

217/782-2113

CONSTRUCTION PERMIT
PREVENTION OF SIGNIFICANT DETERIORATION APPROVAL (40 CFR 52.21)
EMISSION STANDARDS FOR PHARMACEUTICALS (40 CFR 63, SUBPART GGG)

PERMITTEE

Archer Daniels Midland Co.
Attn: Jill E. Davidson
4666 Faries Parkway
Decatur, Illinois 62526

Application No.: 98080023

I.D. No.: 115015AAE

Applicant's Designation: VITAMIN C

Date Received: August 7, 1998

Subject: Vitamin C Production

Date Issued:

Location: 4666 Faries Parkway, Decatur

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a Vitamin C Production Plant, including Vitamin C synthesis, product drying, product handling, solvent recovery, and raw material silos as described in the above referenced application. This Permit is subject to standard conditions attached hereto and the following special condition(s):

In conjunction with this permit, approval is given with respect to the Prevention of Significant Deterioration of Air Quality Regulations (PSD) to construct the above referenced project, in that the Illinois Environmental Protection Agency (Agency) finds that the application fulfills all applicable requirements of 40 CFR 52.21. This approval is issued pursuant to the Clean Air Act, as amended, 42 U.S.C. 7401 et. seq., the Federal regulations promulgated thereunder at 40 CFR 52.21 for Prevention of Significant Deterioration of Air Quality (PSD), and a Delegation of Authority agreement between the United States Environmental Protection Agency and the Illinois EPA for the administration of the PSD Program. This approval becomes effective in accordance with the provisions of 40 CFR 124.15 and may be appealed in accordance with the provisions of 40 CFR 124.19. This approval is also based upon and subject to the following findings and the conditions which follow:

1. Archer Daniels Midland (ADM) requested a revised construction permit for the Vitamin C plant (Plant) at its Decatur manufacturing complex. The revised permit would allow for greater volatile organic material (VOM) emissions from the plant. VOM emissions occur from the solvent needed for final processing of intermediate Vitamin C feedstock, which has been produced through a series of water-borne processes. The emissions of solvent are controlled by a scrubber, which recovers solvent for reuse, from the point at which solvent is first introduced into the process through the final dryer for Vitamin C product.

2. The source is located in Decatur Township in Macon county. The area is designated attainment for all pollutants.
3. The permit allows annual VOM emissions of 400 tons from the plant. The plant would therefore be subject to PSD as a major modification to an existing source for VOM emissions.
4. The permit allows annual emissions of hazardous air pollutants (HAPs) that are more than 10 tons of a single HAP, i.e., methanol. Accordingly, the plant is subject to USEPA's National Emission Standards for Pharmaceutical Production, 40 CFR Part 63, Subpart A and GGG, as an existing source. However, in the event that the delisting process currently under way by USEPA for methanol declassifies it, this standard may no longer apply to the Vitamin C plant.
5. After reviewing the materials submitted by ADM, Illinois EPA determined that the plant, as proposed, is designed to:
 - a. Comply with applicable Pollution Control Board emission standards,
 - b. Comply with federal emission standards for hazardous air pollutants from pharmaceutical production, and
 - c. Utilize Best Available Control Technology (BACT) on emissions of VOM.
6. The Illinois EPA determined that the application complies with all applicable state and federal air pollution regulations, including the federal rules for Prevention of Significant Deterioration of Air Quality Regulations (PSD), 40 CFR 52.21.
7. A copy of the application and the Illinois EPA's formal review of the application and a draft of this permit were placed in a location in the vicinity of the project, and the public was given notice and an opportunity to examine this material and to submit comments and to request a public hearing on this matter.

The Illinois EPA is issuing this approval subject to the following conditions and consistent with the specifications and data included in the application. Any departure from the conditions of this approval or terms expressed in the application would need to receive prior written authorization by Illinois EPA.

