratios and indicators and they have sometimes cited threshold values that are indicators of financial distress or even bankruptcy for a firm. While there are some benchmarks, as well as thresholds or decision rules for a few financial indicators, generally, there are no widely accepted criteria, benchmarks, thresholds or decision rules to determine whether a particular level of cost is “affordable” or “cost prohibitive.” That said, there is precedence to guide the development of a suite of economic affordability indicators. For instance, the US EPA Office of Air Quality Planning and Standards “Economic Analysis Resource Document” (Page 5-44) recommends that a “...company-level analysis should focus on changes in key measures of profitability”. Ratios such as return on sales, and return on equity may also be useful to evaluate economic hardship. A list of recommended economic indicators is summarized in Table 4: Indicators of Financial Hardship.

If different threshold values or indicators are suggested by a facility, they must provide a rationale for using them. The information on hardship claims will be evaluated by reviewing how these and other financial indicators change as result of incurring compliance costs. These indicator values are provided as examples to those requesting a site-specific standard and are not to be construed as absolute and final proof of reduced competitiveness or non-affordability.

If a company proposes threshold values that are different from those in Table 4 Indicators of Financial Hardship, a documented explanation and rationale must be provided. The ministry would also be interested in other financial indicators that represent funds that could be allocated to compliance activities. These indicators include after-tax profits, depreciation, working capital, tangible assets (e.g. real estate, aircraft, etc.), consulting fees and dividends paid to owners and officers of the firm. Cost effectiveness indicators may also be considered on a case-by-case basis subject to approval by the ministry.

Public information that affects the decision making must be made available through the stakeholder involvement process. Any information submitted to support a request for a site-specific standard, including economic feasibility analysis and reports, must be made available to local stakeholders as part of the pre-submission consultation with the local community (see subsections 34 (3) and 34.1 (5) of the Regulation). The release of information contained in request forms and documentation submitted in support of requests for a site-specific standard is subject to the provisions of the *Freedom of Information and Protection of Privacy Act*. See Chapter 2.10 Processing The Request of this Guideline for more information.

Table 4: Indicators of Financial Hardship

Indicator (unit)	Description/Formula	Not Desirable “Indicator” Thresholds values that are: less than	Not Desirable “Indicator” Thresholds values that are: greater than	Explanatory Notes (desirable for firms)
Return on Assets (%)	Earnings Before Interest but After Taxes(EBIAT) / Total Assets x 100	2.5%		The higher the percentage the better. Source: KPMG, 1990
Beaver’s Ratio	After-tax Cash Flow / Total Liabilities	0.1		The higher the value the better. Source: US EPA, ABEL Model
Total Debt to Total Assets (%)	Total Short and Long Term Debt / Total Assets x 100		70%	The lower the percentage the better. Source: KPMG, 1990
Cash Flow to Total Debt (%)	After-tax Cash Flow/Total Debt x 100	8%		The higher the percentage the better. Source: KPMG, 1990
Compliance Costs as a % of Total Sales (Revenue)	NTAC / Total Sales (or Revenue) x 100		3%	The lower the percentage the better.
Compliance Cost as a % of Operating Profit	NTAC/Before-Tax Income (Profit) x 100		1%	The lower the percentage the better.
Ratio of Compliance Cost to After-Tax Profit as compared to the Ratio of Compliance Cost to Total Sales (Revenue)	(NTAC / Before-Tax Profit) - (NTAC / Total Sales)		1	The lower the index the better.
Quick Ratio	Current Assets (less Inventories) / Current Liabilities	1		The higher the value the better.
Current Ratio	Current Assets / Current Liabilities	2		The higher the value the better. Source: US EPA, ABEL Model
Altman’s Z-Score	$Z = 1.2xX1 + 1.4xX2 + 0.6xX4 + 1.0xX5^* + 3.3xX3$ (1) 1) X1 = Current Assets - Current Liabilities / Total Assets; X2 = Retained Earnings / Total Assets; X3 = Before Tax Profit / Total Assets; X4 = Value of Equity / Total Liabilities; X5 = Revenues from Sales / Total Assets	1.23		Less than 1.23 indicates that the firm could go bankrupt within the next two years if its financial situation does not dramatically improve. Source: US EPA, ABEL Model

2.5.1.1 Cost Effectiveness

Cost effectiveness indicators may also be considered on a case-by-case basis subject to approval by the ministry. In 2009, the ministry hired a consultant to develop a report which was intended to develop a methodology to determine how to assess cost-effectiveness. The report resulted in development of a methodology for evaluating the

cost-effectiveness of potential POI reduction measures. The methodology derives a dimensionless value that provides an indicator of Total Resource Effectiveness (TRE) for the POI reduction measure being evaluated. A User Guide was developed and is available on the ministry's website: "Application of Cost Effectiveness Methodology and Indicators for Use in Section 32 Requests under Ontario Regulation 419/05: Air Pollution – Local Air Quality, USER GUIDE, Total Resource Effectiveness (TRE) Methodology and Calculations", dated June 2009, as amended. This user guide provides step-by-step instructions on how to complete a cost effectiveness evaluation using the TRE methodology. Standardized form(s) have also been developed to aid the environmental professional in collecting, estimating and presenting the various elements needed to determine TRE values. The TRE value uses standard costing methods referenced in the USEPA Office of Air Quality Planning and Standards (OAQPS): [OAQPS' EPA Air Pollution Control Cost Manual](#) (Sixth Edition), EPA/452/B-02-001 (this manual is periodically updated so it is recommended that the most recent version be used).

A threshold of annualized risk reduction cost is expressed as the product of a site-specific contaminant reduction potential and a cost factor. The cost factor used is \$10,000⁵ per tonne, which is adjusted upward or downward based upon the consequence of potential exposure as expressed by the scoring method (referred to in the user guide as the risk score). The formula for Risk Reduction Cost (RRC) is expressed as:

$$\text{RRC} = \text{Risk Score} * \text{Potential POI reduction (tonne)} * \$10,000/\text{tonne}$$

The Total Resource Effectiveness (TRE) value is determined by the ratio of Net Total Annualized Cost (NTAC) for a potentially feasible POI reduction option to the threshold Risk Reduction Cost (RRC).

The TRE values provide an indication of the relative effectiveness of potential POI reduction methods. The assessment of TRE values is useful to assess the relative effectiveness of one option versus another. The TRE value is not intended to be a bright line test. Additionally, calculated scores are based on limited toxicological information and may not completely reflect the hazard associated with an individual contaminant. Therefore, this tool should not be used to characterize risk.

TRE values less than 1.0 would generally indicate a reasonably effective use of resources to achieve the POI improvement. However, TRE values above 1.0 and ranging up to about 10.0 may suggest further consideration is appropriate and/or refinement of assumptions are required. TRE values over 10.0 would generally indicate the potential POI reduction technique is not a good use of resources and perhaps other options should be considered. However, TRE values are not intended to be used as a yes or no test.

This analysis would also be considered public information to support a request for a site-specific standard and is subject to the provisions of the *Freedom of Information and*

⁵ The ministry may request the \$10,000 value to be periodically adjusted for inflation.

Protection of Privacy Act. See Chapter 2.10 Processing The Request of this Guideline for more information.

Note: See the publication User Guide: Application of Cost Effectiveness Methodology and Indicators for Use in Section 32 Requests under Ontario Regulation 419/05: Air Pollution – Local Air Quality. This document may be periodically updated.

2.6 Stakeholder Involvement

Public transparency is an important element of the Regulation. The Regulation requires that the person requesting a site-specific standard hold a public meeting on the proposed request prior to submission. Subsection 33 (1) paragraph 8 and sections 34 and 34.1 of the Regulation specify the requirements for stakeholder involvement.

Section 33(1) paragraph 8 of the Regulation – Information to be included with request:

“... 8. If a public meeting is held under subsection 34 (1) before the request is made under section 32, a description of the steps taken under section 34 by the person making the request, including a summary of the questions asked and comments made by persons who attended the public meeting and the responses of the person making the request.”

Section 34 of the Regulation – Public meeting before request:

“34. (1) Subject to subsection (1.1), a person making a request under section 32 shall, before making the request, hold a public meeting on the proposed request.

(1.1) A person making a request under section 32 may make the request without holding a public meeting or without complying with subsections (2) to (4) if the Director has ever set a site-specific standard under section 35 for the same contaminant in respect of the same facility, even if the site-specific standard was for a different averaging period.

(2) The person making a request under section 32 shall, at least 15 days before the public meeting required by subsection (1),

(a) publish a notice in a newspaper having general circulation in the area where the source of contaminant is located, setting out the name, address and telephone number of the person and informing the public of the person’s intention to make the proposed request, the purpose of the request and the date, time and place of the meeting; and

(b) ensure that all of the information contained in the notice referred to in clause (a) is given in writing to,

(i) the owners and occupants of,

(A) every property that adjoins or is within 500 metres of the property on which the source of contaminant is located, and

(B) every property where, according to an approved dispersion model, there is a point of impingement where, as a result of discharges of the contaminant that is the subject of the request, the concentration of the contaminant may exceed the standard set out in Schedule 3 for the contaminant for the averaging period specified under paragraph 0.1 of subsection 33 (1),

(ii) the medical officer of health for the health unit in which the source of contaminant is located and the medical officer of health for each health unit in which a property described in subclause (i) is located,

(iii) the Ministry, and

(iv) each municipality in which the source of contaminant is located and every other municipality that is within 500 metres of the property on which the source of contaminant is located. O. Reg. 507/09, s. 32 (1); O. Reg. 282/11, s. 8 (2, 3).

