

## Ontario Regulation 419 – Local Air Quality

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### INTRODUCTION

*Ontario Regulation 419 – Local Air Quality* came into force on November 30, 2005 - retiring the dated *O.Reg. 346 – General Air Regulation*.

The new regulation has four main elements:

- Prohibition of any exceedence of an air criteria, whether modeled or monitored
- Introduction of new air dispersion models
- Introduction of new air standards
- Codification of Emission Summary and Dispersion Modeling Reports

The changes in the way that Air Quality is now regulated in Ontario are radical and sweeping. The elements of this regulation will be implemented over a 15 year period with all emitters covered by 2020.

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### PURPOSE OF THIS DOCUMENT

The purpose of this document is to familiarize the reader with the main changes to the regulation of Air Quality in Ontario and to highlight some of the key issues that might arise at their facility.

The reader is cautioned that this is a very complex regulation and that this document, by necessity of space, briefly touches on the major topics and should not be viewed as a comprehensive review of the regulation. We would be pleased to discuss specific questions in more detail.

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### CONTENTS

The topics presented in this document include:

- Major Changes
  - New Air Models
  - New Standards
  - ESDM Report requirements
  - Alternate standards
  - Implementation Schedule
  - Implications
  - How LEHDER can assist our clients
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### KEY MOE DOCUMENTATION

There are several key MOE documents:

- [\*Ontario Regulation 419/05 Air Pollution - Local Air Quality\*](#)
- [Summary of O. Reg. 419/05 Standards and Point of Impingement Guidelines and Ambient Air Quality Criteria \(AAQCs\) – Sorted Alphabetically](#)
- [Guideline A-10: Procedure for Preparing an Emission Summary and Dispersion Modelling \(ESDM\) Report](#)
- [Guideline A-11: Air Dispersion Modelling Guideline for Ontario](#)
- [Guideline A-12: Guideline for the Implementation of Air Standards in Ontario](#)

All the above and a great deal more information can be found at:

[www.ene.gov.on.ca/envision/AIR/regulations/localquality.htm](http://www.ene.gov.on.ca/envision/AIR/regulations/localquality.htm)

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### WHAT ARE THE MAJOR CHANGES INTRODUCED WITH REG 419?

Some of the major changes introduced by Reg. 419 include:

- Prohibition of exceedance of an Air Criteria whether it is modeled or monitored.
- New notification requirements for modeled or monitored exceedance of an Air Criteria.
- The use of USEPA air dispersion models (AERMOD, ISCPrime, SCREEN3) is phased in over a period of 15 years.
- Three schedules of air standards to be used in conjunction with the staged implementation of the new list of approved models. The new standards are effects-based and have variable averaging periods.
- Introduction of the Upper Risk Threshold concept.
- Regulated facilities will be required to prepare and maintain a current Emission Summary and Dispersion Modeling (ESDM) report.
- Reg. 419 specifies the contents of the ESDM report and mandates conservatism in preparing emission estimates. CofA applications must include an ESDM report for ALL contaminants emitted from the site.
- Specified time frames to apply for Alteration of the applicable air standard(s) for facilities unable to meet the scheduled air standards. The proponent must provide a detailed report summarizing the potential impacts, review of available control technologies and an economic analysis. Public consultation is a required element of the regulation.

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### NEW AIR MODELS

Reg. 419 introduces several new air dispersion models developed by the USEPA as replacements for the thirty-year old Reg. 346 models. These are:

- AERMOD
- ISCPrime
- SCREEN3

**AERMOD** is a state-of-the-art model that has been adopted as a regulatory model in the United States by the US Environmental Protection Agency (USEPA). It allows the modeling of multiple stacks and sources using either a MOE designated or a site specific set of hourly meteorological data. The physical terrain surrounding the source is taken into consideration by the model. The output is provided in terms of hourly or daily concentrations.

**ISCPrime** is an updated version of ISCST3 which includes improved algorithms for building downwash. Like AERMOD it uses surrounding terrain and hourly meteorological data as inputs

**SCREEN3** has been used for many years by the USEPA as a permit screening tool. It is simple to run and very fast. It is only possible to model one source at a time in SCREEN3 using a defined meteorological data set that generally provides a conservative estimate of impact. SCREEN3 only provides hourly output.

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### NEW STANDARDS

Reg. 419 introduced three schedules of Air Quality Standards:

**Schedule 1** provides ½ hour Point of Impingement standards and applies to all existing facilities until 2010. This schedule assumes the use of the Model in the Appendix to Reg. 346.

**Schedule 2** provides ½ hour Point of Impingement standards and applies to all existing facilities not specified in the regulation to use the new models commencing in 2010. This schedule assumes the use of the Appendix to Reg. 346 model.