1. Standard conditions for issuance of construction permits, attached hereto and incorporated herein by reference, shall apply, unless superseded by the following special conditions.
- 2a. All process vents in the plant discharging VOM, including any vacuum systems and VOM solvent tanks, shall be enclosed and ducted through a closed vent system to a VOM emission control system.

- b. The VOM emission control systems shall be designed and constructed to achieve at least 98% control of VOM comparing the amount of VOM introduced into the processes and the emissions to the atmosphere. These control systems shall be operated and maintained in conformance with good air pollution practice.
- 3a. The Permittee shall implement the following practices for components and materials to minimize VOM emission losses from leaking components unless and until an equivalent practice is approved by the Illinois EPA:
- i. Open-ended valves shall only be present as needed for routine sampling of a process.
- b. The Permittee shall implement a Leak Detection and Repair Program for components in VOM service (i.e., containing process fluids that are at least 10 percent VOM by weight) in the process units of the plant. This program shall include the following elements as a minimum, except for those components for which the Permittee must implement and comply with a Leak Detection and Repair Program pursuant to 40 CFR 63.1255 (See Condition 4).
- i. Scope: The program covers components that are in VOM service in the process operations, other than components in vacuum service and components equipped with a closed vent system ducted to a VOM control system, where the term component includes valves, pumps and agitators (shaft seals), flanges, other connectors (inspection ports, manways, sight glasses, etc.), closed vent systems, and pressure relief devices.
 - ii. Definitions:
 - Leak:

An instrument reading of 10,000 ppm or greater for components other than pressure relief devices, an instrument reading of 500 ppm or greater for pressure relief devices, or observation of leaking material from a component as detected by sight, smell, or sound is considered a leak.
 - Low-Leak Design Pump:

A pump fitted with double mechanical pressurized seals, equipped with a permanent gauge for seal pressure* and that is operated and maintained consistent with good practice, or other similar pump design as approved by the Illinois EPA that both minimizes leaks and directly reveals the presence of a leak.
- * This pressure gauge may be installed on the individual pump or located on a central seal fluid system if each pump is equipped with a device to indicate leakage of seal fluid.

- iii. Monitoring: Monitoring is conducted on at least the following basis for components using applicable instrument and source survey procedures specified by USEPA Method 21 (except that daily manual calibration is not required if the instrument is self-calibrating) or the screening procedures in such methods are satisfied. Inspections are as follows:

Quarterly for valves (except for conventional valves as USEPA skip-check criteria and alternative practices established in 40 CFR 60.483-2 (NSPS for SOCOMI Leaks) are satisfied) and pumps (except pumps that are of low leak design);

Annually for closed vent systems;

Within a week for a pressure relief device after it experiences a pressure release;

Within a week for the flanges and other connectors in a particular area, system or feature after such components are involved in repair, maintenance, alteration or other activity that has the potential to result in a leak from flanges or other connectors, including resealing of a manway after entry to a vessel, if absence of leaking components was not verified as a final step in such activity by use of a soap solution or other comparable technique; and

Within a week after repair of a component for which a leak was detected and could not be readily repaired within one hour.

- iv. Visual Inspection: Pumps and agitator shafts shall be inspected by visual inspection on a weekly basis for indications of liquids dripping from the seal. If there are indications of liquids dripping from a seal, a leak is detected.
- v. Repairs: Repairs are made as soon as practicable but not later than the following:

For a component other than a pump or valve, if a process unit shutdown is necessary to accomplish the repair, not later than the end of the next process unit shutdown.

For a pump or valve, if a process unit shutdown is necessary to accomplish the repair, not later than the end of the next process unit shutdown or 6 months, whichever occurs first, except that further delay of repair of a valve is allowed (beyond the next process unit shutdown) if reasonable supplies of repair parts or replacement valves are maintained but these supplies are depleted, in which case repair of a valve shall be accomplished not later than 6 months after the first process unit shutdown or 1 year after detection of the leak, whichever occurs first.

vi. Tagging: A leaking component is "tagged" if it cannot be readily repaired within one hour of detection of a leak, which tag includes the date the leak was detected and the date the leak was repaired and which tag is only removed after the repaired component is inspected.

vii. Records: Records are maintained that:

Facilitate correct and consistent identification of the components that are covered by the program, including at a minimum having available an up to date process diagrams for the plant.