(3) The person making a request under section 32 shall, at the public meeting required by subsection (1),

(a) make available, without charge, to everyone in attendance,

(i) a written copy of the executive summary of the report required by paragraph 1 of subsection 33 (1), and

(ii) a written explanation, written in language that can be understood by persons without specialized scientific training, of the proposed request, including the materials that are to be included under subsections 33 (1), (2) and (4);

(b) offer to provide, without charge, a complete written copy of a draft of the proposed request, including the materials that are to be included under subsections 33 (1), (2) and (4), to every person in attendance who asks for a copy;

(c) provide the copies requested under clause (b), or make arrangements to provide those copies as soon as practicable after the meeting;

(d) explain the proposed request;

(e) explain how the Environmental Bill of Rights, 1993 will apply to the proposed request; and

(f) provide a reasonable opportunity for those in attendance to ask questions of the person making the request under section 32 and to comment on the proposed request.

a. The person making a request under section 32 shall provide, without charge, written material referred to in clause (3) (a) or (b) as soon as practicable to any person who makes a request for the material within 30 days after the public meeting required by subsection (1).

As required in the Regulation, any public meetings must be published in a newspaper having general circulation in the area at least 15 days before the meeting. Notification of the public meeting must be in a language that can be understood by persons without specialized scientific training. The format, style, title or content of the notification may vary from facility to facility to suit specific circumstances and local requirements. The following is recommended:

- Name and address of facility requesting the site-specific standard(s);
- A brief description of the basis of the request for the site-specific;
- Indication that the facility is following the process required by the Regulation;
- Details of when and where the public meeting will take place, and where further information can be obtained if a member of the public is unable to attend the meeting;
- Name or title of a company contact person to whom comments or requests for information should be directed;
- Suggested date by which comments/input may be received by the facility.

The Regulation also requires certain stakeholders to be notified of the meeting. Notification to the ministry shall be both to the local ministry district office as well as to the Director for the site-specific standards process (Standards Development Branch, Environmental Sciences and Standards Division). As outlined above, facilities will be required to provide a plain language version to the public that summarizes their proposal and their proposed path forward.

2.6.1 Request to Renew of Site-Specific Standards

Facilities that have already received an approval for a site-specific standard and are making a subsequent request may not be required to hold a public meeting if there are no significant changes to their original request. The ministry will consider, on a case-by-case basis, whether or not the facility needs to hold a public meeting (see section 34.1). The ministry or the facility may also decide to host a public information session if there are potential concerns regarding the request for renewal. However, regardless of whether or not a meeting is held the request is still required to be posted on the Environmental Registry for public comment.

Section 34.1 - Public meeting required by Director

“34.1 (1) The Director may give a person who has made a request under section 32 a notice requiring the person to hold a public meeting on the request if both of the following criteria are met:

1. Pursuant to subsection 34 (1.1),

i. the person did not hold a public meeting on the request, or

ii. the person held a public meeting on the request but did not comply with subsections 34 (2) to (4).

2. Any of the following criteria are met:

i. The Director is of the opinion that implementation of the plan submitted with the request under paragraph 7 of subsection 33 (1) or paragraph 4 of subsection 33 (4) would require significant changes to the method or combination of methods that was implemented under the corresponding plan that was submitted when the request was made for the site-specific standard previously set by the Director.

ii. The averaging period specified under paragraph 0.1 of subsection 33 (1) with respect to the request is different from the averaging period that applied to the site-specific standard previously set by the Director.

iii. The averaging period specified under paragraph 0.1 of subsection 33 (1) with respect to the request is the same as the averaging period that applied to the site-specific standard previously set by the Director and the Director is of the opinion that the material included in the request under section 33 may justify the setting of a site-specific standard that is less stringent than the previously-established standard.

iv. The Director is of the opinion that subsection 35 (2) may not permit the Director to approve the request.

(2) Before the Director gives a person a notice under subsection (1), the Director shall give the person a draft of the notice and an opportunity to make written submissions to the Director during the period that ends 30 days after the draft is given.

(3) If a person is required to hold a public meeting under subsection (1),

(a) the person shall hold the meeting before the date specified by the Director in the notice given under subsection (1); and

(b) the person shall, within the period specified by the Director in the notice given under subsection (1), provide the Director with a description of the steps taken under subsections (4) to (6) by the person, including a summary of the questions asked and comments made by persons who attended the public meeting and the responses of the person making the request.

(4) The person who made the request under section 32 shall, at least 15 days before a public meeting required under this section,

(a) publish a notice in a newspaper having general circulation in the area where the source of contaminant is located, setting out the name, address and telephone number of the person and informing the public of the request, the purpose of the request and the date, time and place of the meeting; and

(b) ensure that all of the information contained in the notice referred to in clause (a) is given in writing to,

(i) the owners and occupants of,

(A) every property that adjoins or is within 500 metres of the property on which the source of contaminant is located, and

(B) every property where, according to an approved dispersion model, there is a point of impingement where, as a result of discharges of the contaminant that is the subject of the request, the concentration of the contaminant may exceed the standard set out in Schedule 3 for the contaminant for the averaging period specified under paragraph 0.1 of subsection 33 (1),

(ii) the medical officer of health for the health unit in which the source of contaminant is located and the medical officer of health for each health unit in which a property described in subclause (i) is located,

(iii) the Ministry, and

(iv) each municipality in which the source of contaminant is located and every other municipality that is within 500 metres of the property on which the source of contaminant is located.

(5) The person who made the request under section 32 shall, at a public meeting required under this section,

(a) make available, without charge, to everyone in attendance,

(i) a written copy of the executive summary of the report that was included in the request under paragraph 1 of subsection 33 (1), and

(ii) a written explanation, written in language that can be understood by persons without specialized scientific training, of the request, including the materials described in subsections 33 (1), (2) and (4)”...

(b) offer to provide, without charge, a complete written copy of the request, including the materials described in subsections 33 (1), (2) and (4), to every person in attendance who asks for a copy;

(c) provide the copies requested under clause (b), or make arrangements to provide those copies as soon as practicable after the meeting;

(d) explain the request;

(e) explain how the Environmental Bill of Rights, 1993 applies to the request; and

(f) provide a reasonable opportunity for those in attendance to ask questions of the person who made the request under section 32 and to comment on the request. O. Reg. 282/11, s. 9.

(6) The person who made the request under section 32 shall provide, without charge, written material referred to in clause (5) (a) or (b) as soon as practicable to any person who makes a request for the material within 30 days after a public meeting required under this section.”

Note: Sector-based Requests

In some cases, sectors who have chosen to share their resources to develop technology benchmarking reports or economic feasibility reports may also want to conduct sector-based public meetings. This is acceptable provided the requirements set out in the Regulation are adhered to. For example, any facility who wants to rely on sector-based public meetings must ensure that all required local stakeholders are notified of the meeting at least 15 days prior. In addition, local newspapers, or province-wide newspaper advertising can also be considered. For sector-based approaches, local open houses are recommended, in addition to the larger information sessions, to ensure that local issues have an opportunity to be considered. Pre-submission consultation with the ministry is required for sector-based approaches so that the intent of the Regulation is more likely to be satisfied. For a facility wanting to register for a sector-based technical standard (see subsection 38(2) of the Regulation), they must comply with the notification and consultation requirements of the industry standard and/or equipment standard and may be requested by the ministry to host a meeting or do other forms of public notification.

2.6.1 Public Meetings for Technical Standards

Technical standards are developed with input from industry and the public. Each proposed technical standard is posted on the [Environmental Registry](#) for public comment. Where communities express an interest, community consultation at key milestones will be considered.

Once developed, a facility can apply to register to the technical standard as their compliance approach for specified contaminants. All requests for registration are posted on the Environmental Registry for a minimum 45-day comment period.

Some facilities registering under a technical standard may be required by the ministry to host a local stakeholder meeting to inform and engage their local communities in their plans.

2.6.2 Developing a Communication Plan

For the site-specific standards process, it is recommended that stakeholder identification begin as soon as possible and that risk communication focus on the key stakeholder(s) – the local community. This is an important element of public transparency. The ministry has developed a series of fact sheets and other communication material to assist with this effort. These are available on the ministry website. The Key Communications Objectives are to ensure that:

- Community members are given an opportunity to understand the barriers for the facility in meeting the standards at this time.
- Community members are provided an opportunity to better understand the potential incremental health or environmental risks associated with the request.
- Stakeholders/Community members are given an opportunity to review the proposed action plan (see Chapter 2.7 The Action Plan of this Guideline).
- Community members understand the regulatory framework and have an opportunity to comment on the proposal by the facility for a site-specific standard and the outcome reached by the facility in terms of actions to address the issue.
- The community is given an opportunity to provide input into the process both before the request is submitted and through the Environmental Bill of Rights process after the request is submitted to the ministry.
- Stakeholders know where information is available and whom to contact for answers to their questions.
- If a request for a site-specific standard is approved by the ministry, the final Approval and supporting documents must be made available upon request as set out in subsection 35 (13) of the Regulation.

Under Section 35 of the Regulation – Approval of request to set site-specific standard :

“... (13) If the Director approves a request under subsection (1), the person who made the request shall, without charge,

(a) give a copy of the approval to any person within 15 days after the person requests it; and

(b) make available for inspection by any person at the facility during regular business hours, during the period specified by the Director under subsection (9),

(i) a written explanation, written in language that can be understood by persons without specialized scientific training, of the request, including the materials that were included under subsections 33 (1), (2) and (4), and

(ii) a complete written copy of the request, including the materials that were included under subsections 33 (1), (2) and (4).

Note: While there is a great emphasis on public transparency and open communication, the regulated community’s proprietary information will be considered confidential if it is deemed to be so under the Freedom of Information Act and Protection of Privacy. See Chapter 2.10.1 Submission of Confidential Information of this Guideline for more information.