**Schedule 3** provides Effects Based Standards where the averaging times range from 10 minutes to 1 hour to 24 hour depending on the contaminant and assumes the use of the new air dispersion models. This schedule applies:

- **Immediately** to new facilities with NAICS codes specified in Schedules 4 and 5 (see Implementation Schedule below);
- In **2010** to existing facilities with NAICS codes specified in Schedule 4;
- In **2013** to existing facilities with NAICS codes specified in Schedule 5;
- In **2020 for all other facilities; or**
- When **Director's Orders** requiring a facility to use the new air models have been issued by the MOE

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### ESDM REPORT REQUIREMENTS

The preparation and contents of an Emission Summary and Dispersion Modeling (ESDM) Report have been dictated by O.Reg. 419. For example:

- Facilities are required to establish and maintain an ESDM Report at the site available for inspection by MOE once Schedule 3 Standards apply to the facility
- Content of an ESDM Report is specified by Reg 419
- Format of an ESDM Report is specified by Guideline A-10

Note that an ESDM Report with the mandated format and content is now required for every CofA application.

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### UPPER RISK THRESHOLD

Schedule 6 of O. Reg. 419 lists 58 contaminants which have Upper Risk Thresholds (URT). The URTs are not standards, but are concentrations that must not be exceeded based upon health concerns. They are listed in units of ug/m<sup>3</sup> and are established on a half hour and 24 hour averaging time basis. The MOE typically set the URT at either 10X the air standard for non-carcinogens, or 100X the standard for carcinogens.

The regulation requires a facility to notify the MOE immediately in writing "if there is reason to believe, based on any relevant information" that an URT exceedance **MAY** occur. The MOE's stated position is that information such as unrefined modelling data, or unsubstantiated monitoring data must be reported.

Important Note: In some cases, the URT is equal to or lower than the historical Standard specified in Reg. 346. In these cases, there is no Schedule 1 Standard in Reg. 419 and the URT is the de facto standard for the site until Schedule 2 or 3 standards apply.

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### WHAT HAPPENS IF AN URT IS EXCEEDED?

If a facility models or monitors an exceedance of an Upper Risk Threshold as listed in Schedule 6, it must:

- **immediately** notify the Director in writing, AND
- submit an ESDMR using advanced models and Schedule 3 standards to the Director within 3 months

O. Reg. 419 also prescribes extra ESDMR content for submissions related to URT exceedances which requires significant effort to prepare. Also note that even if the exceedance was predicted using the O. Reg. 346 model, and the advanced models/Schedule 3 don't apply to a facility yet, the ESDMR must be prepared using advanced models and Schedule 3 standards.

### ALTERNATE STANDARD SETTING

For facilities that are unable to meet a Standard by the specified in-force date, the MOE has identified an alternative standard process to establish interim site specific standards until the facility is able to demonstrate compliance with the standard. The proponent must provide an Application that includes:

- Form with name and location of applicant, contaminant name, etc.
- Emission Summary Table from an ESDM Report including the results from a special modelling/ monitoring study, and an assessment of the magnitude and frequency of exceedances of the standard(s), etc.
- Technology Benchmarking Report assessing and ranking the technical methods for reductions in contaminant concentrations and providing an assessment of feasibility for the available technologies.
- Public Consultation Report summarizing the results of the mandatory public meeting(s) with the local community.
- Action Plan with a schedule of dates/timelines
- Optional Economic Feasibility Analysis

### IMPLEMENTATION SCHEDULE

The scheduled implementation of Reg. 419 is based on Industrial Sectors. The sectors impacted by the first two phases are presented in the following table. All other sectors must demonstrate compliance with Schedule 3 Air Standards by 2020 using the new air models.

Implementation Date			
Schedule 4 February 1, 2010		Schedule 5 February 1, 2013	
Sector	NAICS	Sector	NAICS
Metal Ore Mining	2122	Pulp, Paper and Paperboard Mills	3221
Fossil-Fuel Electric Power Generation	221112	Other Petroleum and Coal Products Manufacturing	324190
Petroleum Refineries	324110	Chemical Manufacturing	325
Basic Chemical Manufacturing	3251	Urethane and Other Foam Product (except Polystyrene) Manufacturing	326150
Resin, Synthetic Rubber, and Artificial and Synthetic Fibres and Filaments Manufacturing	3252	Other Non-Metallic Mineral Product Manufacturing	3279
Iron and Steel Mills and Ferro-Alloy Manufacturing	3311	Primary Metal Manufacturing	331
Non-Ferrous Metal (except Aluminum) Smelting and Refining	331410	Fabricated Metal Product Manufacturing	332
		Transportation Equipment Manufacturing	336
		Waste Treatment and Disposal	5622
<b>All other sectors – February 1, 2020</b>			

### Implications

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#### **WHAT SHOULD THE REGULATED COMMUNITY DO?**

If you have not done so already, LEHDER strongly recommends that you assess your facility against the proposed standards using the appropriate models as soon as possible. Any company that holds a Certificate of Approval, CofA for air discharges should consider the potential impact of this proposed change on both current operations and future plans. The following issues should be considered in your assessment:

- Are any Point of Impingement Standards or Approvals Screening Levels or proposed Standards challenged?
- What is the predicted frequency of exceedances?
- What are potential solutions for demonstrating compliance? Taller stacks? Control equipment? Pollution prevention?
- What are the potential costs?
- What will it do for economic competitiveness?
- What will it do to your future plans?

