

217/785-1705

CONSTRUCTION PERMIT/PSD APPROVAL

PERMITTEE

Archer Daniels Midland Company - Decatur Complex-BioProducts  
Attn: Andrea Coffman - Environmental Manager  
4666 Faries Parkway  
Decatur, Illinois 62526

Application No.: 11020016

I.D. No.: 115015AAE

Applicant's Designation:

Date Received: February 3, 2011

Subject: Expansion of Lysine Department

Date Issued:

Location: 4666 Faries Parkway, Decatur, Macon County

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission source(s) and/or air pollution control equipment consisting of a project to increase the capacity of the Lysine Department, as described in the above referenced application. This Permit is subject to the following special condition(s) and standard conditions attached hereto, except as superseded by a special condition.

In conjunction with this permit, approval is given with respect to the Prevention of Significant Deterioration of Air Quality Regulations (PSD) for the above referenced project, in that the Illinois Environmental Protection Agency (Illinois EPA) 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 based upon and subject to the following findings and the conditions. This approval is also subject to the general requirement that the project be developed and operated consistent with the specifications and data included in the application and any significant departure from the terms expressed in the application, if not otherwise authorized by this permit, must receive prior written authorization from the Illinois EPA.

If you have any questions on this permit, please call Shashi Shah at 217/785-1705.

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

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

ECB:SRS:jws

cc: Region 3  
USEPA Region V

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INTRODUCTION: FINDINGS

- 1a. ADM has applied for a construction permit to increase the capacity of the Lysine Department in the BioProducts Facility at its Decatur complex. Lysine is an essential amino acid manufactured as a nutritional supplement for animal feeds.
  - b. The proposed project would include changing service of certain existing emission units for lysine production, modifications to certain existing units, and construction of certain new equipment for production of lysine. The project would also involve increases in the operation of the existing Cogeneration Plant to supply the additional steam needed by the Lysine Department.
  - c. For purposes of this permit, the "affected department" is the future Lysine Department after it begins operation with changes authorized by this permit, i.e., the Lysine Department with the proposed project.
2. ADM's Decatur complex is located in Decatur Township in Macon County. The area is designated attainment for all criteria pollutants.
- 3a. The proposed project would be a major project subject to Prevention of Significant Deterioration (PSD) for emissions of volatile organic compounds (VOC), nitrogen oxides (NOx), sulfur dioxide (SO<sub>2</sub>) and greenhouse gases (GHG) This is because it would be accompanied by significant increases in annual emissions of these pollutants (see also Attachment 1). In particular:
- i. The project would involve a significant increase in the VOC emissions of the affected department, which emits trace amounts of VOC from lysine fermentation and processing.
  - ii. The project would be accompanied by increases in emissions of NOx, SO<sub>2</sub> and GHG from Boilers 1 through 9, the existing coal-fired boilers at the complex's co-generation plant, which would operate more to supply the additional steam needed by the affected department. However, the project would not trigger the requirement to apply Best Available Control Technology (BACT) for these boilers for NOx, SO<sub>2</sub> and GHG because these boilers would not be modified. In this regard, this permit does not authorize physical changes to these boilers or provide for increases in emissions over permitted levels as set by the current construction permits for these boilers, Permits 85060030, 94020006 and 97050097.
- b. While the project would increase emissions of carbon dioxide (CO<sub>2</sub>), a GHG, from lysine fermentation, this increase is not subject to PSD. This is because the lysine fermentation process is a biogenic process and the applicability of PSD to biogenic CO<sub>2</sub> emissions has been deferred by USEPA until July 21, 2014.
  - c. This project is not subject to PSD for emissions of particulate matter (PM, PM<sub>10</sub> or direct PM<sub>2.5</sub>) or carbon monoxide (CO). This is because the increases in emissions of these pollutants are not significant.

- 4a. The Lysine Department is not a major source for emissions of hazardous air pollutants (HAPs) and will continue to not be a major source of HAPs. In particular, as limited by this permit, the HAP emissions of the affected department will be less than 10 tons of an individual HAP (e.g., acetaldehyde) and less than 25 tons in aggregate for total HAPs. Therefore, this project is not subject to review under Section 112(g) of the federal Clean Air Act.
- 5a. After reviewing the materials submitted by ADM, the Illinois EPA has determined that the project, as proposed, would be designed so that the affected department would (i) comply with applicable state and federal emission standards, and (ii) utilize BACT for VOC emissions from new and modified emission units for which BACT is applicable.
- b. Various air quality evaluations have been prepared for the project to address the impacts of the project on ambient air quality, including applicable PSD increments. The project would not threaten compliance with air quality standards for NO<sub>2</sub> or SO<sub>2</sub>. The NO<sub>x</sub> and SO<sub>2</sub> emissions from the project would not threaten air quality for PM<sub>2.5</sub> due to the formation of secondary PM<sub>2.5</sub>. The VOC and NO<sub>x</sub> emissions of the project also would not contribute to an exceedance of the ozone air quality standard considering current air quality as monitored in Macon County.
6. The Illinois EPA has determined that the project, as proposed, would comply with all applicable Illinois Pollution Control Board Regulations and the federal PSD rules, 40 CFR 52.21.
7. This permit would increase permitted production and emissions of the Lysine Department, from levels established in previous construction permits for the department, including Construction Permit 08030052.
8. A copy of the application and a summary of the Illinois EPA's 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.

## Section 1: Conditions for the Project

### 1.1. Effect of Permit

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.

### 1.2 Validity of Permit and Commencement of Construction

This permit shall expire if construction of this project is not commenced within 18 months of the effectiveness of the permit or is not pursued in a reasonable manner thereafter, as provided by 40 CFR 52.21(r)(2). This condition supersedes Standard Condition 1.

