

217/782-2113

FEDERALLY ENFORCEABLE STATE OPERATING PERMIT -- REVISED

PERMITTEE

Occidental Chemical Corporation  
Attn: Mr. James F. Hughes  
4201 West 69th Street  
Chicago, Illinois 60629-5718

Application No.: 99110109

I.D. No.: 031600AFI

Applicant's Designation:

Date Received: May 8, 2007

Subject: Sodium Silicate Plant

Date Issued: August 21, 2008

Expiration Date: May 18, 2010

Location: 4201 West 69th Street, Chicago, 60629-5718

This permit is hereby granted to the above-designated Permittee to OPERATE emission unit(s) and/or air pollution control equipment consisting of a natural gas/residual fuel oil-fired open hearth glass furnace (Mode 1: glass melting operations controlled by scrubber, Mode 2: cleaning of heat exchanger controlled by scrubber), dissolver and surge bin controlled by scrubber, raw material handling controlled by baghouse, glass conveying system controlled by a wet cyclone, flash tanks controlled by demister, and one (1) 5 mmBtu/hr natural gas-fired boiler, pursuant to the above-referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

- 1a. This federally enforceable state operating permit is issued to limit the emissions of air pollutants from the source to less than major source thresholds (i.e., 100 tons/yr for NO<sub>x</sub>, PM<sub>10</sub>, and SO<sub>2</sub>). As a result the source is excluded from the requirement to obtain a Clean Air Act Permit Program (CAAPP) permit. The maximum emissions of this source, as limited by the conditions of this permit, are described in Attachment A.
- b. Prior to issuance, a draft of this permit has undergone a public notice and comment period.
- c. This permit supersedes all operating permits issued for this location.
- 2a. No person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit other than those emission units subject to the requirements of 35 Ill. Adm. Code 212.122, pursuant to 35 Ill. Adm. Code 212.123(a), except as allowed by 35 Ill. Adm. Code 212.123(b) and 212.124.
- b. Pursuant to 35 Ill. Adm. Code 212.206, no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period to exceed 0.15 kg of particulate matter per MW-hour of actual heat input from any fuel combustion emission unit using liquid fuel exclusively (0.10 lbs/mmBtu).

- c. Pursuant to 35 Ill. Adm. Code 212.301, no person shall cause or allow the emission of fugitive particulate matter from any process, including any material handling or storage activity, that is visible by an observer looking generally toward the zenith at a point beyond the property line of the source.
- d. Pursuant to 35 Ill. Adm. Code 212.306, all normal traffic pattern access areas surrounding storage piles specified in 35 Ill. Adm. Code 212.304 and all normal traffic pattern roads and parking facilities which are located on mining or manufacturing property shall be paved or treated with water, oils or chemical dust suppressants. All paved areas shall be cleaned on a regular basis. All areas treated with water, oils or chemical dust suppressants shall have the treatment applied on a regular basis, as needed, in accordance with the operating program required by 35 Ill. Adm. Code 212.309, 212.310 and 212.312.
- e. Pursuant to 35 Ill. Adm. Code 212.307, all unloading and transporting operations of materials collected by pollution control equipment shall be enclosed or shall utilize spraying, pelletizing, screw conveying or other equivalent methods.
- f. Pursuant to 35 Ill. Adm. Code 212.309(a), the emission units described in 35 Ill. Adm. Code 212.304 through 212.308 shall be operated under the provisions of an operating program, consistent with the requirements set forth in 35 Ill. Adm. Code 212.310 and 212.312, and prepared by the owner or operator and submitted to the Illinois EPA for its review. Such operating program shall be designed to significantly reduce fugitive particulate matter emissions.
- g. Pursuant to 35 Ill. Adm. Code 212.310, as a minimum the operating program shall include the following:
  - i. The name and address of the source;
  - ii. The name and address of the owner or operator responsible for execution of the operating program;
  - iii. A map or diagram of the source showing approximate locations of storage piles, conveyor loading operations, normal traffic pattern access areas surrounding storage piles and all normal traffic patterns within the source;
  - iv. Location of unloading and transporting operations with pollution control equipment;
  - v. A detailed description of the best management practices utilized to achieve compliance with 35 Ill. Adm. Code 212 Subpart K, including an engineering specification of particulate collection equipment, application systems for water, oil, chemicals and dust suppressants utilized and equivalent methods utilized;
  - vi. Estimated frequency of application of dust suppressants by location of materials; and