The communication guidelines outlined below assume that the ESDM reports have already been completed as set out in the Regulation, the ESDM Procedure Document, ADMGO and GRSSS. The following are some suggested guidelines for communication.

Public Communication to support Request for Site-Specific Standard(s):

1. **Identify public interest:** Identify key stakeholders (community groups/existing local environmental groups/ministry/Public Health Units, municipalities, other levels of government, etc.). First Nations or Metis members may also have an interest and efforts should be made to reach out them. At a minimum, the stakeholders identified in subsection 34 (2) of the Regulation must be notified of the public meeting.
2. **Public Meeting:** As per sections 34 and 34.1 of the Regulation, before the request for a site-specific standard is submitted to the ministry, the facility must, as a minimum, host one public meeting and notify all key stakeholders and the ministry (which includes the local District Office as well as the Director of Standards Development Branch) at least 15 days before the meeting.

Note: The proposed communications plan may have to be adjusted to correspond to the perceived level of risk acceptance in the community. If risk acceptance is low, the communications response may need to be modified to respond to questions.

3. **Seeking Input:** Before the request is submitted, the document(s) that will be used to support a request for a site-specific standard must be made available to the public as set out in the Regulation (subsections 34 (3) and (4) as well as 34.1 (5) and (6)). These would include: the ESDM Report Executive Summary, Technology Benchmarking Assessment; and Economic Feasibility Analysis (if the facility opted to consider economics) and the action plan.
4. **Community Forum:** The community informational meeting is to be organized by the company. The meeting will be hosted by the facility and representative(s) from the ministry should be present. At the meeting, the facility must provide a plain language informational package to the interested stakeholders including an outline of the proposed action plan (see subsection 34(3) (and 34.1(5)) of the Regulation). The company is expected to respond to questions raised by the meeting participants. The company must also offer to provide a complete written copy of the the proposed request for a site-specific standard, including supporting materials.
5. **Summary of Comments:** As set out in subsection 33 (1), paragraph 8 of the Regulation, the facility must provide a written summary of the public meeting which must be submitted as part of the request for a site-specific standard(s).
6. **EBR Comment Period:** The facility's request to the ministry for a site-specific standard will be posted on the Environmental Registry (under the Environmental Bill of Rights) (EBR)) for a minimum 30-day comment period. The ministry will review the request and the supporting documents at the same time. During this review period, all stakeholder comments received through EBR Registry will be shared with other stakeholders upon request. The facility should be available to respond to specific comments submitted under EBR as needed.
7. **Outcome:** The ministry will consider the summary of comments from the local community as well as input from other interested stakeholders submitted via EBR Registry to make a final decision on the approval of the action plan proposed by the facility. If approved, the Regulation requires that key information be made available to the public and all identified stakeholders upon request.

“ ... 35(13) If the Director approves the site-specific standard under subsection (1), the person who requested the site-specific shall,

- (a) give a copy of the approval to any person who requests it; and*
- (b) make the written material referred to in clause 34(3) (a) and (b) available for inspection by any person at the facility during regular business hours during*

the period that the site-specific standard applies. ...”

2.7 The Action Plan

Paragraph 7 of subsection 33 (1) and paragraph 4 of subsection 33 (4) of the Regulation require the submission of a plan on how the facility will implement the preferred solutions identified through its analysis of technical or economic feasible methods.

Subsection 33 (1) of the Regulation is the subsection that allows for technical feasibility arguments. Paragraph 7 of this subsection requires a person who makes a request for a site-specific standard based on technical considerations to include an action plan as per the following:

Under Section 33(1) of the Regulation – Information to be included with request:

- “... 7. Unless a plan is included under paragraph 4 of subsection (4), a plan on how to implement,**
- i. the method or combination of methods that is ranked under paragraph 6 as the method or combination of methods that predicts the lowest maximum concentration of the contaminant at a point of impingement, or**
 - ii. a method or combination of methods that, according to an approved dispersion model, would not result in a contravention of section 20.”**

Subsection 33 (4) of the Regulation allows for economic feasibility arguments. Paragraph 4 of this subsection requires a person who makes a request for a site-specific standard based on economic considerations to include an action plan as per the following:

Under Section 33(4) of the Regulation – Information to be included with request:

- “... 4. A plan on how to implement,**
- i. the method or combination of methods that is ranked under paragraph 3 as the method or combination of methods that predicts the lowest maximum concentration of the contaminant at**

a point of impingement, or

- ii. a method or combination of methods that, according to an approved dispersion model, would not result in a contravention of section 20.”***

An action plan developed under either of the two above subsections must be submitted with the request for a site-specific standard and should:

- represent the best the facility can do to get as close to the standard as possible under current circumstances;
- propose maximum or considerable risk reduction where possible; and
- propose further improvements over time, if feasible.

Elements of the final action plan can be incorporated as conditions on the approval of a site-specific standard, in an order under subsection 35 (14), or as conditions of an ECA. Additional public information sessions or outreach may be considered depending on community responses to the proposal and timing of the action plan.

Under section 35 of the Regulation - Approval of request to set site-specific standard

“(4) Subject to subsection (4.1), if a site-specific standard for a contaminant is set by the Director under subsection (1), references in this Regulation to a standard set out in Schedule 3 for the contaminant shall be deemed, for the averaging period specified by the Director, to be references to the site-specific standard.

(4.1) Subsection (4) does not apply to the following references:

- 1. References to a standard set out in an amendment to Schedule 3.***
- 2. References in this section, sections 32 to 34.1 and sections 36 to 37.1 to a standard set out in Schedule 3.***

(5) Subsection (4) applies only to the facility to which the request related.

(6) The Director may impose conditions in an approval under subsection (1).

(7) If conditions are imposed under subsection (6),

- (a) subsection (4) applies only if the conditions are complied with; and*
- (b) the person who made the request under section 32 shall notify the Director when the conditions have been complied with.*
- (8) Subsection (7) applies, with necessary modifications, to conditions that are imposed in an environmental compliance approval to ensure compliance with section 20 with respect to a contaminant for which a site-specific standard has been set by the Director under this section.*
- (9) Subsection (4) applies only to a period specified by the Director in the approval that ends at least five years and not more than 10 years after the period begins.*
- (9.1) If an amendment to Schedule 3 that has not yet come into force sets out a standard for a contaminant, and a site-specific standard set by the Director applies to the same contaminant and the same averaging period, the period specified by the Director under subsection (9) shall not begin earlier than the date the amendment comes into force unless specifically requested by the person making the request.*
- (10) Subsection (9) does not prevent the making of further requests under section 32 in respect of the contaminant but, in considering a further request, the Director may consider the number of previous requests that have been made for the source of contaminant that is the subject of the request.*
- (11) If a site-specific standard for a contaminant is set by the Director under this section and a further request is made under section 32 in respect of the contaminant, subsections 32 (6) to (11) do not apply.*
- (12) The Director shall consider the following matters when he or she decides whether to impose conditions under subsection (6), what those conditions should be, and what period to specify under subsection (9):*
- 1. The nature of the contaminant.*
 - 2. The frequency with which the inability to comply with section 20 referred to in subclause (1) (b) (i) would occur.*
 - 3. Whether there are any acute effects associated with the contaminant.*
- (13) If the Director approves a request under subsection (1), the person who made the request shall, without charge,*
- (a) give a copy of the approval to any person within 15 days after the person requests it; and*
 - (b) make available for inspection by any person at the facility during regular*

business hours, during the period specified by the Director under subsection (9),

(i) a written explanation, written in language that can be understood by persons without specialized scientific training, of the request, including the materials that were included under subsections 33 (1), (2) and (4), and

(ii) a complete written copy of the request, including the materials that were included under subsections 33 (1), (2) and (4).

(14) If the Director sets a site-specific standard, he or she may make an order requiring a person to whom the site-specific standard applies to take steps specified by the order, not later than the dates specified in the order, that are related to complying with section 20, having regard to subsection (4).

(15) An order made under subsection (14) does not apply if the person against whom the order was made complies with section 20, having regard to subsection (4).

(16) If the Director makes an order under subsection (14), the person against whom the order was made shall give a copy of the order to any person who requests it.”

The following steps are part of the development of the action plan:

1. Step 1 - Document the strategy for implementing the preferred technically feasible pollution control combination. This should include the details of the chosen preferred technically feasible pollution control combination. The draft action plan shall be communicated to the ministry and other stakeholders including the public during pre-submission consultation (see Chapter 2.6 Stakeholder Involvement of this Guideline).
2. Step 2 – Consider modifications to the initial proposed action plan, if necessary, based on input from various stakeholders or the ministry. The ministry will formally review the plan when the request a site specific standard is submitted.
3. Step 3 – Determine whether multiple temporal site-specific standards need to be included in the approval to reflect different stages of implementation of the final action plan- each representing the minimum change necessary to enable the facility to comply with section 20 at a particular point in time. Any proposed approach must ensure that the URTs identified and discussed in Chapter 3 Upper Risk Thresholds of this Guideline are not too frequently exceeded at the receptors listed in 30(8) of the Regulation. There must also be an assessment of frequency of exceedences, magnitude and geographic footprint as outlined in Chapter 4 Factors To Consider When There Are Exceedences of this Guideline.