### 1.3 Permitted Emissions of the Affected Department

Total emissions of VOC from the affected department, i.e., the future Lysine Department with change(s) authorized by this permit, shall not exceed 159.2 tons/year.

### 1.4. General Operating Requirements

The Permittee shall operate and maintain the emission units at the affected department, including associated air pollution control equipment, in a manner consistent with good air pollution control practice to minimize emissions, including the following practices:

- a. At all times, including periods of startup, shutdown, malfunction or breakdown, operate as practicable to minimize emissions.
- b. Air pollution control equipment shall be operated in accordance with written operating procedures that address startup and shutdown, as well as normal operation, which procedures shall be developed and maintained by the Permittee and may incorporate the manufacturers recommended operating instructions.
- c. Conduct weekly visual inspections of emission units and associated air pollution control equipment.
- d. Conduct regular preventative maintenance on emission units and associated air pollution control devices as needed to assure reliable operation.
- e. For those repairs that are related to good air pollution control practices, make prompt repairs to emission units and associated air pollution control devices upon identification of need either as a consequence of formal inspections or other observations.
- f. Install, operate and maintain required monitoring devices and instrumentation in accordance with good monitoring practices, following the manufacturer's recommended operating and

maintenance procedures or such other procedures as are otherwise needed to assure reliable operation of such devices.

#### 1.5 Compliance with Emission Limits

- a. Unless otherwise specified in a particular provision of this permit, compliance with annual emission limits established by this permit (i.e., annual emission limits in permit conditions entitled "Emission Limits"), shall be determined from a running total of 12 months of data, i.e., from the sum of the data for the current month plus the preceding 11 months (12 month total).
- b. Unless otherwise specified in a particular provision of this permit, compliance with emission limits established by this permit, other than annual limits, for units other than fermentation shall be determined on a hourly basis, except for purposes of testing, when emissions may be determined as the average of three (or two) test runs as provided by 35 IAC Part 283.

#### 1.6 Records for Required Instrumentation

- a. The Permittee shall keep records of the data measured by required instrumentation.
  - i. For this purpose, the measured data shall be recorded manually at least once per day, with data and time both recorded, for periods when the associated emission unit(s) are in service, provided however that if data from an instrument is recorded automatically, the following provisions for recording of data shall apply.
  - ii. Data shall be automatically recorded by a central data system, dedicated data logging system, chart recorder, other data recording device. If an electronic data logging system is used, the recorded data shall be the hourly average value of the particular parameter for each hour. During periods when the automatic recording device is out of service, data shall be recorded manually at least once every 12 hours for periods when the associated emission unit(s) is in service.
- b. The Permittee shall maintain logs or other records for the operation and maintenance of operational monitoring systems and instrumentation required by this permit.

#### 1.7 Records and Reports for Changes in Emissions of PM, PM<sub>10</sub>, PM<sub>2.5</sub> and CO

- a. Pursuant to 40 CFR 52.21(r)(6)(i), for emissions of PM, PM<sub>10</sub>, PM<sub>2.5</sub> and CO, before beginning actual construction of the project, the Permittee shall document and maintain a record of the following information:
  - i. A description of the project;

- ii. Identification of the emissions unit(s) whose emissions could be affected by the project; and
  - iii. A description of the applicability test used to determine that the project is not a major modification, including the baseline actual emissions, the projected actual emissions, the amount of emissions excluded under 40 CFR 52.21(b)(41)(ii)(c) and an explanation for why such amount was excluded, and any netting calculations, if applicable.
- b. For PM, PM<sub>10</sub>, PM<sub>2.5</sub> and CO, the Permittee shall keep records for the actual emissions from the emissions units identified in the records required by Condition 1.7(a)(ii) and calculate and maintain a record of the annual emissions of these pollutants, in tons per year on a calendar year basis, for a period of ten years following resumption of regular operations after construction of the project is completed.
- c. The Permittee shall notify the Illinois EPA if the combined actual PM, PM<sub>10</sub>, PM<sub>2.5</sub> or CO emissions of the emissions units identified in the records required by Condition 1.7(a)(ii), in tons per year on a calendar year basis, exceed the baseline actual emissions (as documented in the records pursuant to Condition 1.7(a)(iii)) by a significant amount or more, and if such emissions differ from the preconstruction projection (as documented in the records pursuant to Condition 1.7(a)(iii)). Such report shall be submitted to the Illinois EPA within 60 days after the end of such calendar year and contain the following information:
- i. The combined annual emissions of the pollutant(s) from the relevant emission units as calculated pursuant to Condition 1.7(b); and
  - ii. Any other information that the Permittee wishes to include in the report (e.g., an explanation as to why the emissions differ from the preconstruction projection).

#### 1.8 Retention and Availability of Records

- a. The Permittee shall retain all records required by this permit at the source for at least five 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. For this purpose, the Permittee may keep records in a computerized data system provided that, upon request by the Illinois EPA during the sources normal working hours, requested information is retrieved and available prior to inspection completion to the Illinois EPA.

1.9 Notifications

- a. The Permittee shall notify the Illinois EPA within 30 days of the following events related to this project:
  - i. Commencement of construction.
  - ii. Initial startup of each new affected fermenter and each new affected dryer.
- b. The Permittee shall notify the Illinois EPA within 30 days of any deviation from the annual emission limits for the affected department, as set in Condition 1.3. Any such notification shall include the information specified in Condition 3.4.
- c.
  - i. Two copies of the above notification and other reports and notifications required by this permit shall be sent to the Illinois EPA, Division of Air Pollution Control, Compliance Section, in Springfield, unless otherwise indicated.
  - ii. One copy of the above notification and other required reports and notifications required by this permit shall be sent to the Illinois EPA's Regional Office of the Division of Air Pollution Control, unless otherwise indicated.

