

217/782-2113

FEDERALLY ENFORCEABLE STATE OPERATING PERMIT -- NSPS SOURCE
REVISED

PERMITTEE

Daubert Chemical Company
Attn: Mr. Mark Pawelski
4700 South Central Avenue
Chicago, Illinois 60638

Application No.: 73090167

I.D. No.: 031821AAS

Applicant's Designation: CHEMPLANT

Date Received: August 30, 2006

Subject: Paint Manufacturing

Date Issued: December 8, 2006

Expiration Date: March 25, 2008

Location: 4700 South Central Avenue, Chicago, Cook County, 60638

This permit is hereby granted to the above-designated Permittee to OPERATE emission source(s) and/or air pollution control equipment consisting of four boilers (each 8.3 mmBtu/hr, gas fired), 54 storage tanks, metal working, and an industrial coating, adhesive manufacturing process and V-DAMP process which includes three (3) mixers controlled by dust collector and two (2) silos, 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 emission of air pollutants from the source to less than major source thresholds (i.e., 100 tons/year for VOM, 10 tons/year of a single HAP and 25 tons/year for total HAPs), as further described in Attachment A. As a result, the source is excluded from requirements to obtain a Clean Air Act Program permit.
- b. Prior to issuance, a draft of this permit has undergone a public notice and comment period.
- c. This permit supersedes all operating permit(s) for this location.
- 2a. The 21,500 gallon storage tank #403 and 7 new storage tanks (404, 303, 305, 307, 308, 311 and 315) are subject to a New Source Performance Standard (NSPS) for volatile organic liquid storage vessels, 40 CFR 60, Subpart Kb. The Illinois EPA is administering NSPS in Illinois on behalf of the United States EPA under a delegation agreement.
- b. The Permittee of the storage vessel shall keep readily accessible records showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel.
- c. At all times, the Permittee shall also, to the extent practicable, maintain and operate the tank, including associated air pollution control equipment, in a manner consistent with good air pollution control practice for minimizing emissions.

- 3a. Total combined emissions and operation of the metal working, industrial coating, new V-DAMP process and adhesive manufacturing processes, including all clean up operations, shall not exceed the following limits:

Production Rate		VOM Emissions		PM Emissions	
(Gal/Mo)	(Gal/Yr)	(Tons/Mo)	(Tons/Yr)	(Tons/Mo)	(Tons/Yr)
1,555,000	15,550,000	2.3	22.7	0.45	3.0

These limits are based on emission factors that were derived from formulas and models contained in the Emission Inventory Improvement Program (EIIP), Vol. II, Chapter 8: Preferred and Alternative Methods for Estimating Air Emissions from Paint and Ink Manufacturing Facilities (i.e., VOM emissions occur from vapor displacement during loading of liquid raw materials into a batch vessel, heating of raw materials in the vessel, mixing of batch material and transfer of batch material from the batch vessel to another container.) PM emissions calculated using AP-42 Table 6.4-1 "Uncontrolled Emission Factors for Paint and Varnish Manufacturing."

- b. Compliance with annual limits shall be determined from a rolling 12 month average.
- c. For determination of compliance with the above emission limit, batch emissions shall be determined by using the following equation:
- i. Total combined VOM emissions equal the sum of vapor displacement during loading of liquid raw materials into a batch vessel, heating of raw materials in the vessel, mixing of batch material and transfer of batch material from the batch vessel to another container.
- ii. VOM emissions from vapor displacement losses and transfer of material to vessels:

$$\text{VOM Emissions (lb / batch)} = \frac{12.46 \times 1.45 \times P \times Q \times M}{T}$$

$$M = \sum Y_i \left(\frac{P_i}{P} \right) = \text{Vapor molecular weight (lb/lb-mole)}$$

T = Temperature degrees in Rankine

Q = 1000 lb of material per batch

Y_i = Molecular weight of component i in liquid (lb/lb-mole)

X_i = Liquid mass fraction of component in the liquid (lb/lb)

$$P_i = P_T \frac{X_i / Y_i}{\sum (X_i / Y_i)}$$

P_T = True vapor pressure of component I at temperature T (psia)

P_i = Partial vapor pressure of component i at temperature T (psia)

$P = \sum P_i$ = The total vapor pressure of material in the vessel (psia)

iii. VOM Emissions from Vessel/Reactor Heating/Mixing Process:

$$\eta_s = \frac{\frac{\sum (P_i)_{T_1}}{14.7 - \sum (P_i)_{T_1}} + \frac{\sum (P_i)_{T_2}}{14.7 - \sum (P_i)_{T_2}}}{2} \times \Delta_n \times M$$

Where:

η_s = Lb - moles of VOC vapor displaced from the vessel being heated up (lb/batch).