- vii. Such other information as may be necessary to facilitate the Illinois EPA's review of the operating program.
- h. Pursuant to 35 Ill. Adm. Code 212.314, 35 Ill. Adm. Code 212.301 shall not apply and spraying pursuant to 35 Ill. Adm. Code 212.304 through 212.310 and 35 Ill. Adm. Code 212.312 shall not be required when the wind speed is greater than 40.2 km/hour (25 mph). Determination of wind speed for the purposes of this rule shall be by a one-hour average or hourly recorded value at the nearest official station of the U.S. Weather Bureau or by wind speed instruments operated on the site. In cases where the duration of operations subject to this rule is less than one hour, wind speed may be averaged over the duration of the operations on the basis of on-site wind speed instrument measurements.
- i. Pursuant to 35 Ill. Adm. Code 212.321(a), no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit which, either alone or in combination with the emission of particulate matter from all other similar process emission units for which construction or modification commenced on or after April 14, 1972, at a source or premises, exceeds the allowable emission rates specified in 35 Ill. Adm. Code 212.321(c).
- 3a. Pursuant to 35 IAC 214.122(b)(1), no person shall cause or allow the emission of sulfur dioxide into the atmosphere in any one hour period from any new fuel combustion source with actual heat input smaller than, or equal to, 73.2 MW (250 mmBtu/hour), burning liquid fuel exclusively to exceed 1.55 kg of sulfur dioxide per MW-hr of actual heat input when residential fuel oil is burned (0.8 lbs/mmBtu).
- b. Pursuant to 35 Ill. Adm. Code 214.301, no person shall cause or allow the emission of sulfur dioxide into the atmosphere from any process emission source to excess 2000 ppm.
- c. Pursuant to 35 Ill. Adm. Code 214.304, the emissions from the burning of fuel at process emission sources located in the Chicago or St. Louis (Illinois) major metropolitan areas shall comply with applicable 35 Ill. Adm. Code 214 Subparts B through F (i.e., 35 Ill. Adm. Code 214.122(b)).
- 4. Pursuant to 35 Ill. Adm. Code 218.301, no person shall cause or allow the discharge of more than 3.6 kg/hour (8 lbs/hour) of organic material into the atmosphere from any emission unit, except as provided in 35 Ill. Adm. Code 218.302, 218.303, or 218.304 and the following exception: If no odor nuisance exists the limitation of 35 Ill. Adm. Code 218 Subpart G shall only apply to photochemically reactive material.
- 5a. The scrubbers, baghouses, wet cyclones, and demister shall be in operation at all times when the associated emission unit(s) are in operation and emitting air contaminants.
- b. In the event that the operation of this emission unit results in an odor nuisance, the Permittee shall take appropriate and necessary actions to

minimize odors, including but not limited to, changes in raw material or installation of controls, in order to eliminate the odor nuisance.

- c. The boiler shall only be operated with natural gas as the fuel. The use of any other fuel in the boiler requires that the Permittee first obtain a construction permit from the Illinois EPA and then perform stack testing to verify compliance with all applicable requirements.
- d. The hearth glass furnace shall only be operated with natural gas or residual fuel oil as the fuels. The use of any other fuel in the hearth glass furnace requires that the Permittee first obtain a construction permit from the Illinois EPA and then perform stack testing to verify compliance with all applicable requirements.
- e. The Permittee shall not keep, store or use Residual fuel oil (Grade No. 4, 5 and 6) with a sulfur content greater than that given by the formula:  
  

$$\text{Maximum Wt percent sulfur} = (0.00005) \times (\text{Gross heating value of oil, Btu/lb}).$$
- f. Organic liquid by-product or waste materials shall not be used in any emission unit at this source without written approval from the Illinois EPA.
- g. The Illinois EPA shall be allowed to sample all fuels stored at this location.
- 6a. Emissions from glass melting operations in the open hearth glass furnace, controlled by the scrubber shall not exceed the following limits:

<u>Pollutant</u>	<u>Emissions</u>	
	<u>(Tons/Month)</u>	<u>(Tons/Year)</u>
CO	0.45	5.26
NO <sub>x</sub>	4.77	56.13
PM	3.21	37.80
SO <sub>2</sub>	7.59	89.29
VOM	0.45	5.26

These limits are based on the maximum fuel usage and production rate and by the emission factors and formulas listed below:

- i. To determine emissions resulting from the combustion of natural gas, the following emission factors and formulas shall be used:

<u>Pollutant</u>	<u>Factor</u>	<u>Basis</u>
CO	0.2 lb/ton	AP-42, 11.15 (Glass Manufacturing Revised 10/86)
NO <sub>x</sub>	286 lb/mmscf	Stack test that was performed 5/27/87
PM	1.20 lb/ton	Stack test that was performed 5/27/87

SO <sub>2</sub>	0.6 lb/mmscf	AP-42, 1.4 (Natural Gas Combustion Revised 3/98)
VOM	0.2 lb/ton	AP-42, 11.15

A. Emissions of NO<sub>x</sub> and SO<sub>2</sub> shall be determined by the following formula:

$$E = G \times R$$

Where:

E = Emissions (lb/hr);

G = Natural gas usage (mmscf/hr); and

R = Emission factor listed above (lb/mmscf).

B. Emissions of CO, PM and VOM shall be determined by the following formula:

$$E = P \times R$$

Where:

E = Emissions (lb/hr);

P = Production Rate (ton/hr); and

R = Emission factor listed above (lb/ton).

ii. To determine emissions resulting from the combustion of residual fuel oil, the following emission factors and formulas shall be used:

<u>Pollutant</u>	<u>Factor</u>	<u>Basis</u>
CO	0.2 lb/ton	AP-42, 11.15
NO <sub>x</sub>	59 lb/10 <sup>3</sup> gal	Estimation from Stack Test performed on 5/27/87 & AP-42 factors
PM	1.63 lb/ton	Stack test that was performed 5/29/87
SO <sub>2</sub>	155 lb/10 <sup>3</sup> gal	AP-42, 1.3 (Fuel Oil Combustion Revised 9/98)
VOM	0.2 lb/ton	AP-42, 11.15

A. Emissions of NO<sub>x</sub> and SO<sub>2</sub> shall be determined by the following formula:

$$E = F \times R$$

Where:

E = Emissions (lb/hr);

F = Fuel Oil Usage (gal/hr); and

R = Emission factor listed above (lb/10<sup>3</sup> gal).

B. Emissions of CO, PM and VOM shall be determined by the following formula:

$$E = P \times R$$

Where:

E = Emissions (lb/hr);

P = Production Rate (ton/hr); and

R = Emissions factor listed above (lb/ton).

- b. Emissions of particulate matter from the open hearth glass furnace during heat exchanger cleaning operations controlled by wet scrubber shall not exceed 7.07 lb/hour and 7.07 tons/year. These limits are based on the maximum allowable hourly rate of emissions by 35 Ill. Adm. Code 212.321 and 2,000 hours of operation per year.
- c. Emissions and operation of the 5 mmBtu/hour boiler shall not exceed the following limits:

Fuel Usage		Pollutant	Emission Factor (lb/10 <sup>6</sup> scf)	Emissions	
(10 <sup>6</sup> scf/Mo)	(10 <sup>6</sup> scf/Yr)			(T/Mo)	(T/Yr)
4.26	42.6	NO <sub>x</sub>	100	0.22	2.13
		CO	84	0.18	1.79
		VOM	5.5	0.02	0.12
		SO <sub>2</sub>	0.6	0.01	0.01
		PM	7.6	0.02	0.17

These limits are based on maximum fuel usage, and 8,760 hours of operation, standard emission factors (Tables 1.4-1 and 1.4-2, AP-42, Volume I, Fifth Edition, Supplement D, July 1998).

- d. This permit is issued based on negligible emissions of particulate matter from the following items:

Dissolver and surge bin controlled by scrubber  
 Glass conveying system controlled by a wet cyclone  
 Flash tanks controlled by a demister

For this purpose, emissions shall not exceed nominal rates of 0.1 lb/hour and 0.44 tons/year.

