



**2020 Air Permitting Requirements Update
July 24, 2019**

Facilitator

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Director of Technical
Services
Concrete Ontario





Housekeeping

- 35-40 minute webinar with 15 minutes Q & A
- All participants are muted
- Questions? Use the GoToWebinar 'Questions' Pane
- Webinar will be recorded and posted on the Concrete Ontario YouTube channel. www.ConcreteOntario.org
- PDF version of the presentations and the link to the YouTube video will be emailed to all participants

Concrete Ontario

- 280 ECO certified plants in Ontario (MOE reference # or ECA)
- Significant impact on the industry

2020 Air Permitting Requirements Updates

The Ontario Ministry of the Environment, Conservation and Parks requires all facilities that have a permit for their air emissions to compare those emissions to Schedule 3 Point-of-Impingement (POI) Standards using an advanced dispersion model such as AERMOD, by February 1, 2020. This is a requirement under Ontario Regulation 419/05 (<https://www.ontario.ca/page/rules-air-quality-and-pollution>).

For ready mix plants that have not amended their approvals in the last few years, it is possible that the Emission Summary and Dispersion Modelling (ESDM) report that supports your approval, still assesses air emissions using the Ministry of the Environment, Conservation and Parks' (Ministry's) Schedule 2 Point-of-Impingement (POI) Standards and Ontario Regulation (O. Reg.) 346 air dispersion model. This can quickly be checked by looking at the Emission Summary Table in the ESDM (Schedule 2 Standards have ¼-hour averaging periods).

What does this mean for Facilities that do not meet the 2020 requirements?

Scenario 1: No Changes

If the facility has not made any changes to operations, equipment or the property line since the facility's air approval was issued, the facility is **only** required to update their ESDM report. This involves updating the emission calculations to different averaging periods and modelling the emissions using an advanced dispersion model such as AERMOD. A copy of the updated ESDM report should be kept at the facility to be available if requested by the Ministry District Officer.

Scenario 2: Changes

If the facility has made changes to operations, equipment and/or the property line, then the facility's air approval must be amended. This involves preparing a new ESDM report that includes:

- a) new emission calculations to the Schedule 3 averaging periods and modelling of the emissions using an advanced dispersion model such as AERMOD;
- b) application forms and the Ministry's review fee, and;
- c) if applicable, an update Acoustic Assessment Report.

Since all facilities in Ontario must comply with the Ministry's 2020 requirements by **February 1, 2020**, resources to assist members to meet their 2020 requirements are becoming more and more limited as the deadline approaches. Concrete Ontario's Environment Committee urges all members to immediately review their 2020 compliance status and make appropriate plans to complete updated ESDM reports/ECA amendments as necessary.

Concrete Ontario Environment Committee
Chair: Andy Wallgren, Fisher Wavy Inc.

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Presenter

Xiaoxi (Winnie) Song, M.Sc., P.Eng. BCX Environmental

- Xiaoxi (Winnie) Song is a senior environmental engineer, senior air modelling specialist and partner at BCX Environmental Consulting (BCX).
- Winnie's efforts involve emission inventory development and advanced air dispersion modelling for simple and complex facilities in support of Environmental Compliance Approvals (ECA), Environmental Activity and Sector Registries (EASR), Air Quality Studies (for Environmental Assessments (EAs), site plan approvals, rezoning applications, etc.), and annual reporting (NPRI, TRA, GHG, ChemTRAC, etc.).
- Winnie has extensive experience in ECA applications for ready-mix concrete batching plants and provides regulatory training for BCX's industrial clients.