P_i = Vapor pressure of each compound at specified temperature (psia).

Δ_n = Number of lb - moles of gas displaced (lb - moles/batch).

and

$$\Delta_n = \frac{V}{R} \left[\left(\frac{Pa_1}{T_1} \right) - \left(\frac{Pa_2}{T_2} \right) \right]$$

Where:

V = Volume of free space in the vessel in ft³.

R = Gas law constant, 10.73 psia ft³/lb-mole °R.

Pa₁ = Initial gas pressure in the vessel, psia.

Pa₂ = Final gas pressure, psia.

T₁ = Initial temperature of vessel °R.

T₂ = Final temperature of vessel °R.

iv. VOM emissions from surface evaporation:

$$\frac{E}{(\text{lb} / \text{batch})} = \sum E_i = \frac{(Y_i)(K_i)(P_i)(A)(H)(3600 \text{ sec} / \text{hr})}{(R)(T)}$$

Where:

E_i = Emissions from component I in batch (lb).

$$K_i = 0.00438 \times U^{0.78} \left[\frac{18}{Y_i} \right]^{1/3} = \text{Gas-phase Mass transfer coefficient for component I (ft/sec).}$$

U = Air movement (miles/hr).

A = Surface area of liquid (ft²).

H = hours/batch.

4. Emissions and operation of the 54 storage tanks shall not exceed the following limits:

Throughput		VOM Emissions	
<u>(Gal/Mo)</u>	<u>(Gal/Yr)</u>	<u>(Tons/Mo)</u>	<u>(Tons/Yr)</u>
840,000	8,400,000	0.08	0.8

These limits are based on maximum throughputs, vapor pressures, and Tanks 4.0. Compliance shall be determined from a running total of the previous 12 months of data.

5. Emissions from operation of the 4 boilers and another non-process gas-fired sources at the plant shall not exceed the following limits:

Natural Gas Usage		E M I S S I O N S					
<u>(mmscf/Mo)</u>	<u>(mmscf/Yr)</u>	<u>NO_x (Ton/Mo)</u>	<u>NO_x (Ton/Yr)</u>	<u>CO (Ton/Mo)</u>	<u>CO (Ton/Yr)</u>	<u>VOM (Ton/Mo)</u>	<u>VOM (Ton/Yr)</u>
33	330	1.7	16.5	1.4	13.9	0.1	1.0

These limits are based on standard AP-42 emission factors. Compliance with annual limits shall be determined from a running total of 12 months of data.

6. This permit is issued based on all storage tanks having no odor nuisance and storing materials with a vapor pressure of less than 2.5 psia, pursuant to 35 Ill. Adm. Code 218.122(c).

- 7a. The emissions of hazardous air pollutants as listed in Section 112(b) of the Clean Air Act shall not equal or exceed 10 tons per year of any single hazardous air pollutant or 25 tons per year of any combination of such hazardous air pollutants, or such lesser quantity as USEPA may establish by rule which would require the Permittee to obtain a Clean Air Act Permit Program permit from the Illinois EPA.

- i. Emissions of hazardous air pollutants (HAPs), as listed in Section 112(b) of the Clean Air Act, shall not exceed the following limits:

<u>Item</u>	<u>HAPs Emissions</u>	
	<u>(Tons/Month)</u>	<u>(Tons/Year)</u>
Individual HAP	1.0	9.5
All HAPs	2.5	24.5

This general HAP emission limit is to restrict the source below major source HAP levels and provide operational flexibility.

- b. Compliance with annual limits shall be determined from a rolling total of 12 months of data.

- 8. The Permittee is subject to the operating requirements of 35 Ill. Adm. Code 218.624 through 218.637.
 - a. The requirements of 35 Ill. Adm. Code 218.624 and 218.625 and 35 Ill. Adm. Code 218.628(a) shall not apply to equipment while it is being used to produce either [35 IAC 218.621]:
 - i. Paint or ink formulations which contain 10 percent or more (by weight) water, or
 - ii. Inks containing Magie oil and glycol as the primary solvent.