- e. Emissions of particulate matter from raw material handling controlled by baghouse shall not exceed 0.45 lb/hour and 2.0 tons/year. These limits are based on AP-42 emission factors for glass fiber manufacturing, use of the baghouse, and 8,760 hours of operation per year.
- f. Compliance with the annual limits of this permit shall be determined on a monthly basis from the sum of the data for the current month plus the preceding 11 months (running 12 month total).

- 7a. Pursuant to 35 Ill. Adm. Code 201.282, every emission source or air pollution control equipment shall be subject to the following testing requirements for the purpose of determining the nature and quantities of specified air contaminant emissions and for the purpose of determining ground level and ambient air concentrations of such air contaminants:
- i. Testing by Owner or Operator. The Illinois EPA may require the owner or operator of the emission source or air pollution control equipment to conduct such tests in accordance with procedures adopted by the Illinois EPA, at such reasonable times as may be specified by the Illinois EPA and at the expense of the owner or operator of the emission source or air pollution control equipment. The Illinois EPA may adopt procedures detailing methods of testing and formats for reporting results of testing. Such procedures and revisions thereto, shall not become effective until filed with the Secretary of State, as required by the APA Act. All such tests shall be made by or under the direction of a person qualified by training and/or experience in the field of air pollution testing. The Illinois EPA shall have the right to observe all aspects of such tests.
  - ii. Testing by the Illinois EPA. The Illinois EPA shall have the right to conduct such tests at any time at its own expense. Upon request of the Illinois EPA, the owner or operator of the emission source or air pollution control equipment shall provide, without charge to the Illinois EPA, necessary holes in stacks or ducts and other safe and proper testing facilities, including scaffolding, but excluding instruments and sensing devices, as may be necessary.
- b. Testing required by Condition 8 shall be performed upon a written request from the Illinois EPA by a qualified independent testing service.
- 8a Pursuant to 35 Ill. Adm. Code 212.107, for both fugitive and nonfugitive particulate matter emissions, a determination as to the presence or absence of visible emissions from emission units shall be conducted in accordance with Method 22, 40 CFR part 60, Appendix A, except that the length of the observing period shall be at the discretion of the observer, but not less than one minute. 35 Ill. Adm. Code 212 Subpart A shall not apply to 35 Ill. Adm. Code 212.301.
- b. Pursuant to 35 Ill. Adm. Code 212.109, except as otherwise provided in 35 Ill. Adm. Code Part 212, and except for the methods of data reduction when applied to 35 Ill. Adm. Code 212.122 and 212.123, measurements of opacity shall be conducted in accordance with Method 9, 40 CFR Part 60, Appendix A, and the procedures in 40 CFR 60.675(c) and (d), if applicable, except that for roadways and parking areas the number of readings required for each vehicle pass will be three taken at 5-second intervals. The first reading shall be at the point of maximum opacity and second and third readings shall be made at the same point, the observer standing at right angles to the plume at least 15 feet away from the plume and observing 4 feet above the surface of the

roadway or parking area. After four vehicles have passed, the 12 readings will be averaged.