It is important to remember that there will only be a one year window of opportunity during which you can apply for assignment of an interim standard from the MOE. Therefore it is imperative to assess your facility using AERMOD as soon as possible to allow sufficient planning and solution development if your facility is in a non-compliance situation.

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#### **INCREASED LEGAL COMPLEXITY**

Because of the multistage implementation of specific parts of the regulation, the wording is extremely complex and confusing. Even those of us who work with regulations on a continuous basis will find this one tough to interpret. Unfortunately, this means that it will be difficult for industry to comply and for the MOE to administer.

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#### **POTENTIAL ACCELERATION OF APPLICABILITY**

We should anticipate that some facilities will be required by the MOE to use the new models and standards well ahead of the dates set out in the regulation. The MOE has a long history of implementing proposed guidelines or policies before they are even put out into the public sector. For example, the recent trend for the requirement to conduct AERMOD modeling as a CofA condition and in the “invitations” to participate in the Selected Targets for Air Compliance (STAC) program.

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#### **INCREASED LEVEL OF EFFORT**

The level of effort required to prepare an ESDM report that meets the new requirements in the regulation is significantly more than that required in the past. Additionally, setting up and interpreting the output of the new models takes much longer than it did with the simpler Reg. 346 model.

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### **WILL THE NEW STANDARDS IMPACT MY COMPLIANCE STATUS?**

The MOE recognizes that the introduction of new or revised air standards and models means that not all facilities may be able to achieve compliance with MOE air standards within the proposed phase-in period due to technology limitations and economic realities.

If a company is able to demonstrate that compliance with an air standard(s) could not be achieved during the phase-in period, then the risk-based decision making process outlined in the “Guideline for the Implementation of Air Standards in Ontario” (GIASO) could be considered.

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### **WILL I BE ABLE TO RUN THE NEW MODELS MYSELF?**

Versions of the new models are commercially available in user friendly formats; however, the new models are significantly more complex than the current Reg. 346 models.

LEHDER recommends that if you want to run the models yourself that you:

- Have the models set up initially by experienced air quality professionals
  - Get training in the general and site-specific use of the model
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### **HOW CAN LEHDER HELP?**

LEHDER’s Air Quality professionals intimately understand the Ontario regulatory regime and the nuances of the modeling process and would be pleased to discuss the implications of Reg. 419 to your facility at your convenience.

Typical activities include:

- Review and update your current source inventory to ensure all sources have been included
  - Review and update the emission inventory to reflect all sources of emission, and calculate emissions for each required averaging time
  - Prepare and populate the advanced air dispersion models with property line, building, source and emission information
  - Run the air dispersion model(s) and extract data in format required by MOE
  - Compare model results to MOE standards, Ambient Air Quality Guidelines and Approval Screening Levels
  - Summarize results identifying any potential compliance challenges and potential solution options if necessary
  - Prepare an Emission Summary and Dispersion Modeling Report in the mandated format.
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### LEHDER AIR QUALITY MANAGEMENT CAPABILITIES

The Air Quality Management Services provided by LEHDER include:

- Regulatory Negotiations and Strategic Planning
- Applications for Permits, Licenses and Certificate of Approval
- Source Testing (Air)
  - Compliance
  - Engineering/Process Evaluations
- Odor Evaluations
  - Compliance Odor Testing and modeling
- Dispersion Modeling
  - Ontario Reg. 346
  - AERMOD, ISCPrime
  - Screen 3
- Preparing Source and Emission Inventories
- Annual Emission Inventories
  - NPRI
  - GHG Reporting

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### FOR FURTHER INFORMATION

For further information please contact:

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### ABOUT LEHDER

LEHDER Environmental Services Limited is one of the largest Air Quality Management consulting companies in Canada. Our core strength in Air Quality is demonstrated in LEHDER Environmental Information Management Service (LEIMS) which integrates source and emission inventories, air dispersion modeling and NPRI reporting. The LEHDER Emissions Testing Team is one of the largest and most experienced in Canada and is recognized by Canadian and U.S. regulatory agencies.

LEHDER's multidisciplinary team of consulting professionals includes engineers, scientists, information management specialists, industrial hygienists, biologists and technologists; we work together to provide totally integrated environmental, health and safety solutions to industrial and municipal clients throughout North America.

The Head Office for LEHDER is located in Point Edward, Ontario and our Western division is based in Edmonton, Alberta.

Visit our web pages at [www.lehder.com](http://www.lehder.com)

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