 - b. The Permittee shall comply with the following regulations for the affected paint manufacturing operation.
 - i. No person shall operate an open-top mill, tank, vat or vessel with a volume of more than 451 (12 gal) for the production of paint or ink unless [35 IAC 218.624]:
 - A. The mill, tank, vat or vessel is equipped with a cover which completely covers the mill, tank, vat or vessel opening except for an opening no larger than necessary to allow for safe clearance for a mixer shaft. Such cover shall extend at least 1.27 cm (0.5 in) beyond the outer rim of the opening or be attached to the rim.
 - B. The cover remains closed except when production, sampling, maintenance or inspection procedures require access.
 - C. The cover is maintained in good condition such that, when in place, it maintains contact with the rim of the opening for at least 90 percent of the circumference of the rim.

- ii. No person shall operate a grinding mill for the production of paint or ink which is not maintained in accordance with the manufacturer's specifications [35 IAC 218.625(a)].
- iii. No person shall operate a grinding mill fabricated or modified after the effective date of 35 Ill. Adm. Code 218 Subpart AA which is not equipped with fully enclosed screens [35 IAC 218.625(c)].
- iv. The manufacturer's specifications shall be kept on file at the plant by the owner or operator of the grinding mill and be made available to any person upon verbal or written request during business hours [35 IAC 218.625(c)].
- v. The owner or operator shall equip tanks storing VOL with a vapor pressure greater than 10 kPa (1.5 psi) at 20°C (68°F) with pressure/vacuum conservation vents set as a minimum at +0.2 kPa (0.029 psi). These controls shall be operated at all times [35 IAC 218.625(c)].
- vi. Stationary VOL storage containers with a capacity greater than 946 l (250 gal) shall be equipped with a submerged-fill pipe or bottom fill. These controls shall be operated at all times [35 IAC 218.626(b)].
- vii. The Permittee shall for the purpose of detecting leaks, conduct an equipment monitoring program as set forth below [35 IAC 218.628]:
 - A. Each pump shall be checked by visual inspection each calendar week for indications of leaks, that is, liquids dripping from the pump seal. If there are indications of liquids dripping from the pump seal, the pump shall be repaired as soon as practicable, but no later than 15 calendar days after the leak is detected.
 - B. Any pump, valve, pressure relief valve, sampling connection, open-ended valve and flange or connector containing a fluid which is at least 10 percent VOM by weight which appears to be leaking on the basis of sight, smell or sound shall be repaired as soon as practicable, but no later than 15 calendar days after the leak is detected.
 - C. A weather proof, readily visible tag, in bright colors such as red or yellow, bearing an identification number and the date on which the leak was detected shall be attached to leaking equipment. The tag may be removed upon repair, that is, when the equipment is adjusted or otherwise altered to allow operation without leaking.

- D. When a leak is detected, the owner or operator shall record the date of detection and repair and the record shall be retained at the source for at least two years from the date of each detection or each repair attempt. The record shall be made available to any person upon verbal or written request during business hours.
 - vii. No person shall clean paint or ink manufacturing equipment with organic solvent unless the equipment being cleaned is completely covered or enclosed except for an opening no larger than necessary to allow safe clearance for proper operation of the cleaning equipment, considering the method and materials being used [35 IAC 218.630(a)].
 - viii. No person shall store organic wash solvent in other than closed containers, unless closed containers are demonstrated to be a safety hazard, or dispose of organic wash solvent in a manner such that more than 20 percent by weight is allowed to evaporate into the atmosphere [35 IAC 218.630(b)].
9. The Permittee shall maintain records of the following items:
- a. Molecular weight and vapor pressure at operating temperature of each VOM and/or HAP containing raw material.
 - b. MSDS of all VOM and/or HAP containing material.
 - c. VOM and HAP emissions including fugitive (lbs/batch, tons/month and tons/year) from metal working and industrial coating and adhesive manufacturing process.
 - d. All the detailed necessary data to determine VOM and HAP emissions using the equations specified in Condition 3.
 - e. Throughput and vapor pressures of the 54 storage tanks (gallons/month and gallons/year).
 - f. Natural gas consumption (ft^3/month and ft^3/year).
 - g. VOM emissions (lbs/month and tons/year) from storage tanks and natural gas combustion.
 - h. Amount of clean-up solvent used (gallons/month and gallons/year).
 - i. PM emissions (tons/month and tons/year) from the mixing tanks.
- 10a. Pursuant to 40 CFR 63.10(b)(3), if an owner or operator determines that his or her stationary source that emits (or has the potential to emit, without considering controls) one or more hazardous air pollutants

