

Appendix I AERMOD Modeling Setup

Ministry of the Environment
and Climate Change

Ministère de l'Environnement et de
l'Action en matière de changement
climatique



Environmental Monitoring and
Reporting Branch

Direction de la Surveillance
Environnementale

125 Resources Road
Etobicoke ON M9P 3V6
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125, chemin Resources
Etobicoke ON M9P 3V6
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November 27, 2014
Robert Nixon, Engineering Leader
Owens Corning Composite Materials Canada - LP
247 York Road
Guelph, Ontario
N1H 6P6

Dear Madam/Sir:

**Re: Request for Approval under Paragraph 3 of section 13(1) of Regulation 419/05
For use of Site Specific Meteorological Data:
Owens Corning Composite Materials Canada - LP-Owens Corning Guelph Glass Plant (located at
247 York Road, Guelph, Ontario)**

In accordance with the application for approval under s.13(1) of Regulation 419/05 for use of site specific meteorological data, I am approving the use of site specific data in preparing an Emission Summary Dispersion Modelling (ESDM) as requested by Owens Corning Composite Materials Canada - LP and signed by you dated November 17, 2014.

The site specific meteorological data referenced as the Guelph Turfgrass data is an accurate reflection of the meteorological conditions for the proposed modelling assessment, given the proximity of the meteorological station to the facility's location.

A fully processed meteorological data set for the 5 years from 2009 to 2013 has been prepared by the Ministry of the Environment and Climate Change with wind-sector dependent land use specific to the application area, using wind and temperature data from the Guelph Turfgrass station and other variables from the Waterloo, Kitchener/Waterloo and Toronto Pearson International airport station. This meteorological dataset was prepared using the AERMET 14134 meteorological pre-processor computer program, and can be used to run the AERMOD model. It has been prepared to model discharges only from the above-referenced facility.

The data were prepared in reply to a request submitted in relation to the preparation of an ESDM report under O. Reg. 419/05 and is approved for use in subsequent ESDM reports for this specific facility until such time as (i) the ministry officially adopts a new regulatory version of the AERMET computer program or (ii) there are significant land use changes in vicinity of the facility.

Yours truly,

A handwritten signature in black ink, appearing to be "Yvonne Hall", written over a faint printed name.

Yvonne Hall
Director, Section 13, O. Reg. 419/05

cc: District Manager, Guelph District Office
Director, Section 9, Environmental Protection Act
Environmental Approvals Branch

Subject : RE: Land Use for Owens Corning Guelph
Date : Tuesday, July 08, 2014 11:21 am
Linked to: Bruce Gillies
From : "Gillies, Bruce (ENE)" <Bruce.Gillies@ontario.ca>
To : Penny McInnis <pmcinnis@lehder.com>
Cc : Nixon.Robert D. <Robert.D.Nixon@owenscorning.com>

Hi Penny,

The ministry is in agreement with the proposal outlined in your memo of July 4, 2014, to use 'rural' dispersion coefficients in your modelling for Owens Corning Guelph.

Regards,
Bruce

Bruce Gillies, P.Eng.

Air Pollution Control Engineer
Standards Development Branch
Ontario Ministry of the Environment and Climate Change
40 St. Clair Ave. W., 7th floor
Toronto, Ontario, M4V 1M2
Phone: 416-212-4457
Fax: 416-327-9187
bruce.gillies@ontario.ca

From: Penny McInnis [mailto:pmcinnis@lehder.com]
Sent: July-04-14 12:19 PM
To: Gillies, Bruce (ENE)
Cc: Nixon.Robert D.
Subject: Land Use for Owens Corning Guelph

Hi Bruce,

As discussed, here is the memo outlining how we have calculated the land use for use in AERMOD. We look forward to feed back when its available. Thank you.

