

217/785-1705

CONSTRUCTION PERMIT -- PSD APPROVAL  
NSPS SOURCE

PERMITTEE

Cronus Chemicals, LLC  
Attn: Donald Gill  
150 North Michigan Avenue  
Chicago, Illinois 60601

Application No.: 13060007                      I.D. No.: 041804AAF  
Applicant's Designation: Urea Plant  
Date Received: February 14, 2014              Date Issued: September 5, 2014  
Subject: Urea and Ammonia Production Facility  
Location: 785 East Highway 36, Tuscola

Permit is hereby granted to the above-designated Permittee to CONSTRUCT emission units and air pollution control equipment consisting of a urea and ammonia production facility, as described in the above referenced application. This permit is granted based upon and subject to the findings and conditions that follow.

In conjunction with this permit, approval is given with respect to the federal regulations for Prevention of Significant Deterioration of Air Quality (PSD) for the facility, as described in the application, in that the Illinois EPA finds that the application fulfills all applicable requirements of 40 CFR 52.21. This approval is issued pursuant to the federal Clean Air Act, the federal PSD rules at 40 CFR 52.21, and a Delegation of Authority agreement between the USEPA 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 provisions of 40 CFR 124.19. This approval is based upon the findings that follow. This approval is subject to the following conditions. This approval is also subject to the general requirement that the facility 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 Bob Smet at 217/785-1705

Raymond E. Pilapil  
Acting Manager, Permit Section  
Division of Air Pollution Control

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

REP:RPS:psj

TABLE OF CONTENTS

	<u>Page</u>
FINDINGS	3
PART 1: SOURCE-WIDE PERMIT CONDITIONS	5
1.1 Effect of Permit	
1.2 Validity of Permit and Commencement of Construction	
1.3 Natural gas Used at the Facility	
1.4 Fixed-Roof Storage Tanks	
1.5 Emissions of Hazardous Air Pollutants (HAPs)	
1.6 Good Air Pollution Control Practice	
1.7 Compliance with Emission Standards and Emission Limits	
1.8 Records for Monitoring Systems and Instrumentation	
1.9 Records for Opacity Measurements	
1.10 Retention and Availability of Records	
1.11 Addresses for the Illinois EPA	
1.12 Authorization to Operate Emission Units	
1.13 Standard Conditions	
PART 2: UNIT-SPECIFIC CONDITIONS FOR PARTICULAR EMISSION UNITS	11
2.1 Ammonia Plant	
2.2 Reformer Furnace	
2.3 Boiler	
2.4 Startup Heater	
2.5 Ammonia Storage Flare	
2.6 Urea Plant	
2.7 Cooling Tower	
2.8 Equipment Components	
2.9 Handling of Urea Product	
2.10 Roadways	
2.11 Engines	
PART 3: GENERAL PERMIT CONDITIONS	86
3.1 General Requirements for Emission Testing	
3.2 General Requirements for "Logs" or Similar Records	
3.3 General Requirements for Records for Deviations	
3.4 General Requirements for Reporting of Deviations	
ATTACHMENTS	90
1. Summary of Permitted Emissions	84
2. Summary of the Permitted HAP Emissions of the Facility	
3. Standard Permit Conditions	

## Findings

1. Cronus Chemicals, LLC (Cronus) has requested a permit for a facility that would produce urea and ammonia. Natural gas would be both the feedstock and fuel for the facility. The principal product of the facility would be urea and the facility would have a nominal daily urea production capacity of 4880 tons. Ammonia would be an intermediate material used in the production of urea. The facility would also be able to make ammonia for direct sale but this would be limited to 25 percent of the annual ammonia production capacity of the facility. This mode of operation would most likely occur in the spring and fall to supply the seasonal demand for ammonia.
2. The facility would be located in Douglas County, which is attainment for all criteria pollutants.
- 3a. The proposed facility is a major source under the PSD rules. This is because the facility will have potential emissions of nitrogen oxides (NOx), particulate matter (as PM, PM<sub>10</sub> and PM<sub>2.5</sub>), and carbon monoxide (CO) that are more than 100 tons per year. The facility will also be subject to PSD for volatile organic material (VOM) greenhouse gases (GHG) because the facility's potential emissions of these pollutants exceed the applicable significant emission rates under the PSD rules. (Refer to Attachment 1 for a summary of the potential emissions of the facility.)
- b. The proposed facility is not a major source for emissions of hazardous air pollutants (HAPs), i.e., as limited by this permit, the potential emissions from the facility will be less than 10 tons of an individual HAP and will be less than 25 tons in aggregate for total HAPs. Therefore, the facility is not subject to National Emission Standards for Hazardous Air Pollutants (NESHAP), adopted by USEPA under 40 CFR 63 that apply to major sources of HAPs. A case-by-case determination of Maximum Achievable Control Technology (MACT) is also not required for the proposed facility pursuant to Section 112(g) of the federal Clean Air Act.
4. After reviewing the materials submitted by Cronus, the Illinois EPA determined that the facility will be designed to: (i) comply with applicable state emission standards, (ii) comply with applicable federal emission standards, and (iii) utilize Best Available Control Technology (BACT) on emission units as required by PSD.  
  