regulated by any standard established pursuant to section 112(d) or (f) of the Clean Air Act, and that stationary source is in the source category regulated by the relevant standard, but that source is not subject to the relevant standard (or other requirement established under 40 CFR Part 63) because of limitations on the source's potential to emit or an exclusion, the owner or operator must keep a record of the applicability determination on site at the source for a period of 5 years after the determination, or until the source changes its operations to become an affected source, whichever comes first. The record of the applicability determination must be signed by the person making the determination and include an analysis (or other information) that demonstrates why the owner or operator believes the source is unaffected (e.g., because the source is an area source). The analysis (or other information) must be sufficiently detailed to allow the USEPA and/or Illinois EPA to make a finding about the source's applicability status with regard to the relevant standard or other requirement. If relevant, the analysis must be performed in accordance with requirements established in relevant subparts of 40 CFR Part 63 for this purpose for particular categories of stationary sources. If relevant, the analysis should be performed in accordance with USEPA guidance materials published to assist sources in making applicability determinations under Section 112 of the Clean Air Act, if any. The requirements to determine applicability of a standard under 40 CFR 63.1(b)(3) and to record the results of that determination under 40 CFR 63.10(b)(3) shall not by themselves create an obligation for the owner or operator to obtain a Title V permit.

- b. All records and logs required by this permit shall be retained at a readily accessible location at the source for at least three years from the date of entry and shall be made available for inspection and copying by the Illinois EPA and 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 request for records during the course of a source inspection.
- 11. If there is an exceedance of or 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/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 exceedance or deviation and efforts to reduce emissions and future occurrences.
- 12. 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

13. The Permittee shall, in accordance with the manufacturer(s) and/or vendor(s) recommendations, perform periodic maintenance on the pollution control equipment covered under this permit such that the pollution control equipment be kept in proper working condition and not cause a violation of the Environmental Protection Act or regulations promulgated therein.
14. The Permittee shall submit the following additional information with the Annual Emissions Report, due May 1st of each year:
 - a. VOM and HAP emissions including fugitive (tons/month and tons/year) from metal working and industrial coating and adhesive manufacturing process, including all clean-up solvents.
 - b. Throughput and vapor pressures of the 54 storage tanks (gallons/month and gallons/year).
 - c. Natural gas consumption (ft³/month and ft³/year).
 - d. VOM emissions (lbs/month and tons/year) from storage tanks and natural gas combustion.

This permit has been revised to reflect the addition of the V-DAMP process from Construction Permit #06080081.

If you have any questions on this permit, please call Jocelyn Stakely at 217/782-2113.

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

ECB:JRS:psj

cc: IEPA, FOS Region 1
IEPA, Compliance Unit
Lotus Notes

Attachment A - Emissions Summary

This attachment provides a summary of the maximum emissions from metal working and industrial coating and adhesive manufacturing 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 well below the levels, e.g., 100 tons/year of VOM, 25 tons/year of combined HAPs and 10 tons/year of each single HAP, 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, and control measures are more effective than required in this permit.

<u>Equipment</u>	HAPs			<u>NO_x</u> <u>(T/Yr)</u>	<u>PM</u> <u>(T/Yr)</u>	<u>CO</u> <u>(T/Yr)</u>	<u>SO₂</u> <u>T/Yr)</u>
	<u>VOM</u> <u>(T/Yr)</u>	<u>Combined</u> <u>(T/Yr)</u>	<u>Single</u> <u>(T/Yr)</u>				
Metal working and industrial coating, new V-DAMP process and adhesive manufacturing including clean-up solvents	22.7	--	--	--	--	--	--
Storage Tanks	0.8	--	--	--	--	--	--
Four (4) Boilers	1.0	--	--	16.5	1.0	13.9	--
Totals:	<u>24.5</u>	<u>< 25</u>	<u>< 10</u>	<u>16.5</u>	<u>1.0</u>	<u>13.9</u>	<u>0.0</u>

JRS:psj