Sincerely,

Penny McInnis, P.Eng.
LEHDER Environmental Services Limited
Suite 210, 704 Mara Street
Point Edward, Ontario
N7V 1X4
Tel: 519-336-4101 ext. 245
Fax: 519-336-4311
www.lehder.com/mcinnis



Memo

To: Bruce Gillies CC: Rob Nixon

Company: Ministry of Environment Project: 144539

From: Penny McInnis Date: July 4, 2014

Re: Land Use Determination for Owens Corning Guelph

Urgent
 For Review
 Please Comment
 Please Reply
 Please Recycle

Bruce,

As discussed, I am providing a summary of LEHDER's land use determination for the property surrounding the Owens Corning Guelph Glass Facility. We are providing this information to ensure MOE approval of this determination prior to modeling for the Site Specific Standard for this facility.

The AERMOD dispersion model requires selection of Rural or Urban for the surrounding land use in addition to the met data. The EMRB has provided us with processed site specific met and in an effort to be consistent we have utilized the land use evaluation by the EMRB in order to make the urban vs. rural selection in AERMOD. Our assessment has determined that greater than 50% of the 3 km area surrounding the facility is classified as rural and therefore the rural algorithms should be used in AERMOD. Details of this assessment are outlined below.

There are 2 land use classifications of interest in this assessment; U1 and U2. The following table summarizes the details associated with each.

Table 1 – Classification Descriptions

EMRB Code	Description	AERSURFACE Guide Classification	AERSURFACE Description	ADMGO equivalency
U1	Urban 1 (High)	22	High Intensity Residential	Urban
U2	Urban 2 (Low)	21	Low Intensity Residential	Rural*

LEHDER is considering U2 (low intensity residential) as rural in accordance with Section 5.4.5 of the Air Dispersion Modeling Guide of Ontario, Version 2.0. This is

based on the definition provided in Appendix B of the AERSURFACE Guide where Low Intensity Residential is defined as:

“Includes areas with a mixture of constructed materials and vegetation. Constructed materials account for 30-80 percent of the cover. Vegetation may account for 20-70 percent of the cover. These areas most commonly include single-family housing units. Population densities will be lower than in high intensity residential areas.”

The low intensity residential land use category (on its own) accounts for approximately 50% of the land use within 3 km as shown below. Therefore the interpretation of this category is critical to the selection of rural or urban algorithms in the modeling.

Table 2 – Summary of Land Use Assessment

Description	EMRB Code	% of Total 3km Area
High Intensity Residential	U1	18.7 %
Low Intensity Residential	U2	50.7 %
Crops, Forest and Grassland	CR, FO, GR	30.5 %
TOTAL % RURAL		81 %

LEHDER’s interpretation is that rural should be used in the modeling. However, due to the amount of AERMOD modeling that will be required as part of the Site Specific Standard, we are requesting that the MOE review and either approve this selection of ‘rural’ or provide direction on a rationale for classifying the area as urban.

Respectfully submitted,
LEHDER Environmental Services Ltd.

Penny McInnis
Principal

Attachments: Land Use Calculations by LEHDER
Land Use Sector Graph by MOE - EMRB

OC Guelph Land Use Area Calculations

Section	Area (km ²)	% Urban 1 (High)	% Urban 2 (Low)	% Crops	% Forest	% Grassland	Total Area (km ²) - U1 AERSURFACE Class 22 (High Intensity Residential)	Total Area (km ²) - U2 AERSURFACE Class 21 (Low Intensity Residential)	Total Rural Area (km ²) - all classifications except for U2
1	4.89	5%		20%	25%	50%	0.24	0.00	4.65
2	1.56	5%	30%		45%	20%	0.08	0.47	1.01
3	3.95	50%	30%		5%	15%	1.98	1.19	0.79
4	3.9	10%	70%		5%	15%	0.39	2.73	0.78
5	3.65	30%	65%			5%	1.10	2.37	0.18
6	5.49	10%	85%		5%		0.55	4.67	0.27
7	4.99	20%	60%		5%	15%	1.00	2.99	1.00
	28.43						5.33	14.42	8.68
							18.7%	50.7%	30.5%