Note: The determinations of BACT made by the Illinois EPA for the various emission units at the proposed facility are contained in the permit conditions for specific emission units that are headed by "Control Technology Determination - BACT".
5. The Illinois EPA determined that the application for the proposed facility complies with all applicable Pollution Control Board Air Pollution Control Regulations, the applicable federal New Source Performance Standards (NSPS), and the federal PSD rules, 40 CFR 52.21.

6. The air quality analyses submitted by Cronus and reviewed by the Illinois EPA shows that the proposed project will not cause or contribute to violations of the National Ambient Air Quality Standards for NO<sub>2</sub>, PM<sub>10</sub>/PM<sub>2.5</sub> and CO. The air quality analysis also shows compliance with the applicable allowable increment levels established under the PSD rules.
7. Other impact analyses were also submitted by Cronus, as required by the PSD rules, to address other potential impacts from the emissions of the proposed facility.
8. A copy of the application, the project summary prepared by the Illinois EPA, and a draft of this construction permit were placed in a nearby public repository, and the public was given notice and an opportunity to examine this material and to participate in a public hearing and to submit comments on these matters.

PART 1: SOURCE-WIDE PERMIT CONDITIONS

CONDITION 1.1: EFFECT OF PERMIT

- a. This permit does not relieve the Permittee of the responsibility to comply with all local, state and federal regulations that are part of the applicable Illinois' State Implementation Plan, as well as all other applicable federal, state and local requirements.
- b. In particular, this permit does not relieve the Permittee from the responsibility to carry out practices during the construction and operation of the facility, such as application of water or dust suppressant sprays to unpaved traffic areas, as necessary to minimize fugitive dust and prevent an air pollution nuisance from fugitive dust, as prohibited by 35 IAC 201.141.

CONDITION 1.2: VALIDITY OF PERMIT AND COMMENCEMENT OF CONSTRUCTION

- a. This permit shall become invalid if construction is not commenced within 18 months after this permit becomes effective, if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable period of time, pursuant to 40 CFR 52.21(r)(2). The Illinois EPA may extend the 18-month period upon a satisfactory showing that an extension is justified. This condition supersedes Standard Condition 1.
- b. For purposes of the above provisions, the definitions of "construction" and "commence" at 40 CFR 52.21 (b)(8) and (9) shall apply, which requires that a source must enter into a binding agreement for on-site construction or begin actual on-site construction. (See also the definition of "begin actual construction," 40 CFR 52.21 (b)(11).)

CONDITION 1.3: NATURAL GAS USED BY THE FACILITY

- a. The natural gas used as fuel in the emission units at the facility shall be "pipeline natural gas" as defined by 40 CFR 72.2.
- b. The Permittee shall keep copies of fuel receipts from the suppliers of natural gas to the facility or other documentation for the natural gas fired in the emission units at the facility that confirms that it meets the criteria in the definition of pipeline natural gas in 40 CFR 72.2.

CONDITION 1.4: FIXED-ROOF STORAGE TANKS

- a. The emissions of volatile organic material (VOM) and hazardous air pollutants (HAPs) from the storage tanks for organic liquids at the facility, including the tanks for CO<sub>2</sub> absorption solvent, urea-formaldehyde additive and diesel fuel, combined, shall not exceed 0.20 tons/year.

Note: This condition constitutes the determination of BACT for VOM emissions of these tanks, as required under the PSD rules.

- b. The emissions of sulfuric acid mist from storage tanks for sulfuric acid, combined, shall not exceed 0.44 tons/year.