4. Step 4 – Develop a schedule for the implementation of the preferred technically feasible pollution control combination. The preferred technically feasible pollution control combination or selected option shall be implemented according to the approved final action plan. Elements of the final action plan may be incorporated as conditions in the approval for a site-specific standard, in an order under subsection 35 (14) or as conditions in an ECA (see subsections 35 (6) to (8) of the Regulation).
5. Step 5 - Review the plan periodically to ensure continuous improvement (see Chapter 2.8 Continuous Improvement of this Guideline). An expiry date on the approval of a site-specific standard will ensure that if a facility is still not able to meet the provincial standard by the expiry date, then the facility may request a renewal of their site-specific standard after that date. Each review or re-issuance of the approval means that all of the steps outlined in Chapter 2 Review Of Site-Specific Standard Requests/Figure 2 Risk-Based Decision Making Framework for Site-Specific Standards would be repeated. Facilities that have already received an approval for a site-specific standard and are making a subsequent request may waive the requirement for hosting a public meeting if there are no significant changes to their original request. However, public notification and comments will still be required through the Environmental Registry posting. The ministry will consider, on a case-by-case basis, whether to host a public information session if concerns exist regarding the renewal.

2.8 Continuous Improvement

The site-specific standard process that is outlined in this Guideline and the Regulation recognizes the need for continuous improvement. This is accomplished through repeated application of the process steps outlined in Figure 2 Risk-Based Decision Making Framework for Site-Specific Standards and ensuring that the principle of striving to maximize risk reduction. Facilities will be required to periodically review overall progress and revise or review any site-specific standards as necessary and practicable, to ensure continuous improvement in environmental performance.

Subsections 35 (9) and (10) of the Regulation state that:

Under Section 35 of the Regulation – Approval of site-specific standard:

“... 35(9) Subsection (4) applies only to a period specified by the Director in the approval that ends at least five years and not more than 10 years after the period begins. ...

(10) Subsection (9) does not prevent the making of further requests under section 32 in respect of the contaminant but, in considering a further request, the Director may consider the number of previous requests that have been made for the source of contaminant that is the subject of the request...”

Each time the approval of a site-specific standard expires, the facility would be able to make another request. For each subsequent request, the facility will be required to re-submit an updated ESDM report, re-evaluate technically feasible pollution control combinations, and re-evaluate their economic situation (optional). Facilities that have an approval for a site-specific standard and are making a subsequent request may not be required to host a public meeting if there are no significant changes to their original request. However, public notification and comments will still be required through the Environmental Registry posting and the ministry will consider, on a case-by-case basis, whether or not to host or require the company to host a public meeting.

Continuous improvement is affected by technology advances or economic feasibility. Some facilities may never meet the air standard and instead will be regulated by one of the other compliance approaches.

2.8.1 Factors that may affect the Period of Approval for Site-Specific Standards

The Director may approve a site-specific standard for a minimum of 5 years and up to 10 years. Potential factors to consider for the approval period include:

- significance of the investment;
- logistics to implement the action plan;
- potential emerging technologies;
- potential changes in the economy;
- the nature of the contaminant(s);
- the frequency of the exceedences; and
- the location of nearby human receptors.

The timing for the approval may also be affected by incremental risks to potentially affected receptors present in the area. For more information, see Chapters 3 Upper Risk Thresholds and 4 Factors To Consider When There Are Exceedences of this Guideline.

2.9 Verification/Monitoring

As per subsection 35 (7) of the Regulation, if approval was issued on the condition that certain element of their action plan were met, facilities are required to notify the ministry when they have moved forward with those elements of their action plan and installed technical solutions to reduce concentrations. Any installation of equipment that affects emissions would also likely require an ECA mentioned under section 9 of the EPA. The Regulation allows facilities to submit their application for an ECA concurrently with their request for a site-specific standard.

Under Section 32 of the Regulation – Request for site-specific standard:

“... (4) An application for an environmental compliance approval or amendment to an environmental compliance approval may be made in conjunction with a request under subsection (1).

Under Section 35 of the Regulation – Approval of site-specific standard:

“(6) The Director may impose conditions in an approval under subsection (1).”

The approval of a site-specific standard is only in effect provided the conditions of the approval are being met. Subsection 35 (7) of the Regulation states:

Under Section 35 of the Regulation – Approval of site-specific standard:

“(7) If conditions are imposed under subsection (6),

- (a) subsection (4) applies only if the conditions are complied with; and***
- (b) the person who made the request under section 32 shall notify the Director when the conditions have been complied with.”***

An approval of a site-specific standard may also be amended.

Under Section 36 of the Regulation – Amendment of approval: Amendments related to site-specific standard

“36. (1) If the Director sets a site-specific standard under subsection 35 (1), the Director may give a person to whom the site-specific standard applies a notice,

- (a) altering the conditions imposed under subsection 35 (6);***
- (b) altering the period referred to in subsection 35 (9) so that it ends on an earlier date, if the Director is of the opinion that the person should be capable of complying with a more stringent standard by the earlier date;***
- (c) altering the period referred to in subsection 35 (9) so that it ends on a later date that is not more than 10 years after the date the period began;***
- (d) replacing the site-specific standard with a more stringent site-specific standard,***

if the Director is of the opinion that,

(i) the person is capable of complying with the more stringent site-specific standard, or

(ii) discharges of the contaminant that are permitted by the site-specific standard may cause an adverse effect;

(e) replacing the site-specific standard with a site-specific standard for another averaging period, if Schedule 3 sets out a standard for the other averaging period and, after the first-mentioned site-specific standard was set, an amendment to Schedule 3 removed the standard set out in Schedule 3 for the averaging period to which the first-mentioned site-specific standard applied; or

(f) setting an additional site-specific standard for another averaging period, if,

(i) after the first site-specific standard was set, an amendment to Schedule 3 added a new standard that applies to the other averaging period, and

(ii) the Director is of the opinion that the additional site-specific standard can be complied with by implementing the plan that was submitted under paragraph 7 of subsection 33 (1) or paragraph 4 of subsection 33 (4) with the request that related to the first site-specific standard.

(2) Before the Director gives a person a notice under subsection (1), the Director shall give the person a draft of the notice and an opportunity to make written submissions to the Director during the period that ends 90 days after the draft is given.

(3) References in this Regulation to a site-specific standard set under subsection 35 (1) include a replacement site-specific standard or additional site-specific standard set under clause (1) (d), (e) or (f)."

An approval of a site-specific standard may be revoked as set out subsection 37 (1) of the Regulation which states:

Under Section 37 of the Regulation – Revocation of site-specific standard

37. (1) The Director may give a person to whom a site-specific standard applies a written notice revoking the site-specific standard if the Director is of the opinion that,

(a) discharges of a contaminant that are permitted as a result of the site-specific standard may cause an adverse effect;

(b) conditions referred to in subsection 35 (6) or (8) are not being met;

(c) the person is unable to comply with section 20, even though the site-specific standard was set; or

(d) the person would be able to comply with section 20 without the site-specific standard.

(2) Before the Director gives a person a notice under subsection (1), the Director shall give the person a draft of the notice and an opportunity to make written submissions to the Director during the period that ends 30 days after the draft is given.

2.10 Processing the Request

The “Guide to Requesting a Site-Specific Standard” (PIBs 6322e01) as amended, provides more information on the processing of a request. In summary, a complete request for a site-specific standard must meet all of the requirements of sections 32, 33, 34 and 34.1 of the Regulation, which generally include:

- A full site-wide ESDM report (see Chapter 2.2.2 CAMMs of this Guideline and paragraphs 1 and 2 of subsection 33 (1) of the Regulation)
- Technology Benchmarking Report (see Chapter 2.4 Technology Benchmarking (Risk Control) of the Guideline and paragraphs 3, 4, 5, and 6 of subsection 33 (1) of the Regulation)
- Economic Feasibility Report (Optional, see Chapter 2.5 Economic Considerations of the Guideline and paragraphs 1, 2 and 3 of subsection 33 (4) of the Regulation)
- Action Plan (including continuous improvement measures, see Chapter 2.7 The Action Plan of the Guideline and paragraph 7 of subsection 33 (1) or paragraph 4 of subsection 33 (4) of the Regulation)
- Summary of Stakeholder Involvement (see Chapter 2.6 Stakeholder Involvement of the Guideline and paragraph 8 of subsection 33(1), and sections 34 and 34.1 of the Regulation)

If the facility decides to proceed with a request for a site-specific standard, the request would be submitted to the ministry for review. The ministry will review the information and may also administer a series of contracts that would have the ESDM Report, the

Technology Benchmarking Report or the Economic Feasibility Analysis (optional) reviewed by a third party on contract to the ministry.

2.10.1 Submission of Confidential Information

A request for a site-specific standard may contain sensitive technical or economic information. Some companies may be concerned about the requirement to share information with the public (as well as with the ministry).

In terms of the provisions of the Regulation that require a company to share information with the public, the ministry expects that, at a minimum, information shared would include anything which would normally be publicly available. This would include publicly available financial statements and reports in current and previous years. In addition, emissions data that affect POI concentrations must also be made available for public review.

The ministry does not expect a company to have to share with the public sensitive information that is submitted in confidence to the Director. If a member of the public requests access to such information, the ministry will handle the request in accordance with the Freedom of Information and Protection of Privacy Act (“FIPPA”). That statute defines what may and may not be disclosed to the public, and is used to assess all requests for information contained in documents on file with the ministry.

Among other things, FIPPA provides a process for evaluating and considering requests for access to information submitted in confidence to an institution, where certain enumerated harms could result (see FIPPA section 17). In order to avail themselves of the protection afforded by FIPPA section 17, a person requesting a site-specific standard should identify each record that contains confidential information, and mark the specific, confidential sections clearly. The person must also be prepared to provide detailed evidence in support of the confidentiality claim, based on FIPPA section 17, should a request for disclosure be made to the ministry. It is important to understand that the Information and Privacy Commissioner (“IPC”), not the ministry, is the ultimate decision maker, and the ministry may be ordered to disclose information even where it is marked confidential.