Concrete Ontario 2020 Air Permitting Requirements Updates

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Presenter: Xiaoxi (Winnie) Song, M.Sc., P.Eng.
BCX Environmental Consulting
July 24, 2019

Outline

- ▶ 2020 Air Requirement Overview
- ▶ Does your facility meet the 2020 Requirements?
- ▶ Scenarios of 2020 Compliance
- ▶ Requirements for a Schedule 3 Compliance Assessment
- ▶ Next Steps

Outline

- ▶ **2020 Air Requirement Overview**
- ▶ Does your facility meet the 2020 Requirements?
- ▶ Scenarios of Moving into Compliance
- ▶ Requirements for a Schedule 3 Compliance Assessment
- ▶ Next Steps

2020 Air Requirement Overview – Point-Of-Impingement (POI) Standards

- ▶ Ontario Regulation 419/05 (Reg 419) sets out the rules for Environmental Compliance Approvals (Air)[air ECAs].
- ▶ Ontario's air quality standards for air permitting are set for “the maximum modelled **Point-Of-Impingement (POI)** concentrations” **using a Ministry regulatory air dispersion model.**
- ▶ “POI” means any points at or beyond the facility property line.

2020 Air Requirement Overview

- ▶ The POI standards are “phased” according to the timelines specified in Reg 419.
- ▶ **By February 1, 2020**, the Ontario Ministry of the Environment, Conservation and Parks (Ministry) will:
 - ▶ phase out Schedule 2 POI Standards and the Reg. 346 model; and
 - ▶ require all facilities that have an air permit to assess those emissions against Schedule 3 POI Standards using an advanced dispersion model such as AERMOD.
- ▶ The Ministry District Offices will ask the facility to **confirm that they have assessed their facility to Schedule 3 standards** during the site inspection after February 1, 2020.





2020

Yeah, it's coming!

Are you ready?

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Does your facility meet the 2020 Requirements?

- ▶ For ready mix plants that have not amended their approvals in the last few years, it is possible that the Emission Summary and Dispersion Modelling (ESDM) report that supports your approval, still assesses air emissions using Ministry's Schedule 2 Point-of-Impingement (POI) Standards and Ontario Regulation (O. Reg.) 346 air dispersion model.
- ▶ This can quickly be checked by looking at the Emission Summary Table in the ESDM (**Schedule 2 Standards have ½-hour averaging periods**).

Does your facility meet the 2020 Requirements? - Examples

Table ES-1: Emission Summary Table

Contaminant Name	CAS No.	Total Facility Emission Rate (g/s)	Air Dispersion Model Used	Maximum POI Concentration ($\mu\text{g}/\text{m}^3$)	Averaging Period (hr)	MOE POI Limit ($\mu\text{g}/\text{m}^3$)	Limiting Effect	Regulation Schedule #	Percentage of MOE POI Limit (%)
Total Suspended Particulate	-	2.34E-01	Reg. 346	85.16	0.5	100	Visibility	2	85.2%
Nitrogen Oxides	10102-44-0	2.60E-02	Reg. 346	10.61	0.5	500	Health	2	2.1%

Schedule 2 Actions Required

Table ES-1: Emission Summary Table

Contaminant Name	CAS No.	Total Facility Emission Rate (g/s)	Air Dispersion Model Used	Maximum POI Concentration ($\mu\text{g}/\text{m}^3$)	Averaging Period (hr)	Ministry POI Limit ($\mu\text{g}/\text{m}^3$)	Limiting Effect	Regulation Schedule #	Percentage of Ministry POI Limit (%)
Particulate Matter	-	6.22E-01	AERMOD	105.9	24	120	Visibility	3	88.3%
Respirable Crystalline Silica (quartz) (PM_{10})	14808-60-7	1.01E-03	AERMOD	1.8	24	5	Health	Guideline	35.1%
Portland Cement - PM Emission Factors	65997-15-1	1.05E-01	AERMOD	36.7	24	90	Health	SL-MD	40.8%
Slag	65996-69-2	3.45E-02	AERMOD	12.2	24	26	Health	SL-MD	47.0%
Calcium Oxide	1305-78-8	5.22E-03	AERMOD	1.8	24	10	Corrosion	3	18.4%
Nitrogen Oxides	10102-44-0	1.49E-01	AERMOD	112.1	24	200	Health	3	56.0%
Nitrogen Oxides	10102-44-0	1.49E-01	AERMOD	288.0	1	400	Health	3	72.0%