Verify performance of required inspections, including date, personnel, proper implementation of inspection methods, purpose or scope of inspection, covered components and results (leak/no-leak status of the covered equipment).

Document each component leak that is identified, including identification of the component and the nature of the leak, and verify prompt repair of the leak, including the date the repair is completed and detailed explanation of the required actions for a leak repair that could not be completed within 30 days, further explanation if a repair could not be completed until process unit shutdown or thereafter, and the date required inspection of the component was performed following repair.

Compile the results of the program, including fulfillment of skip-check criteria for conventional valves when relied upon.

Identify each deviation from required practices, with appropriate identification, description and explanation.

Document proper operation, maintenance, and repair of low-leak design pumps.

viii. Revisions: The minimum provisions for tagging and recordkeeping, as specified above, may be revised by the Illinois EPA in future operating permits for the plant to the extent that the Permittee demonstrates that effective detection and repair of leaking components is still reasonably assured by the revised provisions.

Conditions 2 and 3 address Best Available Control Technology as required by Section 165 of the Clean Air Act.

4a. i. The VOM control system shall be maintained and operated to comply with the National Emissions Standard for Pharmaceutical Production - Process Vents, which generally requires 93 percent control efficiency for HAP [40 CFR 63.1253(b) and 63.1254(a)].

- ii. The Permittee shall not rely on the emission averaging provisions of these standards without first having submitted a timely and complete implementation plan to the Illinois EPA.
- b. Components in HAP service shall be subject to a Leak Detection and Repair Program and other applicable requirements of National Emission Standards for Pharmaceutical Production - Equipment Leaks [40 CFR 63.1255].
- c. Wastewater from the plant shall be handled in conformity with applicable requirements of the National Emission Standards for Pharmaceutical Production - Wastewater [40 CFR 63.1256]. For this purpose, methanol shall be considered a water soluble HAP [40 CFR 63, Subpart GGG, Table 3].
- d. If USEPA removes methanol from the list of HAPs, the above Condition 4(a), (b), and (c) and Condition 12(e) shall no longer apply as follows:
 - i. These conditions shall no longer apply if 40 CFR Part 63, Subpart GGG is not otherwise applicable, as confirmed by the Permittee in writing to the Illinois EPA.
 - ii. This provisions shall take effect 30 days after written notice from the Permittee, which notice shall explain any changes in applicable requirements for the plan.
- 5a. Emissions of VOM by the plant shall not exceed 400 tons per year.
 - b. Compliance with this limit shall be determined on a rolling 12 month basis, calculated monthly, assuming that VOM loss, i.e., the difference between VOM introduced to the plant and VOM in outputs from the plant, is lost as emissions.
- 6. The VOM control system(s) for process operations, which consists of water absorption, shall be operated in conformance with the following as good air pollution control practices until such practices are set by the Illinois EPA based on actual operating experience and the emission testing required by Condition 9:

A minimum liquid to gas ratio of 0.62 gallon per 100 standard cubic foot of gas flow.

- 7a. Process emission (stack emissions) of VOM from the plant shall not exceed the following limits:

<u>Operation</u>	VOM Emissions Daily (Lb/Hr - 8 Hr. Ave.)	Annual (Ton/Yr)
Processing Vents	7.4	32.4
Packaging Tower (EP1)	0.51	2.25
Product Transfer (EP2)	0.86	3.75
Transfer System (EP3)	0.26	<u>1.125</u>
	Total	39.8

- b. i. Emissions of particulate matter (PM) from classifying packaging and cleanup operations and from bulk storage silos shall be controlled by fabric filters designed and maintained to emit no more than 0.01 gr/dscf.
- ii. Process emissions of PM from the plant shall not exceed the following limits:

<u>Operation</u>	PM Emissions	
	<u>(Lbs/Hr)</u>	<u>(Tons/Yr)</u>
Packaging Tower (EP1)	0.69	3.02
Product Transfer (EP2)	0.07	0.31
Transfer System (EP3)	0.07	0.31
CaOH Silos (EP4)	0.22*	1.04
Vacuum System (EP5)	0.02	0.09
NaOH Silo (EP6)	0.18	0.79
Recycle Transfer (EP7)	0.04	<u>0.18</u>
	Total	5.74

* Hourly emission rate 0.11 lb/hour, each.

These conditions are based on representations of maximum operation and maximum actual emission rates made in the permit application.

- 8. The plant may be operated for 365 days pursuant to this Construction Permit. This Condition supersedes standard Condition 6(b).
- 9a. i. Within 180 days of first beginning to use solvent for processing of intermediate vitamin C feedstock, the VOM and HAP emissions from the VOM control system shall be measured at the Permittee's expense by an approved testing service, during conditions which are representative of maximum emissions to verify compliance with the requirements in this permit, including the National Emission Standards for Pharmaceutical Production.

Notwithstanding the above, the Illinois EPA may upon request of the Permittee provide more time for testing pursuant to this permit if initial shakedown of the plant is interrupted or proceeds slowly so that more time is needed to achieve stable operation at a level suitable for emission testing or such time is reasonably needed to address unavoidable delays in performance of testing.
- ii. Measurements of VOM, HAP or particulate matter emissions from specified emission unit(s) shall also be conducted upon reasonable written request from the Illinois EPA in accordance such request.
- b. The following methods and procedures shall be used for testing of emissions, as approved by the Illinois EPA. Refer to 40 CFR 60, Appendix A for USEPA test methods.

Location of Sample Points	USEPA Method 1
Gas Flow and Velocity	USEPA Method 2
Flue Gas Weight	USEPA Method 3
Moisture	USEPA Method 4
Particulate Matter (PM)	USEPA Method 5
Volatile Organic Material	USEPA Method 18, 25 or 25A, as appropriate

- c. The Permittee shall submit a written test plan to the Illinois EPA for review and comment for the initial testing for VOM and particulate matter and if a significant change in the procedures for this testing is planned from the procedures followed in the previous test. This plan shall be submitted at least 60 days prior to the actual date of testing and include the following information as a minimum:
 - i. A description of the planned test procedures.
 - ii. The person(s) who will be performing sampling and analysis and their experience with similar tests.
 - iii. The specific conditions under which testing will be performed, including a discussion of why these conditions will be representative of maximum emissions.
 - iv. The methodology that will be used to determine the operating rate during the period of testing, e.g., the rate of VOM solvent introduced to the process.
- d. The Permittee shall notify the Illinois EPA prior to conducting these measurements to enable the Illinois EPA to observe testing. Notification for the expected date of testing shall be submitted a minimum of 30 days prior to the expected date. Notification of the actual date and expected time of testing shall be submitted a minimum of 5 working days prior to the actual date of the test. The Illinois EPA may accept shorter advance notice if it does not interfere with the Illinois EPA's ability to observe testing.
- e. Copies of the Final Report(s) for these tests shall be submitted to the Illinois EPA within 30 days after the test results are compiled and finalized.
- f. The Final Report from testing shall include as a minimum:
 - i. A summary of results.
 - ii. General Information.
 - iii. A detailed description of methodology for determination of the rate of VOM introduced into processes during the period of testing, with supporting information.
 - iv. Detailed description of operating conditions of the emission unit(s) being tested, including:

- A. Process information, process rate, e.g. raw material consumption; and
 - B. Control equipment information, i.e., equipment condition and operating parameters during testing.
- v. Data and calculations.
- vi. Conclusions.
- 10a. The Permittee shall install, operate, and maintain devices to measure, either directly or indirectly, and record the scrubbant (liquid) flow and exhaust (gas) flow from the scrubber.
- b. The Permittee shall maintain logs for the operation, maintenance and repair of these monitoring devices.
11. The Permittee shall operate, maintain, and repair all particulate matter air pollution control equipment in a manner that assures the emission limits set in this permit are met. The actions taken by the Permittee to meet this requirement shall include as a minimum the following:
- i. Operating Procedures: Written operating procedures shall be developed and maintained describing normal air pollution control equipment operation. Such procedures shall include maintenance practices and may incorporate the manufacturer's recommended operating instructions.
 - ii. Inspections: Visual inspections of air pollution control equipment shall be conducted on at least a weekly basis.
 - iii. Repairs: Prompt repairs shall be made upon identification of need either as a consequence of formal inspections or other observations in conformance with good air pollution control practice.
 - iv. Records: Records of inspection, maintenance, and repair activities for all air pollution control equipment shall be kept on site and shall include as a minimum:
 - A. Date of inspection, maintenance, and repair activities;
 - B. Description of maintenance or repair activity if not routine preventative maintenance; and
 - C. Probable cause for requiring maintenance or repair if not routine or preventative.
- 12a. The Permittee shall maintain records of the following items, which shall be kept current:

- i. The amount of VOM, (lbs by type of material) typically in inventory in process area in the plant, that is, held in process vessels, in-process tanks, and piping.
 - ii. If the Permittee considers VOM contained in wastewater in determining compliance with Condition 5, records of the fraction of VOM in wastewater, by type of material, that is eliminated by wastewater treatment, e.g., destroyed by biodegradation, so that is not lost to the atmosphere during collection and wastewater treatment, as determined by appropriate USEPA models and analysis methods. (If this record is not maintained the Permittee need not keep the records specified by Condition 12(b)(iii) and (d)(iii).
- b. The Permittee shall maintain operating records for the following items:
- i. Each receipt of VOM material, i.e., transfer from delivery vehicles or shipping containers to the plant or transfer from another operation to the plant, by type of material (lbs., as determined from scale weight tickets or records).
 - ii. Each shipment of VOM material, i.e., transfer to delivery vehicles or shipping containers for return to the supplier or transfer to another source from the plant, by type of material (lbs., as determined from scale weight tickets or records).
 - iii. Quantity of wastewater containing VOM sent from the plant for treatment (gallon/day), and its VOM content (% VOM, as determined from representative sampling and analysis).
 - iv. Estimated amount of VOM material (lbs by type of material) in inventory in process areas in the plant, determined (1) with the initial material balance determination under this permit, and (2) on at least a calendar year basis thereafter.
 - v. Changes in plant operating procedures that would significantly increase the amount or concentration of VOM in the exhausts from process operations, including changes in the amount or type of VOM used or changes in the amount of steam or other inert gases introduced.
- c. The Permittee shall maintain records for the VOM control systems as follows:
- i. A chart or diagram indicating acceptable liquid and gas flow rates so as to comply with Condition 6, with supporting documentation for conversion factors if monitoring devices indirectly determine flow, e.g., by measurement of motor current flow.
 - ii. Each period of time when the control system was not in operation (date and duration) and whether associated process operations were in service during the period.