CONDITION 1.5: EMISSIONS OF HAZARDOUS AIR POLLUTANTS (HAPs)

- a. This permit is issued based on this facility not being a major source of hazardous air pollutants (HAPs), i.e., the emissions of individual HAPs will each be less than 10 tons per year and the total emissions of HAPs will be less than 25 tons per year so that the facility is not subject to the provisions of 40 CFR Part 63 that are applicable to major sources of HAPs.
- b. The HAP emissions from the various emission units at the facility and the facility as a whole shall not exceed the limits in Attachment 2. Compliance with these limits for various emission units shall be determined based on activity and operating data for those units and emission factors that do not understate actual emissions of those units, as developed from representative source-specific testing or analysis, USEPA methodology, or other authoritative source.
- c. The Permittee shall keep records of the HAP emissions of the various units at the facility and the facility as a whole to verify that the facility is not a major source of emissions of HAPs. For this purpose, in addition to other records required by other provisions of this permit, the Permittee shall keep a file containing the emission factors that it uses to calculate emissions of HAPs from the various emission units at the affected facility, with supporting documentation. The Permittee shall keep records of the actual emissions of HAPs from emissions units, which shall be prepared on at least a monthly basis.

CONDITION 1.6: GOOD AIR POLLUTION CONTROL PRACTICE

The Permittee shall operate and maintain all emission units at this facility, including associated air pollution control equipment, in a manner consistent with good air pollution control practice, as follows:

- a. At all times, including periods of startup, shutdown, malfunction or breakdown, operate as practicable to minimize emissions.
- b. Conduct routine inspections and perform appropriate maintenance and repairs to facilitate proper functioning of equipment and minimize or prevent malfunctions and breakdowns.
- c. Install, calibrate 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 otherwise necessary to assure reliable operation of such devices.

CONDITION 1.7: COMPLIANCE WITH EMISSION STANDARDS AND EMISSION LIMITS

- a. The emission limits set by this permit, including BACT limits and other permit limits for emissions, apply at all times unless otherwise specified in a particular provision.
- b.
  - i. Unless otherwise provided by applicable rules, emission standards for particulate matter under applicable regulations that are referenced in the conditions of this permit address only filterable particulate, as would be measured by USEPA Method 5 or 5I or other appropriate USEPA Test Methods.
  - ii. Emissions limits for particulate matter<sub>10</sub> (PM<sub>10</sub>) and particulate matter<sub>2.5</sub> (PM<sub>2.5</sub>) set by this permit address both filterable and condensable particulate.
- c. Emission limits for greenhouse gases (GHG) set by this permit address GHG as carbon dioxide equivalents (CO<sub>2</sub>e).
- d. Emission limits set by this permit in pounds/million Btu (lbs/mmBtu) are in terms of the higher heating value of the fuel burned in an emission unit.
- e. When emission testing is conducted, compliance with hourly limits set by this permit shall be determined from the average of the test results, commonly three runs, each nominally one hour in duration.
- f. For annual limits set by this permit, unless otherwise specified in a particular provision of this permit, compliance shall be determined as follows:
  - i. Compliance with annual emission limits for emission units and pollutants for which continuous emissions monitoring is required by the permit shall be determined from emission data collected by such monitoring systems, including use of substitute data for periods of missing data. Compliance with annual emission limits for emission units and pollutants for which continuous emission monitoring is not required shall be determined from emission data calculated as the product of activity or operating data and emission factors that do not understate emissions, as developed from representative source-specific testing or analysis, USEPA methodology or other authoritative source.
  - ii. Compliance with annual limits established by this permit shall be calculated from a running total of 12 months of data, i.e., from the sum of the data for the current month and data for the preceding 11 months (12 month total) and shall consider all emissions, including emissions during startup, shutdown, and malfunction and breakdown, provided however, that for the first year (12 months) of operation, compliance shall be calculated for a cumulative total of monthly data, i.e., from the sum of the data for the current month and data for all preceding months.