1.10 Authorization for Operation

The affected department may be operated under this construction permit until final action is taken to incorporate this project in a revision to or renewal of the CAAPP permit for the source, provided that the Permittee completes initial emission testing required by this permit in a timely manner.

SECTION 2: UNIT SPECIFIC CONDITIONS

2.1 Lysine Manufacturing Operations

2.1.1 Description

Lysine is produced in the affected department by a biological process or fermentation of liquid dextrose, which is made at ADM's Decatur complex. The crude lysine from the fermentation operation is then refined. A portion of the refined liquid lysine is then dried in steam-heated spray dryers. This dry product then undergoes handling, storage and packaging or bulk loadout.

This project involves modifications to the lysine fermentation operation to increase its production capacity. Five existing fermenters in the Bio-Products Facility will be "re-serviced" for use as main fermentation tanks in the manufacture of lysine. Operational improvements will also be made to the process to increase the production rates. The lysine fermentation operation naturally emits trace amounts of volatile organic compounds (VOC), as a result of the biological fermentation process. While the fermentation operation is equipped with process scrubbers, this permit generally addresses the "uncontrolled" emissions of VOC from the fermentation operation, before scrubbing. This is because the scrubbers are process scrubbers, and are served by a common header, and provide minimal control of VOC emissions from the lysine fermentation.

This project also involves changes to the lysine refining system. New equipment will be installed that does not have emissions, including three additional mechanical evaporators and two new ion exchange systems. New storage tanks will also be installed for ammonium hydroxide and hydrochloric acid.

The drying capacity of the Lysine Department will be increased by re-servicing two existing spray dryers for processing of lysine. Like the existing spray dryers, particulate emissions will be controlled by baghouses that are integral to the dryers.

Two dry material handling systems will be installed to handle the additional output of dry lysine. One system would recycle dried material back through the lysine dryers. The other system would handle dry lysine product for transfer to the packaging tower. PM emissions from these units will be controlled by add-on baghouses.

2.1.2-1 List of Emission Units and Control Equipment

Process	Description	Control Equipment
Fermentation	Modified batch aerobic fermentation of lysine, with five additional main fermentation tanks, for a total of 49 main fermentation tanks (EU FE-02)	*

Drying	Re-serviced spray dryers (Dryers 17 & 18) (EU LY-19 & 20)	Baghouses (CE LY-19 & 20)
	Existing spray dryers (Dryers 3, 4, and 7 thru 16) (EU LY-03 thru LY-14)	Baghouses (CE LY-03 thru 14)
Dry Material Handling & Packaging	New Re-charge lysine transfer sys. (EU LY-21)	Baghouse (CE LY-21)
	New Bio II Transfer System (EU LY-22)	Baghouse (CE LY-22)
	Existing Handling & Packaging Systems (EU LY-15, 16 & 17)	Baghouses (CE LY-15, 16 & 17)

\* The various fermentation tanks in the lysine fermentation operation are ducted by a common header to a number of process scrubbers, which system also serves other departments in the BioProducts Facility.

#### 2.1.2-2 Applicability Provisions

The "affected units" for the purpose of these unit specific conditions are the emission units described in Conditions 2.1.1 and 2.1.2-1, including existing, new and modified units.

#### 2.1.3 Control Technology Determination

- a. This permit is based upon emissions of VOC from the new and modified affected units being minimized by the intrinsic nature of the lysine manufacturing process.
- b. The "uncontrolled" VOC emissions from the affected fermentation operation, i.e. the VOC emissions as present in the ductwork between the lysine fermentation tanks and the header serving the process scrubbers, shall not exceed 50 ppmv, as carbon, dry basis. This limit shall generally be applicable to each lysine fermentation tank, averaged over the fermentation cycle, beginning when aeration of the batch begins and ending when aeration of the broth is concluded. As related to emission testing, as addressed by Condition 2.1.9, this limit shall be applicable to the tank that is being tested as the average over at least three fermentation cycles (in the event that the testing for one cycle is flawed or incomplete, as provided for by 35 IAC Part 283).
- c. The VOC emissions from each affected new lysine dryer (Dryers 17 and 18) shall not exceed 1.0 lb/hr, on a 3-hour average.
- d. The VOC emissions from each affected new dry material handling unit shall be negligible. For this purposed VOC emissions of each unit shall not exceed 0.1 lb/hr or 10 ppmvd, whichever is greater, on a 3-hour average.

#### 2.1.4 Applicable State Emissions Standards

- a. Each process emission unit in the affected department, other than storage tanks, is subject to 35 IAC 215.301, which generally provides that no person shall cause or allow the discharge of more than 3.6 kg/hour (8 lb/hour) of organic material into the atmosphere from any emission unit, except as provided in 35 IAC 215.302, 215.303, 215.304 and the following exception: If no odor nuisance exists the limitation of 35 IAC 215 Subpart K shall apply only to photochemically reactive material [35 IAC 215.301].
- b.
  - i. Affected units are subject to and shall comply with applicable requirements of state emission standards for particulate matter (PM) and opacity, including 35 IAC 212.123, 212.301, and 212.321.
  - ii. Each emission unit in the affected units is subject to 35 IAC 212.123, which provides that no person shall cause or allow the emissions of smoke or other particulate matter, with an opacity greater than 30 percent, into the atmosphere from any emission unit.

#### 2.1.5 Nonapplicability Provisions

This permit is issued based on the affected department not being subject to requirements under the National Emission Standards for Hazardous Air Pollutant (NESHAP), 40 CFR Part 63. This is because the feedstock for lysine production is not a HAP and HAPs are not used in the lysine manufacturing operations.

#### 2.1.6 Operational Requirements

- a. At all times, the Permittee shall maintain and operate all emissions units in the affected department, including associated control devices, in a manner consistent with good air pollution control practice for minimizing emissions.