Schedule 3

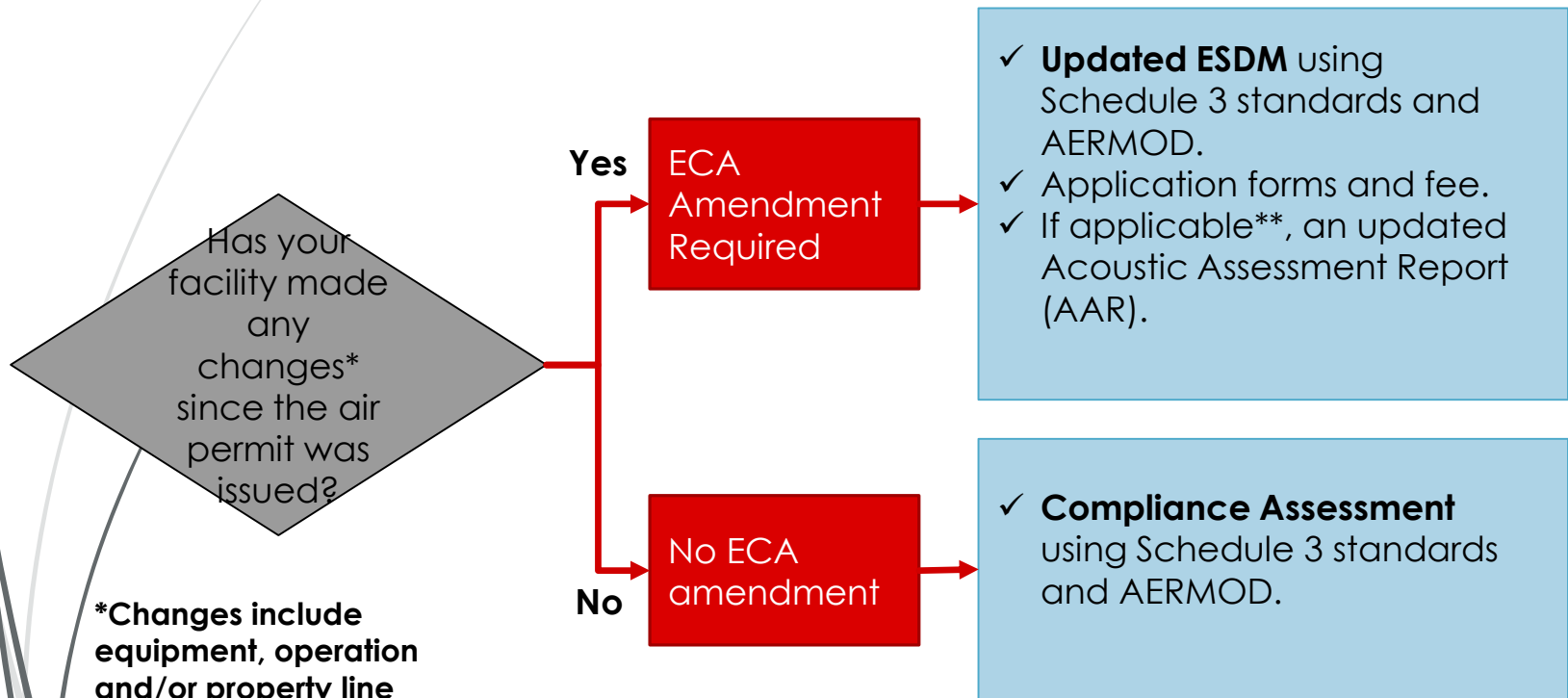
My facility is still in Schedule 2, what now?



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Scenarios of 2020 Air Compliance



**An updated AAR is required if the changes result in a change in noise. E.g. operating schedule change from 7-7 to 24/7, addition of noise sources or receptors, increase in noise levels etc.