CONDITION 1.8: RECORDS FOR MONITORING SYSTEMS AND INSTRUMENTATION

- a. The Permittee shall keep records of the data measured by required monitoring systems and instrumentation. Unless otherwise provided in a particular condition of this permit, the following requirements shall apply to such recordkeeping:
  - i. For required monitoring systems, data shall be automatically recorded by a central data system, dedicated data logging system, chart recorder or 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 at least once per shift for periods when the associated emission unit(s) are in service.
  - ii. For required instrumentation, the measured data shall be recorded manually at least once per day, unless otherwise specified, 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 above provisions for recording of data from monitoring systems shall apply and manual recording of data is not required.
- b. The Permittee shall keep records for the operation, calibration maintenance and repair of required monitoring systems and instrumentation. These operating records shall, at a minimum, identify the date and duration of any time when a required monitoring instrument or device was not in operation, with explanation; the performance of manual quality control and quality assurance procedures for the system; and maintenance and repair activities performed for the system.
- c. The Permittee shall maintain a file containing a copy of the specifications for each required monitoring device or instrument and the recommended operating and maintenance procedures for the device as provided by its manufacturer.

CONDITION 1.9: RECORDS FOR OPACITY MEASUREMENTS

- a. The Permittee shall keep records for all opacity measurements made in accordance with USEPA Method 9 for emission units at the facility that it conducts or that are conducted on its behest by individuals who are qualified to make such observations. For each occasion on which such measurements are made, these records shall include the formal report for the measurements if conducted pursuant to this permit or a request from the Illinois EPA, or otherwise the identity of the observer, a description of the measurements that were made, the operating condition of the affected operations, the observed opacity, and copies of the raw data sheets for the measurements.

CONDITION 1.10: RETENTION AND AVAILABILITY OF RECORDS

- a. The Permittee shall retain all records and logs required by this permit for at least five years from the date of entry (unless a longer retention period is specified by a particular provision), keep the records at a location at the facility that is readily accessible to the Illinois EPA and USEPA, and make records available for inspection and copying by the Illinois EPA or USEPA upon request.
- b. The Permittee shall retrieve and print on paper during normal facility office hours any records retained in an electronic format (e.g., computer) in response to an Illinois EPA or USEPA request for records during the course of a facility inspection.

CONDITION 1.11: ADDRESSES FOR THE ILLINOIS EPA

- a. Any required reports and notifications shall be sent to the Illinois EPA at the following address unless otherwise indicated:

Illinois Environmental Protection Agency  
Division of Air Pollution Control  
Compliance and Enforcement 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 IAC Part 254, shall also be sent to the Illinois EPA Air Regional Field Office at the following address:

Illinois Environmental Protection Agency  
Division of Air Pollution Control  
2009 Mall Street  
Collinsville, Illinois 62234

Telephone: 618/346-5120 Fax: 618/346-5155

CONDITION 1.12: AUTHORIZATION TO OPERATE EMISSION UNITS

- a.
  - i. Under this permit, the ammonia plant may be operated for a period that ends 180 days after initial startup to allow for equipment shakedown and required emission testing. This period may be extended by Illinois EPA for up to an additional 365 days upon request of the Permittee if additional time is needed to complete shakedown or perform emission testing.
  - ii. The remainder of the facility, excluding the ammonia plant, may be operated under this construction permit for a period of 365 days after initial startup of the ammonia plant. This period of time may be extended by the Illinois EPA upon written request by the Permittee as needed to reasonably accommodate unforeseen difficulties experienced during shakedown of the facility.

- b. Upon successful completion of required emission testing, the Permittee may continue to operate emission units at the facility provided that the Permittee submits a complete and timely application for Clean Air Act Permit Program (CAAPP) permit for the facility, as provided for by Section 39.5(5) of the Environmental Protection Act.
- c. These conditions supersede Standard Condition 6.

CONDITION 1.13: STANDARD CONDITIONS

Standard conditions for issuance of construction permits, attached hereto and incorporated herein by reference, shall apply to this project, unless superseded by other conditions in the permit. (Refer to Attachment 3.)

## PART 2: UNIT-SPECIFIC CONDITIONS FOR PARTICULAR EMISSION UNITS

### SECTION 2.1: UNIT-SPECIFIC CONDITIONS FOR THE AMMONIA PLANT

#### 2.1.1 Description

The ammonia plant produces ammonia ( $\text{NH}_3$ ) from nitrogen and hydrogen. The nitrogen comes from the atmosphere. The hydrogen is made in the first part of the ammonia plant from natural gas by "steam reforming". In steam reforming for production of ammonia, a hydrogen-rich stream of synthesis gas is made from natural gas and steam in a reformer furnace. The amount of hydrogen in this stream is increased in a secondary reformer where air is added to the stream. This is followed by shift-conversion to further increase the hydrogen content of the stream.