Note: This requirement does not apply to the process scrubbers on the fermentation operation.

#### 2.1.7 Production and Operational Limits

- a. The total amount of lysine produced by the affected department, dry basis, shall not exceed 60,000 tons/month and 450,000 tons/year.

Note: These production limits for the affected department with the expansion will replace the previous production limits for the department prior to expansion, as set by Construction Permit 08030052. They will also replace previous operational limits for the air flow and particulate matter in grains per dry standard cubic foot of exhaust.

- b. The total amount of dry lysine from the new dryers (Dryer 17 and 18), dry basis, shall not exceed 9,000 tons/month and 78,840 tons/year.
- c. The total usage of steam by the affected department shall not exceed 681,000 pounds/hour.

Note: This condition establishes an operational limit for the use of steam by the affected department on an hourly basis to ensure that this project does not have significant impacts on NO<sub>2</sub> or SO<sub>2</sub> air quality due to the accompanying increases in NO<sub>x</sub> and SO<sub>2</sub> emissions of the boilers at the source, which supply the steam for this department. In this regard, this condition acts to limit the increases in NO<sub>x</sub> and SO<sub>2</sub> emissions of the boilers to no more than 46.7 and 48.7 pounds/hour, respectively, so that air quality impacts of this project would not be significant.

#### 2.1.8 Emission Limits

- a. The emissions of affected units shall not exceed the following limits:

Operation/Unit(s)		Emission Limits							
		PM		PM <sub>10</sub>		PM <sub>2.5</sub>		VOC	
		Lb/Hr	T/Yr	Lb/Hr	T/Yr	Lb/Hr	T/Yr	T/Mo	T/Yr
Fermentation	Modified Fermentation (EU FE-02)	---	---	---	---	--	---	30.1	132.0
Dryers	Dryer 17 (EU/CE LY-18)	0.69	3.02	0.42	1.845	0.32	1.39	6.14	26.9
	Dryer 18 (EU/CE LY-19)	0.69	3.02	0.42	1.845	0.32	1.39		
	Existing	Note-a	Note-a	Note-a	Note-a	Note-a	Note-a		
Transfer Systems	New re-charge transfer system (EU/CE LY-21)	0.10	0.12	0.015	0.07	0.006	0.03	0.018 lb/hr	0.08
	Existing	Note-a	Note-a	Note-a	Note-a	Note-a	Note-a		
	New bio II transfer system (EU/CE LY-22)	0.07	0.32	0.043	0.19	0.02	0.09	0.047 lb/hr	0.21
	Existing	Note-a	Note-a	Note-a	Note-a	Note-a	Note-a		
Total		-	6.48 <sup>b</sup>	-	3.69 <sup>b</sup>	-	2.9 <sup>b</sup>	-	159.2

Notes:

a. Modified emission units and existing emission units are not subject to new emission limits for their emissions of particulate matter, in accordance with 40 CFR 52.21(r)(6). See Attachment 2 for a summary of the existing particulate matter emission limits that apply to modified or existing units, as well as existing VOC limits that apply to these units.

b. Partial total, being the sum of limits for new affected units.

- b. This permit is issued based on minimal emissions of hydrogen chloride from the new hydrochloric acid storage tank. For

this purpose, emissions of hydrogen chloride shall not exceed 1.1 tons/year.

#### 2.1.9-1 VOC Emission Testing Requirements for Fermentation Tanks

- a. The Permittee shall have tests conducted for the VOC emissions of the affected fermentation operation, as follows:
  - i. Within 180 days of initial startup of the first re-serviced fermentation tank, the Permittee shall have emission testing conducted for the VOC emissions of the modified lysine fermentation operation. For this purpose, testing shall be conducted on one of re-serviced fermentation tanks as randomly selected by the Permittee or otherwise as designated by the Illinois EPA unless such testing would not be representative of the fermentation tanks with the greatest VOC emissions and the Illinois EPA approves testing of another fermentation tank as part of its review of the test plan.
  - ii. Within 90 days of a written request from the Illinois EPA, the Permittee shall conduct have emission testing conducted for fermentation tank(s) as specified in the request.
- b. This testing shall be conducted in accordance with a test plan developed by the Permittee and submitted to the Illinois EPA in accordance with Condition 3.1(b) that is approved by the Illinois EPA. The plan shall explain in detail how the average VOC emissions as carbon, over the batch fermentation cycle will be measured. The test plan may provide for tests of the VOC emissions of fermentation tanks to be conducted using either traditional emission test methods, as generally addressed in Condition 3.1(a), or continuous emission monitoring technology, as follows:
  - i. If traditional emission test methods will be used, the plan shall provide for the performance of a minimum of at least nine test runs, i.e., three test runs for at least three separate fermentation batches in the tank. To identify the timing of measurements during the fermentation cycle for an accurate determination of the average emission rate, the Permittee shall conduct preliminary measurements of gas flow rates and VOC or THC concentrations at least every 15 minutes over the course of at least three representative fermentation cycles, to develop a standardized profile of the lysine fermentation process, with this data and the resulting standardized profile submitted to the Illinois EPA as part of the test plan.
  - ii. If continuous emissions monitoring technology will be used, the test plan shall provide for monitoring of VOC

concentrations and gas flow rates into or out of the tank over the complete fermentation cycle for at least three representative fermentation cycles in the tank. To address the monitoring methodology that will be used, the test plan shall explain the calibration and quality control protocols that are planned to assure the accuracy and appropriateness of the monitoring devices that would be used for measuring VOC concentrations and gas flow rates.

- c. The Permittee shall also fulfill requirements of Condition 3.1(c), (d) and (e) for this testing. For this purpose, in the test report, the Permittee shall report VOC emission data in terms of lbs VOC /batch, lbs VOC/lb lysine produced during the batch, and lbs VOC/actual scf applied to the lysine tank, in addition to other required information.