Apart from the process envisioned by the Regulation, information submitted with a request for approval may also be subject to posting on the Environmental Registry pursuant to the Environmental Bill of Rights (“EBR”). Regardless of the circumstances, the ministry’s practice is still to evaluate the release of information in accordance with FIPPA principles. Where an individual is dissatisfied with a decision of the ministry in terms of making information available, they have the option of making application under FIPPA in order to invoke the statutory scheme and have the request considered further by the IPC.

2.10.2 Considerations in Granting Approval

Subsections 35 (1) and (2) set out the authority under which the Director may approve a request for a site-specific standard. The Director will consider these subsections in making a decision. These subsections state:

Under Section 35 of the Regulation – Approval of request to set site-specific standard:

“35. (1) The Director may approve a request under section 32 and set a site-specific standard for the contaminant that is the subject of the request if,

(a) the person making the request has complied with sections 32 to 34.1; and

(b) the Director is of the opinion that,

(i) the person making the request cannot comply with section 20 with respect to the standard set out in Schedule 3 for the contaminant for the averaging period specified under paragraph 0.1 of subsection 33 (1) because,

(A) it is not technically feasible for the person to comply, in the case of a person who is relying on any paragraph of subsection 32 (1), or

(B) it is not economically feasible for the person to comply, in the case of a person who is relying on a paragraph of subsection 32 (1) other than paragraph 4,

(ii) the difference between the standard set out in Schedule 3 for the contaminant for the averaging period specified in paragraph 0.1 of subsection 33 (1) and the site-specific standard set by the Director for the contaminant is the minimum difference necessary to enable the person to comply with section 20 with respect to the contaminant, and

(iii) there is no public interest reason sufficient to require the denial of the request.

(2) Despite subsection (1), the Director shall not approve a request under section 32 to set a site-specific standard for a contaminant if the contaminant is listed in Schedule 6 and the Director is of the opinion that the site-specific standard is likely to permit discharges of the contaminant that too frequently result in the concentration of the contaminant at a point of impingement located on a place referred to in subsection 30 (8) exceeding the other time period upper risk threshold set out for the contaminant in Schedule 6.

(3) The Director shall not approve or refuse to approve a request under section 32 unless the Director first gives the person making the request a draft of the approval or refusal and an opportunity to make written submissions to the Director during the period that ends 30 days after the draft is given. ...”

3.0 UPPER RISK THRESHOLDS

Upper risk thresholds are described in Chapter 1.3 Framework For Managing Risks and are considered in the Regulation and/or guidance documents in the following ways:

- 1) **Site-specific Standards**
- 2) **Notification and Actions**
- 3) **During the phase-in period of a new or updated air standard**
- 4) **Daily Assessment Values for annual standards⁶**

These situations are further discussed below.

URT's are generally based on levels that represent ten times the air standard for non-carcinogens and a cancer risk of 10^{-4} for carcinogens (refer to Chapter 1.3 Framework For Managing Risks for further explanation).

Exceedences of air standards that were established based on environmental effects need to be carefully reviewed to evaluate the potential for health effects at higher exposure concentrations. URT's are set out in Schedule 6 of the Regulation.

3.1 Site-specific Standards and URT's

Requests for site-specific standards are assessed based on the maximum POI concentrations. However, if there are possible exceedences of the standard at the types of receptors identified in subsection 30 (8) – concentrations at child care facilities, educational facilities, senior's facility, health care facility or dwelling/residence or the like – then information at these receptors must also be submitted including an assessment of the frequency of exceedence at those locations.

As per subsection 35 (2) of the Regulation, the Director has the authority to refuse a request for a site-specific standard, for a contaminant listed in Schedule 6 of the Regulation, if the Director is of the opinion that the site-specific standard would likely permit discharges of the contaminant that too frequently result in the concentration of the contaminant at a POI exceeding the URT, at a location listed in subsection 30 (8) of the Regulation. In addition, there may be circumstances where, even though the URT's are not exceeded, the combination of the magnitude of the exceedence of the standard and the frequency of the occurrence may be of concern. When considering a request for a site-specific standard, a Director will also consider the frequency of the exceedences of the standard. Frequency is further discussed in Chapter 4 Factors To Consider When There Are Exceedences of this Guideline.

⁶ See Technical Bulletin on Assessment Values for details.

3.2 Notification and Actions for URTs

Section 30 of the Regulation specifies the actions required when a URT may be exceeded. For more information on ESDM reports under section 30, please refer to the ESDM Procedure Document. Where an exceedence of a URT (listed in Schedule 6 of the Regulation) is suspected at any POI, subsection 30 (3) of the Regulation requires a person to notify the ministry immediately in writing. Subsection 30 (1) of the Regulation sets out the requirements for taking action if the URTs for the contaminants listed in Schedule 6 of the Regulation may be exceeded based on any relevant information (e.g. modelling, monitoring, other observations, etc.). Subsection 30 (4) of the Regulation, requires that the person who discharged the contaminant to prepare an ESDM report in accordance with section 26 of the Regulation within three months of the discharge. It states:

Under Section 30 of the Regulation – Upper Risk Thresholds:

“30(1) A person who discharges or causes or permits the discharge of a contaminant listed in Schedule 6 into the air shall comply with subsections (3) and (4) if there is reason to believe, based on any relevant information, that discharges of the contaminant may result in,

- (a) the concentration of the contaminant exceeding the half hour upper risk threshold set out for that contaminant in Schedule 6 at a point of impingement, if section 19 applies to the person in respect of the contaminant; or***
- (b) the other time period upper risk threshold set out for that contaminant in Schedule 6 at a point of impingement, if section 20 applies to the person in respect of the contaminant...”***

“(2) Without limiting the generality of subsection (1), the reference in that subsection to relevant information includes relevant information from predictions of a dispersion model, including,

- (a) an approved dispersion model or other dispersion model; or***
- (b) a dispersion model that is not used in accordance with this Regulation.***

(3) If subsection (1) applies to a discharge, the person who discharged or caused or permitted the discharge of the contaminant shall immediately notify the Director in writing.

(4) If subsection (1) applies to a discharge, the person who discharged or caused or permitted the discharge of the contaminant shall, within three months after the discharge, prepare a report in accordance with section 26 and submit the report to

the Director.

(5) If a person is required to prepare a report under subsection (4) and section 20 does not apply to the person in respect of the contaminant, section 20 shall be deemed to apply for the purpose of preparing the report and for the purpose of subsections (7) and (8).

(5.1) A person who prepares a report required by subsection (4) shall prepare the report using,

(a) the AERMOD dispersion model described in paragraph 1 of subsection 6 (1); or

(b) Revoked: O. Reg. 507/09, s. 30 (2).

(c) a dispersion model or combination of dispersion models that,

(i) pursuant to subsection 7 (3), is deemed to be included in references in this Part to approved dispersion models, and

(ii) is capable of providing the information referred to in subsection (7).

(5.2) Despite subsections 10 (1) and (2), a person who prepares a report required by subsection (4) shall use an approved dispersion model in accordance with both of the scenarios described in subsection 10 (1).

(6) Paragraphs 1, 1.1, 2 and 2.1 of subsection 13 (1) do not apply to a person who prepares a report required by subsection (4) unless meteorological data described in paragraphs 3 and 4 of subsection 13 (1) is not available and cannot reasonably be available in time to prepare the report within the three-month period referred to in subsection (4).

(6.1) If a report is required by subsection (4) to be prepared in accordance with section 26, it is not necessary for the lists of contaminants required by paragraphs 2 and 4 of subsection 26 (1) to include any contaminant other than the contaminant in respect of which the Director must be notified under subsection (3).

(6.2) A person who is required to prepare a report under subsection (4) shall ensure that the table required by paragraph 14 of subsection 26 (1) contains the following additional information:

1. The other time period upper risk threshold set out for the contaminant in Schedule 6.

2. A comparison of the concentration referred to in subparagraph 14 v of subsection 26 (1) and the other time period upper risk threshold set out for the

contaminant in Schedule 6, expressed as a percentage of the threshold.”

Note that even if a standard (Schedule 2 or 3) is not yet in force for a contaminant listed in Schedule 6, if there is any reason to believe that discharges from a facility could result in an exceedence of a URT, then even though there is a phase-in period for the standard, the facility is required to submit an ESDM report (prepared in accordance with section 26 and the ESDM Procedure Document). This ESDM report only needs to address the contaminant that is believed to be exceeding the URT. This ESDM report must also provide further information on whether or not the exceedences are likely to be occurring and to evaluate the concentrations of the contaminant at the receptors identified in subsection 30 (8) of the Regulation. Subsection 30 (5.1) requires that this ESDM report be prepared using AERMOD or, if applicable, a model approved under section 7 of the Regulation that is capable of assessing frequency of exceedences.

Even though a facility may not yet be required to use the more advanced air dispersion models, this section requires this ESDM report to be prepared as if section 20 of the Regulation applied. The ESDM report must be done in accordance with the Regulation using the highest form of data quality available and appropriate operating conditions (see the ESDM Procedure Document and sections 10, 11 and 12 of the Regulation). Subsection 30 (5.2) requires that an ESDM report submitted for the purposes of section 30 include both operational scenarios in section 10 of the Regulation. Subsection 30 (6) of the Regulation requires that the ESDM report must be prepared using approved site-specific meteorological data. It is important to use approved site-specific meteorological data because the report must assess concentrations and frequency of exceedences at the receptors identified in subsection 30 (8) of the Regulation as well as at the maximum POI concentration. For more information, see Chapter 4 Factors To Consider When There Are Exceedences of this Guideline.