Only category classified as 'urban' is U1

% Urban =	19%
% Rural =	81%

Owens Corning,
Guelph

Prepared by MOE - EMRB



- Owens Corning - Guelph, 43.544941 -80.231857
- 1,60,122, 5%U1+50%GR+20%CR+25%FO
- 2,122,142, 30%U2+5%U1+45%FO+20%GR
- 3,142,192, 50%U1+30%U2+5%FO+15%GR
- 4,192,240, 10%U1+70%U2+5%FO+15%GR
- 5,240,285, 30%U1+65%U2+5%GR
- 6,285,355, 10%U1+85%U2+5%FO
- 7,355,60, 20%U1+60%U2+15%GR+5%FO



Ministry of the Environment and Climate Change
Ministère de l'Environnement et de l'Action en matière de changement climatique

Notice number **5616-9R9L9V**
Reference number **2850-9R9L72**

Notice

Pursuant to subsection 7(1) of O. Reg. 419/05, made under the
Environmental Protection Act, R.S.O. 1990, c.E 19 (EPA)

To: Owens Corning Composite Materials Canada - LP
247 York Road
Guelph, Ontario
N1H 6P6

Site: Owens Corning Guelph Glass Plant
247 York Road, Guelph, Ontario

Part 1: Definitions

In this Notice,

"Act" means the *Environmental Protection Act*, R.S.O. 1990, c. E. 19, as amended;

"Director" means the undersigned Director or any other person appointed under section 5 of the Act as a Director for the purposes of section 7 and 52 of the Regulation;

"Facility" means the plant, structure and any other thing that may discharge a Contaminant that is located at 247 York Road, Guelph, Ontario;

"Minister" means the Minister of the Environment and Climate Change or such other member of the Executive Council as may be assigned the administration of this Act under the Executive Council Act;

"Ministry" means the ministry of the Minister;

"Notice" means this Notice number # 5616-9R9L9V, as it may be amended from time to time;

"Person Responsible" means Owens Corning Composite Materials Canada - LP being the person who discharges or causes or permits the discharge of contaminants from the Facility into the air; and

"Regulation" means Ontario Regulation 419/05: *Air Pollution - Local Air Quality*, made under the Act.

Part 2: Legal Authority

The following provisions of the regulation sets out the legal authority that forms the basis for this Notice:

7. (1) The Director may give written notice to a person who discharges or causes or permits the discharge of a contaminant from a property stating that the Director is of the opinion that, with respect to discharges of the contaminant from that property,

- (a) one or more dispersion models specified in the notice would predict concentrations of the contaminant at least as accurately as an approved dispersion model;
- (b) a combination specified in the notice of two or more dispersion models would predict concentrations of the contaminant at least as accurately as an approved dispersion model;
- (c) a combination specified in the notice of one or more dispersion models and one or more sampling and measuring techniques would predict concentrations of the contaminant at least as accurately as an approved dispersion model; or
- (d) one or more approved dispersion models specified in the notice would predict concentrations of the contaminant less accurately than,
 - (i) a dispersion model or combination specified under clause (a), (b) or (c), or
 - (ii) another approved dispersion model. O. Reg. 419/05, s. 7 (1); O. Reg. 507/09, s. 5 (1).

(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. O. Reg. 419/05, s. 7 (2).

(3) If a notice is given under subsection (1) with respect to discharges of a contaminant from a property, a reference in this Part to an approved dispersion model shall be deemed, with respect to those discharges,

- (a) to include a dispersion model or combination specified under clause (1) (a), (b) or (c); and
- (b) not to include a dispersion model that is specified under clause (1) (d). O. Reg. 419/05, s. 7 (3).

(4) Revoked: O. Reg. 507/09, s. 5 (2).

(5) Subsection (3) does not apply to a discharge of a contaminant until,

- (a) three months after the notice is given under subsection (1), unless clause (b) applies; or
- (b) one year after the notice is given under subsection (1), if the notice includes a notice under clause (1) (c). O. Reg. 419/05, s. 7 (5).