#### 2.1.9-2 Emission Testing Requirements for other Affected Units

- a. The Permittee shall have emission testing conducted for affected units in accordance with Condition 3.1, as follows:
  - i. Within 180 days of initial startup of an affected new dryer, the Permittee shall have measurements conducted for emissions of PM, PM10, PM2.5, condensable particulate and VOC from one of the new dryers and two of existing dryers, either as randomly selected by the Permittee or as designated by the Illinois EPA.
  - ii. Within one year (365 days) of initial startup of the affected new lysine dryers, the Permittee shall have measurements conducted for emissions of PM, PM10, PM2.5, condensable particulate and VOC from either one of the new transfer systems or one of the existing material handling systems, either as randomly selected by the Permittee or as designated by the Illinois EPA.
  - iii. Upon written request by the Illinois EPA, the Permittee shall promptly have measurements conducted for other affected unit(s) for emissions of PM, PM10, PM2.5, condensable particulate and/or VOC, as specified in the request, within 90 days of the date of the request, the date that the unit next operates, or such other date agreed to by the Illinois EPA, whichever is latest.

#### 2.1.9-3 Observations of Opacity

- a. Upon written request by the Illinois EPA, the Permittee shall perform opacity observation for affected unit(s) as specified in the request in accordance with the methods and

procedures specified by Condition 3.2, either within 5 days of the date that request is received by the Permittee, the date that the unit next operates, or such other date agreed to by the Illinois EPA, whichever is latest.

#### 2.1.10 Monitoring and Instrumentation Requirements

- a. The Permittee shall install, operate and maintain instrumentation on the baghouse on each affected new dryer to measure the pressure drop across the device and record pressure drop at least once per operating day.
- b.
  - i. The Permittee shall install, operate and maintain operational monitoring system(s) to directly measure the steam usage of the affected department or the BioProducts Facility, in pounds/hour.
  - ii. If the Permittee does not conduct monitoring for the total steam usage of the affected department, the Permittee shall also install, operate and maintain operational monitoring systems to directly measure the steam usage, in pounds/hour, of the following operations in the BioProducts Facility that are not in the affected department:
    - A. The three existing alcohol recovery stills.
    - B. Any other operation whose steam usage on an annual average basis is 35,000 pounds/hour or more.
    - C. Any other operation that is not a continuous production process whose steam usage on an annual average basis is 14,000 pounds/hour or more. For this purpose, a continuous production process, except when idled, generally operates continuously at stable levels of steam usage for several days at a time, with the periods of operation interrupted by much shorter periods of time when routine maintenance or cleaning of equipment is performed.
  - iii. These monitoring systems shall automatically record steam usage in pounds, on an hourly basis, with all systems recording data for the same hourly periods. For example, the first hour each day would be the hour from 12:00 am through 12:59 am, inclusive.

#### 2.1.11 Recordkeeping Requirements

- a. The Permittee shall maintain a file containing the following information for baghouses (filters) for the affected units:

- i. For each device, a copy of the manufacturer's specifications for the exhaust dust loading.
  - ii. For each device, the manufacturer's recommended operating and maintenance procedures for the device and a copy of the Permittee's written operating and maintenance procedures for the device, which procedures may incorporate the manufacturer's recommended procedures.
- b. The Permittee shall maintain the following production records for the affected department, on a monthly and annual basis:
  - i. The total production of lysine from the refining system (tons, on a dry basis).
  - ii. The production of dry lysine by affected Dryers 17 and 18 (tons, on a dry basis).
- c. The Permittee shall maintain the following logs or other records for each affected unit or group of related units at the affected facility:
  - i. An operating log, in accordance with Condition 3.3(a).
  - ii. An inspection, maintenance and repair log, in accordance with Condition 3.3(b).
- d. The Permittee shall maintain the following records related to the VOC emissions of the affected facility:
  - i. Identification of changes to the lysine fermentation process that would act to increase the amount of VOC emissions or the concentration of VOC in the exhaust from lysine fermentation tank(s).
  - ii. A demonstration that the hourly emissions of VOC from subject emission units will not exceed the limits in Condition 2.1.3-1(c) and (d), with supporting documentation.
  - iii. The factor(s) used by the Permittee to determine VOC emissions of different operations, with supporting documentation.
  - iv. Records of the VOC emissions from the affected fermentation operation (tons/month and tons/year), with supporting calculations.
  - v. Records of the VOC emissions from the affected units in the affected department other than the

fermentation operation (tons/month and tons/year), with supporting calculations.

- vi. Records of the total VOC emissions from the affected department (tons/month and tons/year)
- e. The Permittee shall maintain the following records related to the PM emissions of the affected units:
  - i. Documentation for the PM emission factor(s) and maximum hourly emission rates used by the Permittee to determine emissions of each affected unit or group of related units.
  - ii. Records for any hour in which emissions exceeded an applicable limit.
  - iii. Records of the actual PM emissions of each affected unit or group of related units (tons/month and tons/year) based on appropriate emission factors and operating data, with supporting calculations.
  - iv. Records of total actual PM emissions of the affected department (tons/month and tons/year).
- f. If the Permittee does not conduct monitoring in accordance with Condition 2.1.10(b)(i) for the total steam usage of the affected department, the Permittee shall maintain the following records"
  - i. Records of the steam usage of the affected department, in pounds, on an hourly basis, and records of the following information, with supporting data and calculations. For this purpose, the hourly total steam usage of the affected department shall be determined as the product of the "adjusted hourly steam usage of the BioProducts Facility" and the "steam usage fraction for lysine."
    - A. Records for the "adjusted hourly steam usage of the BioProducts Facility," i.e., the hourly usage of steam by the BioProducts Facility minus the hourly usage of steam by operations for which monitoring for steam use is conducted, as monitored pursuant to Conditions 2.1.10(b)(i) and (ii), respectively.
    - B. Records for the monthly usage of steam by the lysine department.
    - C. Records for the monthly usage of steam by the BioProducts Facility, other than steam used by the lysine department and operations for which

monitoring of steam use is conducted pursuant to Condition 2.1.10(b)(ii), on a monthly basis.