Paragraph 6 of subsection 30 (8) allows the Director to specify by notice a place where the discharge may cause a risk to human health. If the Director specifies such a location, then that location must be assessed in terms of exceedences and frequency of exceedences of standards.

Under Section 30 of the Regulation – Upper Risk Thresholds:

“(9) For the purpose of paragraph 6 of subsection (8), the Director may give written notice to a person who is required to notify the Director under subsection (3) stating that the Director is of the opinion that the discharge may cause a risk to human health at a place specified in the notice.

(10) Before the Director gives a person a notice under subsection (9), the Director shall give the person a draft of the notice and an opportunity to make written submissions to the Director during the period that ends five business days after

the draft is given.”

Monitoring data must also be included in the ESDM report where available or required. For the contaminant that may exceed the URT in Schedule 6, subsections 30 (7) and (11) of the Regulation require that the frequency of exceedences of the Schedule 3 standards at the listed locations be included in the ESDM report. This includes modelled as well as monitored frequency of exceedences. If the ESDM report indicates that there is an exceedence of a standard at a receptor identified in subsection 30 (8) or if the frequency of exceedences at those receptors is unacceptable (see Chapter 4 Factors To Consider When There Are Exceedences of this Guideline), then the ministry may require more timely abatement action to reduce the risk levels in the interim. The Regulation requires the following pertaining to frequency as it relates to URTs:

Under Section 30 of the Regulation – Upper Risk Thresholds:

“(7) If, according to an approved dispersion model that is used for the purpose of preparing a report under subsection (4), discharges of a contaminant may result in a contravention of section 20 because of the concentration of the contaminant at a point of impingement located on a place referred to in subsection (8), the person who prepares the report shall include the following in the report:

- 1. A statement or map identifying the place that the point of impingement is located on.***
- 2. A statement specifying the highest concentration of the contaminant that the approved dispersion model predicts for the point of impingement.***
- 3. A statement specifying the number of averaging periods for which the approved dispersion model predicts that discharges of a contaminant may result in a contravention of section 20 because of the concentration of the contaminant at the point of impingement, expressed as a percentage of the number of averaging periods in,***
 - i. a period of five years, if the approved dispersion model was used in accordance with meteorological data described in paragraph 1, 1.1, 2 or 2.1 of subsection 13 (1),***
 - ii. a period equal to the length of the period over which the meteorological data was collected, if the approved dispersion model was used in accordance with local or site-specific meteorological data described in paragraph 3 of subsection 13 (1), or***

iii. a period equal to the length of the period that was used for the purposes of the computational method, if the approved dispersion model was used in accordance with meteorological data obtained from a computational method in accordance with paragraph 4 of subsection 13 (1).”

“(11) If, according to measurements of air samples collected at a point of impingement, discharges of a contaminant may result in a contravention of section 19 or 20 because of the concentration of the contaminant at the point of impingement, a person who prepares a report under subsection (4) shall include in the report,

- (a) a statement or map identifying the place that the point of impingement is located on;*
- (b) a statement specifying the number of air samples that were collected at the point of impingement and measured for the contaminant; and*
- (c) a statement specifying the number of air samples that were collected at the point of impingement and measured for the contaminant and that indicated that discharges of the contaminant may result in a contravention of section 19 or 20 because of the concentration of the contaminant at the point of impingement, expressed as a percentage of the number of air samples referred to in clause (b).”*

As set out in subsection 30 (12), an ESDM report for the contaminant listed in Schedule 6 may not be required if the person can satisfy the Director that discharges of the contaminant will not result in a contravention of sections 19 or 20 and will not cause an adverse effect or is a report that has already previously been submitted for that contaminant.

Under Section 30 of the Regulation – Upper Risk Thresholds:

“(12) Subsection (4) does not apply if the Director is satisfied that discharges of the contaminant will not result in a contravention of section 19 or 20 and will not cause an adverse effect.

(13) Subsection (4) does not apply if,

(a) a report in accordance with section 26 that relates to the contaminant is already required to be submitted to the Director within the three-month period referred to

in subsection (4); or

(b) a report that relates to the contaminant has previously been submitted to the Director under subsection (4) and the Director is satisfied that another report is not necessary.”

For example, if a monitoring result was recorded based on a failure of the monitor to operate in a normal manner and this triggered an exceedence of the URT being measured, then there may not be a requirement for the report. Further discussions with the ministry staff are required before this decision can be considered.

Need for More Timely Action

If a facility has demonstrated that a URT is likely being exceeded (e.g. through monitoring or an approved dispersion model) at a childcare facility, educational facility, health care facility, senior's facility, residence/dwelling or a place specified in a notice from the Director, it is expected that the facility would take more timely action to ensure that the concentrations are reduced to levels below the URT.

If the Director has reasonable grounds to believe that a person has discharged or caused or permitted the discharge of a contaminant in circumstances that is likely to cause an adverse effect or endanger human health, the Director may require action to be taken to reduce the concentrations as soon as possible. The ministry may use order provisions under the EPA to require people to take timely action in these circumstances.

Another situation that may warrant more timely action is where, even though the URTs are not exceeded, the combination of the magnitude of the exceedence of the standard and the frequency of the occurrence is of concern. This is further discussed in Chapter 4 Factors To Consider When There Are Exceedences of this Guideline.

At this time, not all contaminants have an associated URT in Schedule 6 of the Regulation. In these situations, the ministry will assess POI concentrations on a case-by-case basis and determine if exceedences at certain levels should be subject to further assessments of potential adverse effects. This assessment would be consistent with the risk-based principles outlined in Chapter 1.3 Framework For Managing Risks of this Guideline.

Where a facility is exceeding a standard, notification and routine abatement action is required as set out in the sections 28 and 29 of the Regulation and the ministry's Compliance Guideline (F-2) (as amended). Note that where a facility has confirmed an exceedence of a URT, they are also in non-compliance with a standard once it takes effect unless they decide to pursue and are approved for a site-specific or technical standard (if available). Accordingly, the facility must comply with the requirements of

section 30 of the Regulation in addition to the requirements of sections 28 and 29 of the Regulation.

3.3 URTs during the phase-in of new/ updated air standards

Upper Risk Thresholds are NOT standards. A URT is set above the air standard but can be used to manage risks during the phase-in period of an air standard. During the phase-in period of a new or updated air standard, ESDM reports are expected, as a minimum, not to exceed the URT concentrations set out in Schedule 6 of the Regulation. If an old standard or guideline was less stringent than a URT, then this value is removed from the POI list. During the phase-in period, any ESDM Report prepared in accordance with the Regulation will instead be assessed against the URTs rather than the less stringent older standards or guidelines. If there was no existing standard or guideline for a contaminant, then the URT is also used during the phase-in period for assessment purposes as people prepare for the new or updated air standard.

3.4 Assessment Values for Annual Standards

“Assessment values” may be introduced for exclusive use with the annual standards. For a list of current “Assessment Values”, please see the ministry’s Technical Bulletin “Methodology For Assessment of Contaminants with Annual Average Standards under O. Reg. 419/05” (as amended) and available on the ministry website. An assessment value may be an annual value or a daily value used to assess short-term periods of elevated exposures during peak operations. Annual assessment values are intended to assess the maximum exposure that could result over a year if the facility operated at peak daily capacity every day of that year. Daily assessment values are intended for assessment of the highest exposure that could result over a day if a facility operated at its peak daily capacity during that day (and worst case meteorological conditions). Currently, the daily assessment value for a given compound is equivalent to the URT value of that compound. Unlike URTs, assessment values are not defined in the Regulation. If the value is exceeded, it may trigger further assessment or action if necessary. If the daily assessment value is equal to the URT, then there is already a requirement to notify the ministry immediately in writing, as per section 30 of the Regulation.

Assessment values would only be used if section 20 applies to the facility and they are assessing against an annual standard in Schedule 3 (i.e. would not be used by a facility assessing against a standard in Schedule 2). Assessment values are based on the same science underlying the annual air standard but are set at higher risk levels. Over time, the ministry may also set short-term standards for contaminants based on an effect other than that used to develop an annual standard. Short-term standards would address concerns about elevated exposures during certain operation conditions and may replace the need for assessment values.

4.0 FACTORS TO CONSIDER WHEN THERE ARE EXCEEDENCES

A facility may be required to complete an ESDM report for different reasons as described in Chapter 2.1 Initiation And Scope Definition of this Guideline and the ESDM Procedure document. Once a facility has completed an ESDM report (as per section 26 of the Regulation), and it indicates an exceedence of an air standard (or ministry POI Limit), then appropriate action needs to be taken. Prohibitions under section 20 of the Regulation are shown below. There are similar prohibitions for section 19.

Section 20 - Schedule 3 standards:

“(1) A person shall not discharge or cause or permit the discharge of a contaminant listed in Schedule 3 into the air if a standard is set out in that Schedule for the contaminant for a specified averaging period and the discharge results in the concentration of the contaminant at a point of impingement exceeding that standard.

(2) A person shall not discharge or cause or permit the discharge of a contaminant listed in Schedule 3 into the air if a standard is set out in that Schedule for the contaminant for a specified averaging period and the discharge would result, according to an approved dispersion model, in the concentration of the contaminant at a point of impingement exceeding that standard...”

Any exceedences of monitored or modelled emissions must be reported to the Director under section 28 of the Regulation. Section 12 of the Regulation (“refinement” as described in Chapter 9.3 Refinement Of Emission Rates of the ESDM Procedure) applies for modelled exceedences. Confirmed exceedences of the standard, or potential for adverse effects, must be also be followed up with an abatement plan within 30 days as set out in section 29 of the Regulation.