- c. Pursuant to 35 Ill. Adm. Code 212.110(a), measurement of particulate matter emissions from stationary emission units subject to 35 Ill. Adm. Code Part 212 shall be conducted in accordance with 40 CFR Part 60, Appendix A, Methods 5, 5A, 5D, or 5E.
  - d. Pursuant to 35 Ill. Adm. Code 212.110(b), the volumetric flow rate and gas velocity shall be determined in accordance with 40 CFR Part 60, Appendix A, Methods 1, 1A, 2, 2A, 2C, 2D, 3, and 4.
  - e. Pursuant to 35 Ill. Adm. Code 212.110(c), upon a written notification by the Illinois EPA, the owner or operator of a particulate matter emission unit subject to 35 Ill. Adm. Code Part 212 shall conduct the applicable testing for particulate matter emissions, opacity, or visible emissions at such person's own expense, to demonstrate compliance. Such test results shall be submitted to the Illinois EPA within thirty (30) days after conducting the test unless an alternative time for submittal is agreed to by the Illinois EPA.
9. Pursuant to 35 Ill. Adm. Code 212.110(e), the owner or operator of an emission unit subject to 35 Ill. Adm. Code Part 212 shall retain records of all tests which are performed. These records shall be retained for at least three (3) years after the date a test is performed.
- 10a. The Permittee shall maintain records of the following items so as to demonstrate compliance with the conditions of this permit:
- i. Usage of natural gas (mmscf/month and mmscf/year);
  - ii. Usage of residual fuel oil (gallon/month and gallon/year);
  - iii. The sulfur content of the residual fuel oil used in the open hearth glass furnace provided by the supplier fuel oil (% by weight);
  - iv. Production rate (tons/month and tons/year); and
  - v. Monthly and annual emissions of CO, NO<sub>x</sub>, SO<sub>2</sub>, PM and VOM from the source with supporting calculations (tons/month and tons/year).
- b. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least five (5) years from the date of entry and shall be made available for inspection and copying by the Illinois EPA or USEPA upon request. Any records retained in an electronic format (e.g., computer) shall be capable of being retrieved and printed on paper during normal source office hours so as to be able to respond to an Illinois EPA or USEPA request for records during the course of a source inspection.
11. If there is an exceedance of or a deviation from the requirements of this permit as determined by the records required by this permit, the

Permittee shall submit a report to the Illinois EPA's Compliance Section in Springfield, Illinois within 30 days after the exceedance or deviation. The report shall include the emissions released in accordance with the recordkeeping requirements, a copy of the relevant records, and a description of the exceedances or deviation and efforts to reduce emissions and future occurrences.

12. Pursuant to 35 Ill. Adm. Code 212.110(d), a person planning to conduct testing for particulate matter emissions to demonstrate compliance shall give written notice to the Illinois EPA of that intent. Such notification shall be given at least thirty (30) days prior to the initiation of the test unless a shorter period is agreed to by the Illinois EPA. Such notification shall state the specific test methods from 35 Ill. Adm. Code 212.110 that will be used.

13. Two (2) copies of required reports and notifications shall be sent to:

Illinois Environmental Protection Agency  
Division of Air Pollution Control  
Compliance Section (#40)  
P.O. Box 19276  
Springfield, Illinois 62794-9276

and one (1) copy shall be sent to the Illinois EPA's regional office at the following address unless otherwise indicated:

Illinois Environmental Protection Agency  
Division of Air Pollution Control  
9511 West Harrison  
Des Plaines, Illinois 60016

It should be noted that this permit has been revised to include the operation of an existing 5.0 mmBtu/hour boiler.

If you have any questions on this, please call George Kennedy at 217/782-2113.

Edwin C. Bakowski, P.E.  
Acting Manager, Permit Section  
Division of Air Pollution Control

Date Signed: \_\_\_\_\_

ECB:GMK:jws

cc: Illinois EPA, FOS Region 1  
Lotus Notes

Attachment A - Emission Summary

This attachment provides a summary of the maximum emissions from sodium silicate plant operating in compliance with the requirements of this federally enforceable permit. In preparing this summary, the Illinois EPA used the annual operating scenario which results in maximum emissions from such a plant. The resulting maximum emissions are below the levels (e.g., 100 tons per year of SO<sub>2</sub>, NO<sub>x</sub>, and PM<sub>10</sub>) at which this source would be considered a major source for purposes of the Clean Air Act Permit Program. Actual emissions from this source will be less than predicted in this summary to the extent that less material is handled, gaseous fuel is used and control measures are more effective than required in this permit.

	Emissions (Tons/Year)				
	<u>CO</u>	<u>NO<sub>x</sub></u>	<u>PM</u>	<u>SO<sub>2</sub></u>	<u>VOM</u>
Glass Melting Operations	5.26	56.13	37.80	89.29	5.26
5 mmBtu/hr boiler	1.79	2.13	0.16	0.01	0.12
Open Hearth Glass Furnace			7.07		
Dissolver and Surge Bin			0.44		
Glass Conveying System			0.44		
Flash Tanks			0.44		
Raw Material Handling			<u>2.00</u>		
Totals	<u>7.05</u>	<u>58.26</u>	<u>48.35</u>	<u>89.30</u>	<u>5.38</u>

GMK:jw