D. Records for the "steam usage fraction for lysine," i.e., the ratio of the information required by Conditions 2.1.11(f)(ii) and (f)(iii), determined each month.

ii. A demonstration, with supporting documentation, for operations in the BioProducts Facility other than operations in the affected department, for which operational monitoring of steam use is not conducted pursuant to Condition 2.1.10(b)(ii) to show that the criteria in this condition for such monitoring are not met.

#### 2.1.12 Reporting Requirements

a. The Permittee shall notify the Illinois EPA of any deviations from the requirements of this permit for the affected units. These reports shall be submitted in 30 days or such period specified by the CAAPP permit. These notifications shall include the information specified by and be submitted in accordance with Condition 3.4.

## 2.2 Additional Cooling Tower Cells

### 2.2.1 Description

Two cooling tower cells will be added to an existing cooling tower to support the expansion of the Lysine Department.

### 2.2.2 List of New and Modified Emission Units and Control Measures

Process	Description	Control Measures
Additional cooling tower cells	Production of process cooling water for the Lysine Department	Drift eliminator

### 2.2.3-1 Applicability Provision

- a. The "affected units" for the purpose of these unit-specific conditions are the two additional cooling tower cells described in Conditions 2.2.2 and 2.2.3. The "affected cooling tower" is the cooling tower that these cells will be added onto.

### 2.2.3-2 Applicable Emission Standards

- a. The affected units are subject to and shall comply with applicable requirements of state emission standards for particulate matter (PM) and opacity, including 35 IAC 212.123, 212.301, and 212.321.

### 2.2.4 Operational and Production Limits and Work Practices

- a. The affected cooling tower cells shall be equipped with drift eliminators that are designed to reduce drift loss to no more than 0.0005 weight percent of the circulating water flow.
- b. The total dissolved solids (TDS) content of the water circulated in the affected units shall not exceed 6000 ppmw, annual average.
- c. Process water or wastewater from the affected department shall not be introduced into the cooling water, other than through unintentional leaks, which shall promptly be repaired.

### 2.2.5 Emission Limits

- a. Emissions of PM, PM<sub>10</sub> and PM<sub>2.5</sub> from the affected units, combined, shall not exceed 1.58, 0.37 and 0.20 tons/year, respectively. Compliance with these limits shall be determined using established methodology for determination of particulate emissions from the units, based on appropriate design and operational data for the units.

#### 2.2.6 Sampling and Analysis of Cooling Water

- a. The Permittee shall sample and analyze the water circulated in the affected cooling tower on at least a quarterly basis for the TDS concentration, taking either grab samples or a daily composite sample of the water.
- b. The Permittee shall keep records for this sampling and analysis activity, including documentation for sampling and analysis as well the resulting data that is collected.

#### 2.2.7 Recordkeeping Requirements

- a. The Permittee shall maintain a file containing the design drift rate of the affected units (percent), with supporting documentation.
- b. The Permittee shall maintain the following log(s) or other records for the affected units:
  - i. Operating log(s) in accordance with Condition 3.3(a).
  - ii. Inspection, maintenance and repair log(s) in accordance with Condition 3.3(b).
- c. The Permittee shall maintain records of the emissions of PM, PM<sub>10</sub> and PM<sub>2.5</sub> from the affected units (tons/month and tons/year), with supporting data and calculations.

#### 2.2.8 Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of any deviations from the requirements of this permit for the affected units. These reports shall be submitted in 30 days or such period specified by the CAAPP permit. These notifications shall include the information specified by and be submitted in accordance with Condition 3.4.

SECTION 3: GENERAL REQUIREMENTS

3.1. Emission Testing Requirements

- a. i. The following USEPA methods and procedures shall be used for testing, unless another USEPA method is approved by the Illinois EPA as part of its review of the test plan required by Condition 3.1(b):

Location of Sample Points	Method 1
Gas Flow and Velocity	Method 2
Flue Gas Weight	Method 3
Moisture	Method 4
PM (filterable)	Method 5
PM <sub>10</sub> /PM <sub>2.5</sub> (filterable) <sup>a</sup>	Method 201
Condensable Particulate Matter <sup>b</sup>	Method 202
Volatile Organic Compounds	Methods 18 and 25 or 25A <sup>c</sup>

Notes:

- a. Testing for filterable PM<sub>2.5</sub> need not be conducted if the measurements for filterable PM<sub>10</sub> and condensable particulate show compliance with applicable permit limits for PM<sub>2.5</sub>.
- b. Testing for PM, PM<sub>10</sub> and PM<sub>2.5</sub> shall also include measurements of condensable particulate matter using USEPA Method 202 (40 CFR Part 51, Appendix M).
- c. Method 25A shall be used if outlet VOM concentration is less than 50 ppmv as carbon (non-methane).
- ii. Observation of opacity shall be made in conjunction with measurements of PM emissions.
- b. The Permittee shall submit a written test plan to the Illinois EPA for review and approval for the initial testing 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 30 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 and the means or manner by which the operating parameters for the emission unit and any control equipment will be determined.