Note that if any relevant information indicates an exceedence of the URT, section 30 of the Regulation requires immediate reporting in writing (i.e. before “refinement of emissions”). If subsequent “refinement” confirms an exceedence of the URT or the standard, sections 28 and 29 apply.

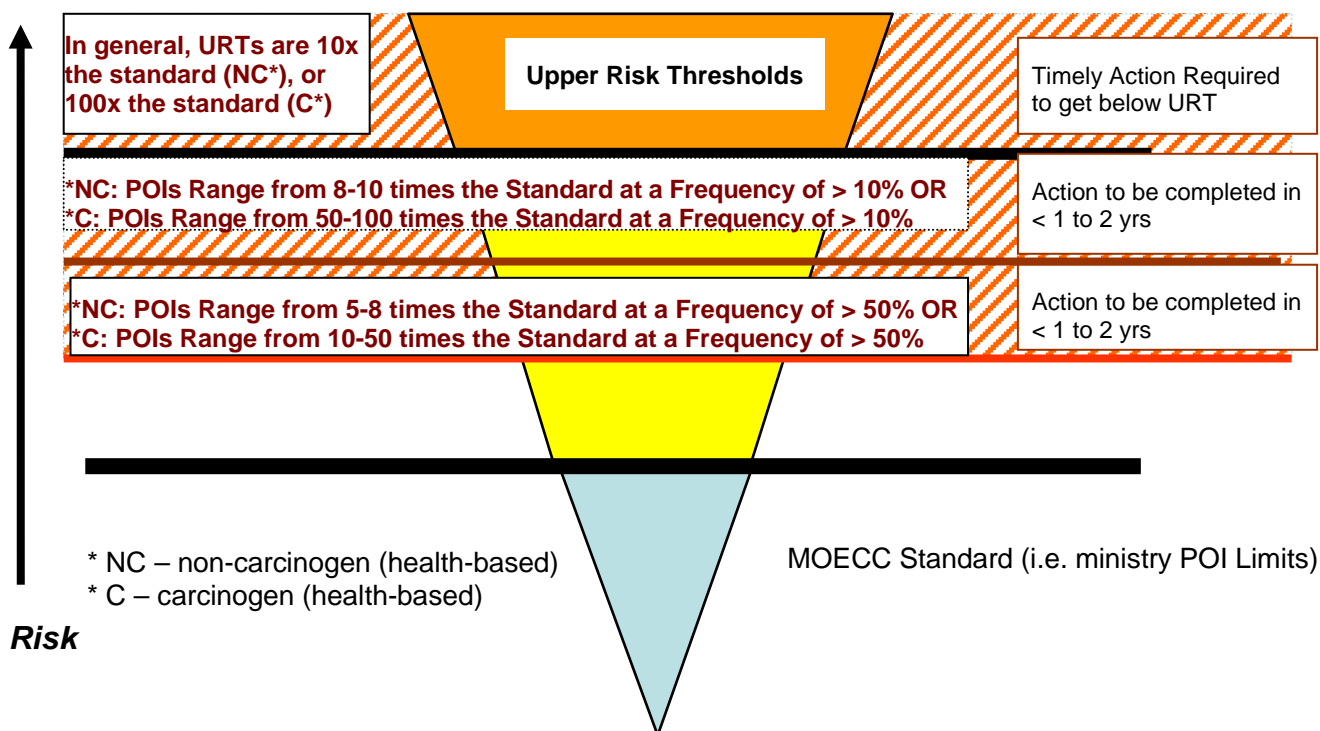
If an ESDM report shows an exceedence of the standard, but it is below the URT, this requires action to get into compliance with the Regulation. In certain circumstances, there will be a need for more timely action to be taken if the magnitude and frequency of exceedences in the “ALARA” Region (see Figure 1 MOECC’s Framework to Manage Risks under the Regulation) are considerable. The magnitude of the exceedence refers to the extent to which the POI concentration exceeds the standard (e.g. is the POI 10 times the standard or 50 times the standard?). The frequency refers to the number of

times the model (or monitoring information) indicates that an exceedence of the standard has or will likely have occurred over a period of time. Frequency is normally expressed as a percentage of time (e.g. standard was exceeded 10% of the time over the last 5 years). General screening level guidance to evaluate both the magnitude of the exceedence and the frequency of exceedences for concentrations above the standard, but below the URT, has been developed. The suggested approach is described in the Figure 3: Approach for Consideration of Magnitude and Frequency.

The approach illustrated in Figure 3: Approach for Consideration of Magnitude and Frequency suggests that where exceedences of a contaminant (e.g. a carcinogen or a non-carcinogen), evaluated at a receptor identified in subsection 30 (8) of the Regulation, are of a certain magnitude and frequency, more timely assessment or action should be undertaken. For example, if a facility is emitting a non-carcinogen contaminant at concentrations where the maximum POI concentration was 5 times the standard (but below the URT) for significant periods of time (e.g. 50% frequency) then Figure 3 Approach for Consideration of Magnitude and Frequency suggests, in the absence of any more detailed information, that action should be considered to reduce those concentrations within one to two years. This is further explained in Table 5: Examples of Assessing Magnitude and Frequency

The Figure 3: Approach for Consideration of Magnitude and Frequency is not intended as an indicator of risk or to prescribe actions but rather is intended as a tool for prompting more immediate assessment and/or action. More detailed analyses may be carried out by the ministry for the purpose of evaluating modelled or measured exposures and for evaluating proposed risk reduction measures. As a minimum, the approach to assessing frequencies shown in Figure 3: Approach for Consideration of Magnitude and Frequency could trigger the need for a more thorough assessment.

Figure 3: Approach for Consideration of Magnitude and Frequency



If an ESDM report confirms an exceedence of a URT at a receptor identified in subsection 30 (8) of the Regulation, then timely action will likely be required to get concentrations below those levels. For more information, please refer to Chapter 3 Upper Risk Thresholds of this Guideline. For the analysis of frequency associated with an exceedence of a URT, it is necessary to determine a number of ranges for frequency. As illustrated in Figure 3: Approach for Consideration of Magnitude and Frequency above, the following is required:

- the number of times (% or frequency) that the model shows a concentration that is above the URT at a receptor specified in subsection 30 (8) of the Regulation or other receptor required by the Director;
- the number of times that the model shows a concentration that is in range of 8 to 10 times the standard for non-carcinogens or 50 to 100 times the standard for a carcinogen;
- the number of times that the model shows a concentration that is in the range of 5 to 8 times the standard for non-carcinogens or 10 to 50 times the standard for a carcinogen; and
- the number of times that the model shows an exceedence of the standard at any receptor specified in subsection 30 (8) of the Regulation or other receptor required by the Director.

When assessing the frequency of exceedences using AERMOD, it is possible to specify the same averaging period for multiple thresholds using different source groups with the MAXIFILE output option. Hence, the required information may be obtained from a single model run for each contaminant.

POSTFILE

The POSTFILE option is similar to the MAXIFILE option except that there is no threshold and every modelled concentration for every specified averaging period for every receptor is sent to the post output file (.POS). This can generate huge files. In most cases the formatted (ASCII) file format is the desired option. The most practical way of processing the data in a POSTFILE is with the use of a separate program or customized spreadsheet/database macros that have been designed for that purpose.

Table 5: Examples of Assessing Magnitude and Frequency.

Carcinogens (RQ)

The magnitude of the exceedence and the frequency of exceedence can be calculated as follows:

Magnitude of the exceedence = RQ (the risk quotient) = C/ministry Standard (or ministry POI limit)

Frequency = W_L and would be calculated as follows for a 24 hr health-based standard or limits:

$$W_L = \left(\frac{\text{\# of 24 hr (or days) exceedences of the ministry standard}}{\text{Total \# of days}} \right) * 100$$

$$= \% [\text{\# of 24 hr (or days) of exceedences}]^7$$

In order to determine W_L for modelling, a post processing step is required (see ADMGO).

[Note: for standards with annual averaging periods, the frequency assessment would continue to be assessed on a 24 hr basis].

Facilities must assess potential exceedences of standards at receptors described in subsection 30 (8) of the Regulation. If the RQ is between 10 and 50 for more than 50% of the time or the RQ is between 50 and 100 for more than 10% of the time, then timely action to reduce the concentrations should be considered. The suggested timeframe is to

⁷ Frequency of exceedences must be assessed using modelled concentrations and the total number of days would be the total number of days in the model run – using site-specific approved meteorological data. Monitoring data, where available, must also be presented. Both results must be reported separately but both must be included in the ESDM Report.

reduce those concentrations at human receptors listed in subsection 30 (8) within a one to two year timeframe.

Non-Carcinogens (HQ)

Magnitude of the exceedence = RQ (the risk quotient) = HQ = C/ministry Standard (or ministry POI limit)

Frequency = W_L and would be calculated as follows for a 24 hr health-based standard or limits:

$$W_L = \left(\frac{\text{\# of 24 hr (or days) exceedences of the ministry standard}}{\text{Total \# of days}} \right) * 100$$

$$= \% [\text{\# of 24 hr (or days) of exceedences}]^8$$

In order to determine W_L for modelling, a post processing step is required (see ADMGO).

[Note: for standards with annual averaging periods, the frequency assessment would continue to be assessed on a 24 hr basis].

Facilities must assess potential exceedences of standards at receptors described in subsection 30 (8) of the Regulation. If the HQ is between 5 and 8 for more than 50% of the time or the HQ is between 8 and 10 for more than 10% of the time, then timely action to reduce the concentrations should be considered. The suggested timeframe is to reduce those concentrations at human receptors is within a one to two year timeframe.