- iii. The operating parameters of the VOM control systems as recorded pursuant to Condition 10(a), using an averaging period that is at most an hourly block average:
 - iv. The above parameters as manually recorded at least every 30 minutes, if automatic measurement and recording device(s) are not in service for more than two hours.
- d. The Permittee shall maintain monthly records of the following items with supporting calculations to determine VOM emissions from the plant by material balance:
- i. The total amount of VOM (lbs) received during the month, (Refer to Condition 12(b)(i)).
 - ii. The total amount of VOM (lbs) shipped during the month (Refer to Condition 12(b)(i)).
 - iii. The total amount of VOM (lbs) eliminated with wastewater during the month, if considered by the Permittee (Refer to Condition 12(a)(i) and (b)(iii)).
 - iv. Any significant change in the amount of VOM (lbs) in inventory in the plant, comparing the current determination for the amount of VOM in inventory with the previous determination (Refer to Condition 12(a)(i)).
 - v. The total amount of VOM (lbs) emitted (lost) during the month, determined as (i) - (ii) - (iii) - (iv).
 - vi. The total amount of VOM (lbs) emitted (lost) during the year, determined as the total of the monthly emissions and the emissions of the previous 11 months (Refer to Condition 12(d)(v)).
- e. The Permittee shall keep applicable records required by the National Emission Standards for Pharmaceutical Operations, 40 CFR 63, Subpart GGG.
- f. The Permittee shall record any period during which any emission unit was in operation when its air pollution control equipment was not in operation or was not operating properly.
- i. These records shall include each period of time when an operating parameter of a VOM control system, as recorded above, deviated outside the level set as good air pollution control practice (date, duration and description of the incident).
 - ii. These records shall include the cause for pollution control equipment not operating properly or being out of normal service, for incidents when control equipment failed to operate properly and shall identify the corrective actions that were taken, the repairs that were made, and the steps that were taken to prevent any such reoccurrence.

- iii. These records shall also identify any such periods during which an emission unit failed to meet the requirements of this permit, including applicable emission limits. This record shall include the cause for noncompliance, if known, and the corrective action(s) and preventive measures taken to prevent any such reoccurrence if any.
13. a. The Permittee shall retain all records required by this permit at the source for at least three years, at a location where the records are readily accessible for inspection by the Illinois EPA.
- b. The Permittee shall make all records required by this permit available for inspection at the source by the Illinois EPA, providing copies of records to the Illinois EPA upon request, as further specified below.
- i. The Permittee may keep records in a computerized data system provided that, upon request by the Illinois EPA during the source's normal working hours, requested information is retrieved and available to the Illinois EPA at the end of inspection.
 - ii. The Permittee shall identify any records that it considers to contain information that it would claim as trade secret under Section 7.1 of the Environmental Protection Act. The Permittee shall mark such records "trade secret," safeguard them from becoming available to persons other than those selected by the Permittee, and have available an undated claim letter for the records, accompanied by a statement of justification for its claim that the records contain trade secrets. When copies of these records are provided to the Illinois EPA, as required upon request, they shall be accompanied by a copy of the claim letter and the statement of justification, which have been dated by the Permittee and otherwise completed for the material provided to the Illinois EPA.
14. If there is an exceedance of the emission limits of this permit as determined by the records required by this permit or by other means, the Permittee shall submit a report to the Illinois EPA's Compliance Section in Springfield, Illinois within 30 days after the exceedance. 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 violation and efforts to reduce emissions and future occurrences.
- 15a. Any required reports and notifications concerning equipment operation, emissions testing, or a monitoring system shall be sent to the Illinois EPA at the following address unless otherwise indicated:

Illinois Environmental Protection Agency
Division of Air Pollution Control
Compliance Section (#40)
P.O. Box 19276
Springfield, Illinois 62794-9276
Telephone: 217/782-5811 Fax: 217/524-4710

- b. A copy of all required reports and notifications, except the Annual Emission Report required by 35 Ill. Adm. Code, shall also be sent to the Illinois EPA at the following address:

Illinois Environmental Protection Agency
Division of Air Pollution Control
2009 Mall Street
Collinsville, Illinois 62234
Telephone: 618/346-5120

16. This permit does not relieve the Permittee of the responsibility to comply with all applicable local, state and federal requirements which are part of Illinois' State implementation Plan, as well as all other applicable local, state and federal requirements.

If you have any questions concerning this permit, please contact Chris Romaine at 217/782-2113.

Donald E. Sutton, P.E.
Manager, Permit Section
Division of Air Pollution Control

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cc: Region 3