- iv. The specific determinations of emissions and operation that are intended to be made, including sampling and monitoring locations.
  - v. The test method(s) that will be used, with the specific analysis method, if the method can be used with different analysis methods.
- c. 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.
- d. 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 but no later than 60 days after completion of sampling. The Final Report shall include as a minimum:
- i. General information, i.e., date of test, names of testing personnel, and names of Illinois EPA observers.
  - ii. A summary of results, e.g., PM, NOx, SO2 or VOM emissions, lbs/hour and gr/scf or ppmv.
  - iii. A detailed description of operating conditions of the emission unit(s) during testing, including:
    - A. Process information, i.e., mode(s) of operation, process rate, e.g. fuel or raw material consumption.
    - B. Control equipment information, i.e., equipment condition and operating parameters during testing.
    - C. A discussion of any preparatory actions taken, i.e., inspections, maintenance and repair.
  - iv. Description of test method(s), including description of sampling points, sampling train, analysis equipment, and test schedule.
  - v. Data and calculations, including copies of all raw data sheets and records of laboratory analyses, sample calculations, and data on equipment calibration.
  - vi. Conclusions.
- e. The Permittee shall retain copies of emission test reports for at least three years beyond the date that an emission test is superseded by a more recent test.

### 3.2 Opacity Observations

- a. Opacity of emissions shall be determined during representative weather and operating conditions by a qualified observer in accordance with USEPA Test Method 9, as further specified below.
- b. The duration of opacity observations for each test shall be at least 30 minutes (five 6-minute averages) unless the average opacities for the first 12 minutes of observations (two six-minute averages) are both no more than half of the most stringent requirement applying to opacity.
- c.
  - i. The Permittee shall notify the Illinois EPA at least 7 days in advance of the date and time of these tests, in order to allow the Illinois EPA to witness testing. This notification shall include the name and employer of the qualified observer(s).
  - ii. The Permittee shall promptly notify the Illinois EPA of any changes in the time or date for testing.
- d. The Permittee shall provide a copy of its observer's readings to the Illinois EPA at the time of testing, if Illinois EPA personnel are present.
- e. The Permittee shall submit a written report for this testing within 15 days of the date of testing. This report shall include:
  - i. Date and time of testing.
  - ii. Name and employer of qualified observer, with a copy of his or her current certification.
  - iii. Description of observation condition, including recent weather.
  - iv. Description of the operating conditions of the affected operation or unit.
  - v. Opacity determinations, accompanied by raw data.
  - vi. Conclusions.
- f. The Permittee shall retain copies of test reports for at least three years after the date that a test is superseded by a more recent test.

### 3.3 General Requirements for Logs

- a. Operating logs required by this permit shall, at a minimum, include the following information:

- i. Information identifying periods when an emission unit or group of related emission units was not in service.
  - ii. For periods when a unit or group of related units is in service and operating normally, relevant process information to generally confirm normal operation.
  - iii. For periods when a unit or group of related units is in service and is not operating normally, identification of each such period, with detailed information describing the operation of the unit(s) and the potential consequences for additional emissions from unit(s), with explanation.
- b. Inspection, maintenance and repair logs required by this permit shall, at a minimum, include the following information:
- i. Identification of equipment, with date, time, responsible employee and type of activity.
  - ii. For inspections, a description of the inspection, findings, and any recommended actions, with reason.
  - iii. For maintenance and repair activity, a description of actions taken, reason for action, e.g., preventative measure or corrective action as a result of inspection, and the condition of equipment following completion of the activity.
- c. The logs required by this permit may be kept in manual or electronic form, and may be part of a larger information database maintained by the Permittee provided that the information required to be kept in a log is readily accessible.

#### 3.4 Reporting of Deviations

- a. Unless otherwise specified in a particular condition of this permit, if deviation(s) from requirements of this permit occur, the Permittee shall submit a deviation report immediately for emission violations and within 30 days of the actual occurrence for any other violations. The Permittee shall include the following information in reports of deviations:
  - i. Identify the deviation, with date, time, duration and description.
  - ii. Describe the effect of the deviation on compliance, with an estimate of the excess emissions that accompanied the deviation, if any.
  - iii. Describe the probable cause of the deviation and any corrective actions or preventive measures taken.
- b. i. A deviation shall be considered to continue even if operation an emission unit is interrupted if the deviation is still present when operation of the unit is resumed.

- ii. When this permit requires immediate notification, such notification shall be provided by telephone and followed by facsimile or e-mail transmittal of a narrative report.
- c. Upon inclusion of this permit into the CAAPP permit, the requirements for deviation reports in the CAAPP permit will supersede the requirements of this permit.

Attachment 1: Summary of the Increases in Emissions of Regulated Pollutants from the Project

Units or Operations/ Evaluation	Increase in Emissions (Tons/Year)							
	PM	PM <sub>10</sub>	PM <sub>2.5</sub>	NO <sub>x</sub>	SO <sub>2</sub>	CO	VOC	GHG (CO <sub>2</sub> )
<b>New Emission Units<sup>a</sup></b>								
Dryers	6.04	3.69	2.78	---	---	---	7.01	---
Transfer systems	0.44	0.27	0.12	---	---	---	0.29	---
New cooling tower cells	1.58	0.37	0.20	---	---	---	---	---
Subtotal	8.06	4.33	3.07	---	---	---	7.30	---
<b>Modified Emission Units<sup>b</sup></b>								
Fermentation	---	---	---	---	---	---	72.75	--- <sup>c</sup>
Existing dryers	2.68	1.63	1.24	---	---	---	1.71	---
Packaging systems	4.43	2.70	1.17	---	---	---	0.7	---
Subtotal	7.11	4.33	2.41	---	---	---	75.16	---
<b>Support Operations<sup>b</sup></b>								
Cogeneration Plant <sup>d</sup>	7.21	5.72	3.78	41.1	153.0	17.3	0.7	108,450
Roadways	2.21	0.44	0.11	---	---	---	---	---
Subtotal	9.42	6.16	3.89	41.1	153.0	17.3	0.7	108,450
<b>Total Increase</b>	<b>24.59</b>	<b>14.82</b>	<b>9.43</b>	<b>41.1</b>	<b>153.0</b>	<b>17.3</b>	<b>82.83</b>	<b>108,450</b>
<b>Evaluation</b>								
PSD Threshold	25	15	10	40	40	100	40	75,000
Significant?	No	No	No	Yes	Yes	No	Yes	Yes

Notes:

- The increases in emissions from these new units are the permitted emissions.
- The increases in emissions for these modified existing units are the differences, as provided in the application, between the baseline actual emissions and the projected actual emissions, excluding increased emissions that could have occurred without the project and are unrelated to this project, as provided for by 40 CFR 52.21(b)(4)(ii)(c).
- The increase in CO<sub>2</sub> emissions from lysine fermentation is projected to be about 156,000 tons per year.
- The increases in emissions from increased operation of the Cogeneration Plant are based on the projected maximum increase in steam demand from the affected department.