The majority of the carbon dioxide ( $\text{CO}_2$ ) in the stream of synthesis gas is then removed using an amine absorbent solution. This absorbent solution is then processed in a regenerator system that drives the  $\text{CO}_2$  out of the solution. This process also removes organic compounds from the gas stream, which are sent back to the reformer furnace for use as fuel.

The remaining carbon monoxide ( $\text{CO}$ ) and  $\text{CO}_2$  in the stream of synthesis gas are then reacted with some of the hydrogen in this stream to convert the  $\text{CO}$  and  $\text{CO}_2$  into methane and water. These are removed from the stream and the methane off-gas is used as a fuel in the reformer furnace. The stream of synthesis gas, which is now essentially only hydrogen and nitrogen, is then converted into ammonia in a catalytic converter.

When urea is being produced by the facility, most of the  $\text{CO}_2$  from the regenerator system is fed to the urea plant where it is used in making urea and is not emitted. Only a small amount of  $\text{CO}_2$  is emitted to regulate operational pressure, either through the  $\text{CO}_2$  vent in the ammonia plant or another  $\text{CO}_2$  vent that is physically located in the urea plant. The full  $\text{CO}_2$  stream from the regenerator system is only emitted when ammonia is produced for direct sale, when the  $\text{CO}_2$  stream is vented through the  $\text{CO}_2$  vent at the ammonia plant. This mode of operation would address the seasonal demand for ammonia and is limited to 25 percent of the annual ammonia production capacity of the facility.

During startup, shutdown and upsets or "malfunctions" of the ammonia plant, process gases from various units in the plant, including the reforming operations, may be ducted to two flares, where these gases are combusted. The "Front End Flare" handles these releases from the reforming operations. The "Back End Flare" handles releases from the later process steps, including regeneration, methanation and ammonia synthesis. The flares have emissions from combustion of both process gases and from the fuel needed for operation of the flares.

For purposes of these unit-specific conditions, the "affected process gas vents" are the vents that release process gases from the

ammonia plant during startup, shutdown and malfunction, which are to be ducted to the Front End and Back End Flares, i.e., "the affected flares". The "affected CO<sub>2</sub> vents" are the main CO<sub>2</sub> vent at the ammonia plant and the pressure control CO<sub>2</sub> vent at the urea plant, which is used to regulate the operation of the urea synthesis process. The reformer furnace, as it is a process heater with emissions from combustion of fuel, is addressed in Section 2.2 of this permit.

2.1.2-1 Control Technology Determination - BACT: Affected CO<sub>2</sub> Vents

- a. As the operation of the ammonia plant affects the emissions of CO, VOM, methane and GHG from the CO<sub>2</sub> vents, the ammonia plant shall be operated and maintained in conformance with its physical and process design.
- b. The emissions of CO, VOM and methane from the affected CO<sub>2</sub> vents, combined, shall not exceed 3.11, 13.1 and 31.1 pounds/hour, respectively.

2.1.2-2 Control Technology Determination - BACT:  
Ammonia Plant and Affected Flares

- a. As the operation of the ammonia plant affects the occurrence of flaring and emissions from flaring, the ammonia plant, including the affected flares, shall be operated and maintained in conformance with its physical and process design.
  - i. The ammonia plant shall be designed and operated to comply with the following requirements to reduce emissions from the affected process gas vents, i.e., vents other than the affected CO<sub>2</sub> vents and the vents for off-gas streams that are ducted to the reformer furnace:
    - A. Process gas streams shall not be discharged from process gas vents except during startup or shutdown or during malfunction due to either failure of equipment or planning that precludes the safe handling of the stream within the ammonia plant.
    - B. All discharges from affected process gas vents shall be ducted to a flare or other combustion device through a closed vent system, except when a failure of equipment or planning preclude the safe disposal of a gas stream in this manner.
    - C. During periods when the ammonia plant is not operating, the above requirements do not apply to venting of air or nitrogen introduced into equipment in the plant, as may be needed to prepare for maintenance or startup.
  - ii. The operating practices for the ammonia plant shall include:

- A. Operation in accordance with written operating procedures that include startup, shutdown and malfunction plan(s), as further addressed in Condition 2.1.5-2.
  - B. Implementation of practices to minimize flaring, as further addressed in Condition 2.1.5-3.
- b. The affected flares shall be designed, operated and maintained to comply with the following requirements:
  - i. The design destruction efficiencies of the flares shall be at least 98 percent for CO and VOM and at least 99 percent for methane.
  - ii. All relevant requirements of 40 CFR 60.18 shall be met for the flares except that when the heat content of a process gas stream is below the specified value in 40 CFR 60.18(b)(3), compliance with the requirements of 40 CFR 60.18 may be demonstrated by conducting periodic visual observations to show compliance with 40 CFR 60.18(c)(1), which addresses the presence of visible emissions from a flare.
  - iii. The only fuel used in the pilot burners of the flares shall be natural gas. These burners shall be equipped with automatic igniter devices for the pilot flame.
  - iv. The only purge gas used in the flare system when the ammonia plant is operating shall be nitrogen.
- c. The design emission rates of the pilot burners in the affected flares shall not exceed 0.07 and 0.37 lb/mmBtu for NO<sub>x</sub> and CO, respectively.
- d. The emissions of NO<sub>x</sub>, CO, VOM, PM, PM<sub>10</sub>/PM<sub>2.5</sub> and GHG from the affected flares shall not exceed the limits in Condition 2.1.6. that apply to the flares. For the purpose of determining compliance with these limits for CO and VOM, emissions shall be determined from the CO and VOM content of the flared process gas using destruction efficiencies for a properly operating flare of no more than 98 percent. For the purpose of determining compliance with the limits for GHG, methane emissions shall be determined from the methane content of the flared process gas using a destruction efficiency for a properly operating flare of no more than 99 percent.

2.1.2-3 Control Technology Determination - BACT:

Limit for GHG from the CO<sub>2</sub> Vent in the Ammonia Plant and from the CO<sub>2</sub> Vent in the Urea Plant, the Reformer Furnace and the Boiler

- a. The GHG emissions, as carbon dioxide equivalents (CO<sub>2</sub>e), of the combination of the affected CO<sub>2</sub> vents in the ammonia plant and the urea plant, the reformer furnace and the boiler, on an

annual average basis, rolled monthly, shall not exceed a limit determined as follows:

$$E = \{(P_u \times R_u) + (P_a \times R_a)\} \div (P_u + P_a)$$

Where

E = Limit on GHG emissions, as CO<sub>2</sub>e, tons/ton ammonia produced, annual average, rolled monthly.

P<sub>u</sub> = Ammonia production sent to the urea plant (tons/year, rolled monthly).

P<sub>a</sub> = Ammonia production for direct sale (tons/year, rolled monthly), determined as ammonia sent to storage.

R<sub>u</sub> = 0.92 tons per ton of ammonia sent to the urea plant.

R<sub>a</sub> = 2.22 tons per ton of ammonia sent to storage.

- b.
  - i. Notwithstanding the above, alternative values for R<sub>u</sub> and R<sub>a</sub> shall be used in the above equation, as follows, to determine the applicable limit for GHG emissions:
    - A. Until the commissioning of the ammonia plant is complete or one year after initial startup of the ammonia plant, whichever occurs first, the values of R<sub>u</sub> and R<sub>a</sub> shall be 1.15 and 2.45 tons per ton of ammonia, respectively.
    - B. Alternative values for R<sub>u</sub> and R<sub>a</sub> shall be used as provided for by Condition 2.1.11, which provides for a reduction in these values based on the demonstrated performance of the facility.
  - ii. For this purpose, if different values of R<sub>u</sub> and R<sub>a</sub> apply in a year, the data for ammonia production for each portion of the year shall be multiplied by the appropriate values of R<sub>u</sub> and R<sub>a</sub> for that portion of the year and the sum of these results shall serve as the numerator in the above equation.
- c. For the purpose of determining compliance with this limit and other limits for GHG emissions set by this permit for the CO<sub>2</sub> vents, the reformer and the boiler, the Permittee shall determine GHG emissions as follows:
  - i. For the reformer furnace and boiler, emissions shall be determined in accordance with 40 CFR Part 98 Subpart C, except that emissions of CH<sub>4</sub> and N<sub>2</sub>O shall be determined using emission factors developed from testing of these units, if such testing indicates that emissions are higher than the default factors in 40 CFR Part 98 Subpart C.
  - ii. For the CO<sub>2</sub> vents, CO<sub>2</sub> emissions shall be determined in accordance with 40 CFR Part 98 Subpart PP and emissions of methane shall be determined using data from sampling

and analysis of the stream(s) that are emitted from these vents.