The magnitude of the exceedence, the geographic extent or footprint of the exceedence, the frequency of the exceedence, and the possible human receptors in subsection 30 (8) may all be important factors to consider when a facility is operating above the air standard. The combination of frequency of the exceedence and magnitude of the exceedence of the standard/ministry POI limit may be considered when:

- assessing adverse effects at the types of receptors referenced in subsection 30 (8) including childcare facilities, educational facilities, senior's facilities, health care facilities and dwellings/residences or the like that would require timely action; and
- determining whether or not a facility should be allowed to operate in a manner that results in such exceedences for some extended period of time when a request for a site-specific standard has been submitted.

For example, if a detailed assessment of the magnitude and frequency of exceedence indicates a potential for adverse human health effects, the ministry would work with a facility to ensure that risks were reduced as soon as possible. Approval for a subsequent

request would require special considerations and the requirements outlined in Chapter 2.10 Processing The Request of this Guideline as well as GRSSS would have to be met.

If there are exceedences of the ministry standards (or the ministry POI Limits) at places where members of the public may be exposed to the contaminant, these must also be assessed and addressed as part of the action plan for the site-specific standard. The ESDM report must accurately assess contaminant concentrations at locations where the public may be exposed to the contaminants. Subsection 33 (1) paragraph 2 of the Regulation requires the frequency of exceedences at all POIs to be assessed. However, in most cases, assessment of frequency of exceedences at the locations set out in subsection 30 (8) of the Regulation and at the maximum POI concentrations will suffice. The frequency and magnitude of exceedences will be used to inform a Director's opinion under subsection 35 (2), on whether or not to approve a request for a site-specific standard. Subsection 35 (12) also requires the Director to consider the following:

Under section 35(12) - Approval of request to set site-specific standard

“... (12) The Director shall consider the following matters when he or she decides whether to impose conditions under subsection (6), what those conditions should be, and what period to specify under subsection (9):

1. The nature of the contaminant.

2. The frequency with which the inability to comply with section 20 referred to in subclause (1) (b) (i) would occur.

3. Whether there are any acute effects associated with the contaminant...”

If either modelling or monitoring indicates that discharges from a facility may result in an exceedence of the standard or the ministry POI Limits (that are in the Benchmark 1 (B1) category in the Air Contaminants Benchmarks (ACB) List), a facility is required to notify the Director under section 28 of the Regulation. Subsections 25 (10), (11) and 28 (2), (3) of the Regulation state that the Director may require a person to provide maps and information on the frequency of the exceedences. This will assist in a further analysis of the magnitude, geographic extent, and receptors that are potentially affected. In some cases, this assessment may lead to the need for more timely abatement action to reduce the POI concentrations. This information may also be considered in determining an acceptable abatement plan for a facility. In most cases, the information that should be included under these sections is:

- A written statement or contour map that identifies the location and magnitude of the POI concentrations for the scenario that results in the maximum POI concentration for the contaminant(s) where compliance with the standard cannot be achieved.

- A written statement of the frequency of occurrence of the exceedences at all the locations set out in subsection 30 (8) of the Regulation as well as at the maximum POI concentration based upon the use of the most site-specific meteorological data in conjunction with an approved dispersion model (see ADMGO for more information on the appropriate use of an approved dispersion model).
- A summary of any monitoring data at any location and assessment of the frequency of exceedences.

This information is also required to be submitted if there is reason to believe that there is an exceedence of a URT (see subsections 30 (7), (11) of the Regulation). The use of the US EPA approved models listed in section 6 of the Regulation (e.g. AERMOD), means that the frequency of exceedence or occurrence at any given location can be assessed. When assessing frequency, it is important that the best available local meteorological data is used to assess concentrations and frequencies of exceedences at the receptors identified in subsection 30 (8). The most site-specific meteorological data is required to be used for requests for site-specific standards (see subsection 33(10) of the Regulation). The best available meteorological data is also required to be used for assessments of the URTs (see subsection 30 (6) of the Regulation). As per subsection 13 (2) of the Regulation, the Director may give written notice to a person who discharges or causes or permits the discharge of a contaminant requiring that an approved dispersion model that is used for the purposes of this Part be used with a type of meteorological data specified in the notice that, in the opinion of the Director, accurately reflects meteorological conditions.

In summary, any exceedence of a ministry POI Limit (that is in the Benchmark 1 (B1) category in the Air Contaminants Benchmarks (ACB) List) would require notification under section 28 of the Regulation followed by an abatement plan under section 29 of the Regulation. The abatement plan may include a decision to submit a request for a site-specific standard. The information in this Chapter 4 Factors To Consider When There Are Exceedences may be used to determine the timeframe for appropriate action to be taken. It will also be considered for the approval of site-specific standards.

5.0 GLOSSARY OF TERMS

ADMGO: Air Dispersion Modelling Guideline for Ontario (as amended) PIBs# 5165e03

Air: means open air not enclosed in a building, structure, machine, chimney, stack or flue.

Approved Model: is a model approved for use in Ontario as set out in sections 6 and 7 of the Regulation.

ALARA: As Low As Reasonably Achievable

C: means the concentration in $\mu\text{g}/\text{m}^3$

CCME: Canadian Council of Ministers of the Environment

Dispersion Model: A group of related mathematical algorithms used to estimate (model) the dispersion of contaminants in the air due to factors such as transport by the wind and turbulence.

EPA: Ontario's Environmental Protection Act

ESDM report: Emission Summary and Dispersion Modelling report

ESDM Procedure Document: means the "Procedure for Preparing an Emission Summary and Dispersion Modelling Report" (as amended) PIBs# 3614e04.

GIASO: means the "Guideline for the Implementation of Air Standards in Ontario" (as amended) PIBs#5166e03

GLC: Ground Level Concentration - the concentration of contaminant at ground level from a dispersion model

GRSSS: means the "Guide to Requesting a Site-Specific Standard" (as amended) PIBs#6322e02.

HQ: Hazard Quotient: is used to measure potential human health hazards from non-carcinogenic substances. The HQ is the ratio of the daily intake (or in the context of GIASO, daily average concentration) of a specified non-carcinogenic effect of a substance during a specified time period over (divided by) a reference dose (or in the context of GIASO, Reference Concentration which is generally the ministry standard for a non-carcinogen) for a similar time period. If the HQ exceeds one, the possibility exists for systemic toxic effects. $\text{HQ} = \text{Daily intake}/\text{Reference dose}$, or in the context of GIASO, $\text{HQ} = \text{Daily average concentration}/24 \text{ hour avg. Reference Concentration}$.

MACT: Maximum Achievable Control Technology

Ministry POI Limit: The generic term "ministry POI limits" used in the context of this Guideline means any numerical concentration limit set by the ministry including standards

in the schedules of the Regulation, guidelines and recommended screening levels for chemicals with no standard or guideline.

$\mu\text{g}/\text{m}^3$: a microgram, one millionth of a gram in a cubic meter of air

MOECC or Ministry: means the Ontario Ministry of the Environment and Climate Change.

Regulation: the Regulation means Ontario Regulation 419/05: Air Pollution – Local Air Quality (as amended) that revoked and replaced Ontario Regulation 346.

RQ: Risk Quotient - In the context of GIASO, RQ is the ratio of the contaminant concentration (generally 24-hour average) divided by the ministry POI Limit (using the same averaging period which is generally 24 hr).

US EPA: means the United States Environmental Protection Agency.

6.0 REFERENCES

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APPENDIX I: TARGETED SECTORS

Sectors targeted to use the US EPA approved dispersion models in paragraphs 1 to 4 of subsection 6 (1) of the Regulation and maintain an ESDM report are listed in Schedule 4 and 5 of the Regulation.

SCHEDULE 4 TARGET SECTORS FOR 2010

Item	NAICS Code	North American Industry Classification System Description
1.	2122	Metal Ore Mining
2.	221112	Fossil-Fuel Electric Power Generation*
3.	324110	Petroleum Refineries
4.	3251	Basic Chemical Manufacturing
5.	3252	Resin, Synthetic Rubber, and Artificial and Synthetic Fibres and Filaments Manufacturing
6.	3311	Iron and Steel Mills and Ferro-Alloy Manufacturing
7.	331410	Non-Ferrous Metal (except Aluminum) Smelting and Refining

*Note: A fossil-fuel electric power generation facility with a maximum electrical power output capacity of less than 25 megawatts shall be deemed not to be part of the class identified by NAICS code 221112 (Fossil-Fuel Electric Power Generation).

SCHEDULE 5 TARGET SECTORS FOR 2013

Item	NAICS Code	North American Industry Classification System Description
1.	3221	Pulp, Paper and Paperboard Mills
2.	324190	Other Petroleum and Coal Products Manufacturing
3.	325	Chemical Manufacturing ^o
4.	326150	Urethane and Other Foam Product (except Polystyrene) Manufacturing
5.	3279	Other Non-Metallic Mineral Product Manufacturing
6.	331	Primary Metal Manufacturing
7.	332810	Coating, Engraving, Heat Treating and Allied Activities ^{ME⁸}
7.1	332999	All Other Miscellaneous Fabricated Metal Product Manufacturing ^{ME⁸}
8.	336	Transportation Equipment Manufacturing
9.	5622	Waste Treatment and Disposal

- Notes:
- i) A mobile PCB destruction facility within the meaning of Regulation 352 of the Revised Regulations of Ontario, 1990 (Mobile PCB Destruction Facilities) made under the Act shall be deemed not to be part of the class identified by NAICS code 5622 (Waste Treatment and Disposal); and
 - ii) A facility shall be deemed not to be part of the class identified by NAICS code 5622 (Waste Treatment and Disposal) unless the facility,
 - is a solid waste combustor or incinerator, or
 - is used for hazardous waste treatment or disposal.

⁸ This is in addition to those facilities identified in Schedule 4.