(6) Subsection (5) does not apply for the purpose of preparing a report to which subsection 22 (1.1) or (1.2), 23 (3), 24 (2), 30 (5) or 33 (6) applies. O. Reg. 419/05, s. 7 (6); O. Reg. 605/05, s. 2 (1); O. Reg. 507/09, s. 5 (3).

(7) Subsection (5) does not apply to a discharge of a contaminant if subsection (3) would have the effect of permitting the discharge. O. Reg. 419/05, s. 7 (7).

(8) If a notice is given to a person under subsection (1) and section 20 does not apply to the person in respect of a contaminant, subsection (3) applies to the person in respect of the contaminant only after section 20 begins to apply to the person in respect of the contaminant. O. Reg. 419/05, s. 7 (8).

(9) Despite subsection (8), if a notice is given to a person under subsection (1) and section 20 does not apply to the person in respect of a contaminant, subsection (3) applies to the person in respect of the contaminant for the purpose of preparing a report to which subsection 22 (1.2), 23 (3), 24 (2), 30 (5) or 33 (6) applies. O. Reg. 419/05, s. 7 (9); O. Reg. 605/05, s. 2 (2); O. Reg. 507/09, s. 5 (4).

(10) If a notice given under subsection (1) is amended by a notice given under section 52, the notice under section 52 takes effect, and subsection (3) begins to apply to the amended notice,

- (a) three months after the notice is given under section 52, unless clause (b) or (c) applies;
- (b) one year after the notice is given under section 52, if the amendment adds a statement described in clause (1) (c) to the notice given under subsection (1), unless clause (c) applies; or
- (c) on the day the notice is given under section 52, if the application of subsection (3) to the amended notice would have the effect of permitting a discharge that would otherwise be prohibited. O. Reg. 507/09, s. 5 (5).

(11) If a notice given under subsection (1) is revoked by a notice given under section 52, the notice under section 52 takes effect, and subsection (3) ceases to apply to discharges of the contaminant,

- (a) three months after the notice is given under section 52, unless clause (b) applies; or

(b) on the day the notice is given under section 52, if the revocation of the notice given under subsection (1) would have the effect of permitting a discharge that would otherwise be prohibited. O. Reg. 507/09, s. 5 (5).

52. (1) Subject to subsections 7 (10) and (11), the Director may, by written notice, amend or revoke any notice given by the Director under this Regulation. O. Reg. 507/09, s. 32 (1).

(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. O. Reg. 507/09, s. 32 (1).

Part 3: Grounds for Notice

3.1. For the purpose of subsection 7(1)(a) of the Regulation, I, the Director am of the opinion that AERMOD version 14134 would predict concentrations of the contaminant at least as accurately as an approved dispersion model.

For the purpose of subsection 7(1)(d) of the Regulation, I, the Director am of the opinion that AERMOD version 07026 would predict concentrations of the contaminant less accurately than AERMOD version 14134.

This notice is being issued for the following reasons:

- AERMOD version 14134 includes more advanced model algorithms, and
- the request was to use the model without using any non-default options (with the exception of the horizontal and capped sources options).

3.2 In accordance with subsection 7(2) of the Regulation, the Director provided a draft of this Notice to the Person Responsible at the Facility and provided an opportunity for that person to make written submissions to the Director during a thirty (30) day period.

Part 4: Notice Requirements

Pursuant to my authority under subsection 7(1) of the Regulation, with the issuance of this Notice, I hereby require the Person Responsible to do the following:

- 4.1 Use an approved dispersion model in accordance with subsection 7(3) of the Regulation.
- 4.2 In particular, a reference to an approved dispersion model in Part II of the Regulation shall be deemed to include:
 - AERMOD version 14134.
- 4.3 A reference to an approved dispersion model in Part II of the Regulation shall be deemed not to include:
 - AERMOD version 07026.

This notice is effective from the date of issue.

Issued this 16th day of March, 2015.



Steve Klose
Director, Section 7, O. Reg. 419/05