#### 2.1.3 Applicable Emission Standards

- a. The emission of smoke or other PM from the affected units shall not have an opacity greater than 30 percent, 6 minute average, except as allowed by 35 IAC 212.124. [35 IAC 212.109 and 212.123(a)]
- b. The affected units are subject to 35 IAC 212.321(a), which provides that no person shall cause or allow the emission of particulate matter into the atmosphere in any one hour period from any new process emission unit which, either alone or in combination with the emissions of particulate matter from all other similar new process emission units at a source or premises, exceeds the allowable emission rates specified in 35 IAC 212.321(c).

#### 2.1.4 Non-Applicability Provisions

This permit does not address the requirements of 35 IAC 215.301, Use of Organic Material, for emission units in the ammonia plant as any direct emissions of organic material from such units are to be flared or otherwise combusted, which will assure compliance with the alternative standard of 35 IAC 215.302, providing at least 85 percent control of emissions of organic material.

#### 2.1.5-1 Operating Requirements

- a. The annual production of ammonia by the ammonia plant shall not exceed the following limits:
  - i. Total production: 1,018,000 tons/year.
  - ii. Production for direct sale (stored): 255,000 tons/year.
- b. The total flow of pilot gas to each flare in the ammonia plant shall not exceed 14,500 scf/day, 30-day rolling average.

#### 2.1.5-2 Startup, Shutdown and Malfunction Plan

- a. i. The Permittee shall develop, implement, and maintain a written Startup, Shutdown, and Malfunction Plan (SSM Plan) that describes, in detail, procedures for operating and maintaining the various emission units in the ammonia plant during periods of startup, shutdown, and malfunction and a program of corrective action for malfunctioning equipment used to comply with the relevant emission standards and emission control requirements. This SSM Plan shall be developed to satisfy the purposes set forth in 40 CFR 63.6(e)(3)(i)(A), (B) and (C). In this regard, with respect to startups, this SSM Plan shall address readily foreseeable startup scenarios. With respect to malfunction, this SSM Plan shall identify

and address likely malfunction events with specific programs of corrective actions, and provide that upon occurrence of a malfunction that will result in a deviation, that the Permittee shall, as soon as practicable, repair the affected equipment or reduce the operating rate of the plant so that the deviation ceases.

- ii. For the purpose of this condition, the definitions of the terms "startup," "shutdown" and "malfunction" under the NESHAP, at 40 CFR 63.2, shall apply and be used. In addition, as related to the scope of the SSM Plan with respect to malfunctions, the plan shall also address and apply to failures of equipment that could reasonably be preventable and that may be attributable to poor maintenance or careless operation, and shall not be restricted to malfunctions as defined by 40 CFR 63.2. Similarly, requirements for recordkeeping, notification and reporting related to malfunctions shall be applicable for failures of equipment irrespective of the cause of such failure.

Note: Although the ammonia plant is not a major source of HAPs for purposes of Section 112 of the Clean Air Act, this permit refers to provisions of the federal NESHAP to establish appropriate work practices for the startup, shutdown and malfunction of the ammonia plant.

- b. The Permittee shall at all times, including periods of startup, shutdown, and malfunction as defined at 40 CFR 63.2, operate and maintain the ammonia plant, in a manner consistent with safety and good air pollution control practice for minimizing emissions to the levels required by the applicable standards and limits or comply with the applicable SSM Plan, as provided below. Determination of whether such operation and maintenance procedures are being used will be based on information available to the Illinois EPA and USEPA, which may include, but is not limited to, monitoring results, review of operation and maintenance procedures (including the SSM Plan), review of operation and maintenance records, and inspection of units.  
[Reflects 40 CFR 63.6(e)(1)(i)]

- i. During periods of startup, shutdown, and malfunction of unit(s) in the ammonia plant, the Permittee shall operate and maintain such unit(s), in accordance with the procedures specified in the SSM Plan. The Permittee shall correct malfunctions as soon as practicable after their occurrence in accordance with the SSM Plan. To the extent that an unexpected event arises during a startup, shutdown, or malfunction, the Permittee shall comply by minimizing emissions during such event consistent with safety and good air pollution control practice.  
[Reflects 40 CFR 63.6(e)(1)(ii) and (3)(ii)]