Attachment 2: Summary of Applicable Limits for Existing Emission Units

(Applicable emission limits from Construction Permit 08030052,  
except for limits for load-out which are from Construction Permit 0410015)

Operation/Unit(s)		Emission Limits			
		PM		VOC	
		Lb/Hr	T/Y	Lb/Hr	T/Y
Dryers	Spray Dryer 3 (EU/CE LY-03)	0.24	1.05	0.30	1.32
	Spray Dryer 4 (EU/CE LY-04)	0.24	1.05	0.30	1.32
	Spray Dryer 7 (EU/CE LY-05)	0.69	3.02	0.80	3.52
	Spray Dryer 8 (EU/CE LY-06)	0.69	3.02	0.80	3.52
	Spray Dryer 9 (EU/CE LY-07)	0.69	3.02	0.80	3.52
	Spray Dryer 10 (EU/CE LY-08)	0.69	3.02	0.80	3.52
	Spray Dryer 11 (EU/CE LY-09)	0.69	3.02	0.80	3.52
	Spray Dryer 12 (EU/CE LY-10)	0.69	3.02	0.80	3.52
	Spray Dryer 13 (EU/CE LY-11)	0.69	3.02	0.80	3.52
	Spray Dryer 14 (EU/CE LY-12)	0.69	3.02	0.80	3.52
	Spray Dryer 15 (EU/CE LY-13)	0.69	3.02	0.80	3.52
	Spray Dryer 16 (EU/CE LY-14)	0.69	3.02	0.80	3.52
	Packaging	Packaging No. 1 (EU/CE LY-15)	0.10	0.44	0.50
Packaging No. 1 (EU/CE LY-16)		0.33	1.40	0.20	0.88
Load-Out	Load-Out (EU/CE LY-17)	0.90	3.94	0.10	0.44
Total		-	36.6	-	41.4

Attachment 3: Standard Permit Conditions

STANDARD CONDITIONS FOR CONSTRUCTION/DEVELOPMENT PERMITS  
ISSUED BY THE ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

The Illinois Environmental Protection Act (Illinois Revised Statutes, Chapter 111-1/2, Section 1039) authorizes the Illinois Environmental Protection Agency to impose conditions on permits which it issues.

The following conditions are applicable unless superseded by special condition(s).

1. Unless this permit has been extended or it has been voided by a newly issued permit, this permit will expire one year from the date of issuance, unless a continuous program of construction or development on this project has started by such time.
2. The construction or development covered by this permit shall be done in compliance with applicable provisions of the Illinois Environmental Protection Act and Regulations adopted by the Illinois Pollution Control Board.
3. There shall be no deviations from the approved plans and specifications unless a written request for modification, along with plans and specifications as required, has been submitted to the Illinois EPA and a supplemental written permit issued.
4. The Permittee shall allow any duly authorized agent of the Illinois EPA, upon the presentation of credentials, at reasonable times:
  - a. To enter the Permittee's property where actual or potential effluent, emission or noise sources are located or where any activity is to be conducted pursuant to this permit;
  - b. To have access to and to copy any records required to be kept under the terms and conditions of this permit;
  - c. To inspect, including during any hours of operation of equipment constructed or operated under this permit, such equipment and any equipment required to be kept, used, operated, calibrated and maintained under this permit;
  - d. To obtain and remove samples of any discharge or emissions of pollutants; and
  - e. To enter and utilize any photographic, recording, testing, monitoring or other equipment for the purpose of preserving, testing, monitoring, or recording any activity, discharge, or emission authorized by this permit.
5. The issuance of this permit:

- a. Shall not be considered as in any manner affecting the title of the premises upon which the permitted facilities are to be located;
  - b. Does not release the Permittee from any liability for damage to person or property caused by or resulting from the construction, maintenance, or operation of the proposed facilities;
  - c. Does not release the Permittee from compliance with other applicable statutes and regulations of the United States, of the State of Illinois, or with applicable local laws, ordinances and regulations;
  - d. Does not take into consideration or attest to the structural stability of any units or parts of the project; and
  - e. In no manner implies or suggests that the Illinois EPA (or its officers, agents or employees) assumes any liability, directly or indirectly, for any loss due to damage, installation, maintenance, or operation of the proposed equipment or facility.
- 6.
- a. Unless a joint construction/operation permit has been issued; a permit for operation shall be obtained from the Illinois EPA before the equipment covered by this permit is placed into operation.
  - b. For purposes of shakedown and testing, unless otherwise specified by a special permit condition, the equipment covered under this permit may be operated for a period not to exceed thirty (30) days.
7. The Illinois EPA may file a complaint with the Board for modification, suspension or revocation of a permit,
- a. Upon discovery that the permit application contained misrepresentations, misinformation or false statement or that all relevant facts were not disclosed; or
  - b. Upon finding that any standard or special conditions have been violated; or
  - c. Upon any violations of the Environmental Protection Act or any regulation effective thereunder as a result of the construction or development authorized by this permit.