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Requirements for a Schedule 3 Standard Compliance Assessment

- ▶ There are two components: (1) Emission Inventory and (2) Dispersion Modelling.
- ▶ Emission Inventory:
 - ▶ Since the averaging period for most of the Schedule 3 standards is 24 hours, the emission inventory is based a daily maximum emission scenario.
 - ▶ For a facility that does not operate 24/7, the maximum daily emission rates will be lower than the hourly/30-min emission rates.
- ▶ Dispersion Modelling:
 - ▶ The regulatory model for Schedule 3 is an advanced dispersion model, AERMOD.
 - ▶ AERMOD allows site-specific inputs and has more options to characterize sources. The results are therefore more “representative”.

Reg. 346 Model vs. AERMOD Model

Item	Reg. 346 Model	AERMOD Model
POI Standards	Schedule 2	Schedule 3
Averaging Period	½ hour	1 hr, 24 hr, annual, 10 minute and 30 day
Types of Modelling Sources	Point Sources and Virtual Sources	Point, Volume, Area, Open Pit and Line Sources
Meteorology	Fixed conditions – stability classes C and D stability, 5 m/s wind speed	Uses Ministry approved regional or site specific 5 year met data
Terrain	No terrain, flat	Uses Ministry approved regional terrain data set

Reg. 346 Model vs. AERMOD Model

Item	Reg. 346 Model	AERMOD Model
Level of Training Required to Run Model Effectively	Days	Months to Years
Level of Detail	Simple	Complex
Time to Run	Fast	Takes hours or days
Time to Analyze Results	Fast	Longer
Cost to Run	Inexpensive	More expensive

Requirements for a Schedule 3 Standard Compliance Assessment

- ▶ In addition to the Schedule/Model change, the Ministry has updated/expanded what they expect to be included in a compliance assessment for a RMC plant:
 - ▶ Assessment of constituents in raw materials (e.g. Portland cement, slag, calcium carbonate, magnesium carbonate, respirable crystalline silica, etc.)
 - ▶ Assessment of cumulative impact (e.g. third party portable crushers on a permanent RMC site needs to be included in the site-wide assessment, but not in the site's ECA).
 - ▶ Changes to emission estimation methodologies (e.g. variable emissions for drop points by wind speed).
 - ▶ A much higher level of justification for control efficiencies.

Information Required for a Compliance Assessment – Permanently Sited Plants

- ▶ More information is needed to perform AERMOD modelling compared with the Reg. 346 model
- ▶ The information that the facility needs to provide can be categorized in four different groups:
 - ▶ Property line
 - ▶ Detailed facility layout, and dimensions for structures and buildings
 - ▶ Inputs for calculating the **daily** emission rates (production rate, daily operating hours, equipment capacity, etc. incl. other operations on site such as portable crushers)
 - ▶ Modelling source parameters (exhaust height, diameter, flow and temperature)
- ▶ For ECA amendment applications, administrative information (e.g. proof of legal name, lease agreement if applicable, signed application form payment information) will be required.



Compliance Assessment – Portable Plants

- ▶ The Ministry has only recently (April 2019) confirmed the general approach for assessing portable plants per Schedule 3.
- ▶ The Ministry requires the portable plants be assessed using either Screen3 or AERMOD. The Screen3 method is likely not viable for most facilities as it results in very large separation distances.
- ▶ With respect to AERMOD, to date, the Ministry has developed a composite meteorological data set by combining all regional data set into a single data set that has **120 years of data**. The Ministry has already identified issues with run time and removal of meteorological anomalies.
- ▶ The Ministry has stated that the EMRB will release this meteorological data set upon request along with more detailed instructions on the modelling approaches.



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Next Steps

- ▶ Due to the complexity of a Schedule 3 compliance assessment, facilities will need to hire a qualified air quality consultant to complete this work soon.
- ▶ Your air consultant will specify the exact information required to complete this assessment.

Questions and Comments?

Please contact:

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Questions?



Concrete materials and methods of concrete construction/Test methods and standard practices for concrete

**Next Webinar - CSA A23.1/2-19 Update
August 15, 2019 – Prof. Doug Hooton**

A close-up photograph of a person's hand holding a green pencil over a light blue card. The card has the words "Thank You" written in a black cursive font. The card is placed on a brown cardboard envelope, which is on a grey surface. The pencil has some text and a barcode on its side.

Thank You