- ii. When actions taken by the Permittee during a startup, shutdown, or malfunction (including actions taken to

correct a malfunction) are consistent with the procedures specified in the applicable SSM Plan, the Permittee shall keep records for that event which demonstrate that the procedures specified in the Plan were followed. In addition, the Permittee shall keep records of these events as specified in 40 CFR 63.10(b), including records of the occurrence and duration of each startup, shutdown, or malfunction of operation. Furthermore, the Permittee shall confirm in the periodic compliance report (refer to Condition 2.1.10(b)) that actions taken during periods of startup, shutdown, and malfunction were consistent with the SSM Plan. [Reflects 40 CFR 63.6(e)(3)(iii)]

iii. If an action taken by the Permittee during a startup, shutdown, or malfunction (including an action taken to correct a malfunction) of unit(s) is not consistent with the procedures specified in the applicable SSM Plan, and the unit(s) exceeds a relevant emission standard or limit, then the Permittee must record the actions taken for that event and must promptly report such actions as specified by 40 CFR 63.6(d)(5), unless otherwise specified elsewhere in this permit or when superseded in the Clean Air Act Permit Program (CAAPP) Permit for the plant. [Reflects 40 CFR 63.6(e)(3)(iv)]

c. i. The Permittee shall develop its initial SSM Plan prior to the initial startup of the ammonia plant. The Permittee shall make changes to the SSM Plan if required by the Illinois EPA or as necessary to satisfy the requirements of this permit or address other changes to procedures for the ammonia plant. [Reflects 40 CFR 63.6(e)(3)(vii) and (viii)]

ii. This SSM Plan is a record required by this permit, which the Permittee must retain in accordance with the general requirements for retention and availability of records. In addition, when the Permittee revises the SSM Plan, the Permittee must also retain and make available the previous (i.e., superseded) versions of the SSM Plan for a period of at least 5 years after such revision. [Reflects 40 CFR 63.6(e)(v) and 63.10(b)(1)]

#### 2.1.5-3 Work Practices to Minimize Flaring

a. The work practices to minimize flaring conducted by the Permittee for the ammonia plant pursuant to Condition 2.1.2-2(a)(ii)(B) shall include the preparation and maintenance of a Flare Minimization Plan (Plan) for the ammonia plant that include the following:

i. Technical information for the ammonia plant, including a general description of the ammonia plant, including process flow diagram(s) depicting all process units, detailed process flow diagram(s) for the affected flares, including process gas lines, knockout pots, surge drums,

seal drums, and other significant components of the flares.

- ii. A general description of the Permittee's written procedures for the operation of the ammonia plant.
  - iii. A detailed description of the Permittee's procedures for flaring due to the occurrence of malfunctions, as caused by process upsets, equipment failures or other reasons, including the provisions in these procedures that act to minimize flaring.
  - iv. A detailed description of the Permittee's procedures to minimize flaring in conjunction with the startup and shutdown of equipment.
  - v. A general description of the Permittee's procedures for preventative maintenance of equipment in the ammonia plant, including the provisions in these procedures that should act to minimize flaring.
  - vi. A description of the established responsibilities of different personnel at the ammonia plant for the operation and maintenance of the plant.
  - vii. A detailed description of the Permittee's procedures for periodic evaluation of flaring activity generally and specific evaluation of flaring incidents, including identification of the causes of flaring, assessment of measures to eliminate or reduce such flaring, and implementation of feasible measures to reduce flaring.
  - viii. An evaluation of preventative measures to reduce the occurrence and magnitude of flaring for the ammonia plant, including a schedule for the expeditious implementation of all feasible prevention measures to address the following, including consideration of past flaring activity as information for actual operation of the plant becomes available:
    - A. Flaring that could reasonably be expected to occur or has occurred during startup or shutdown.
    - B. Flaring that could reasonably be expected to occur or has occurred due to issues of ammonia quality.
    - C. Flaring caused by the recurrent failure of equipment or a process to operate in a normal or usual manner. The evaluation shall consider the adequacy of existing maintenance schedules and protocols for such equipment.
- b. After the shakedown of the ammonia plant is complete, the Plan shall also include a description of additional procedures or

other measures that are installed or implemented to reduce flaring from the ammonia plant, which addresses the following:

- i. Measures taken within the last five years to reduce flaring which shall specify the year of installation or implementation of each measure.
  - ii. Measures that are planned, which shall specify the year in which operation or implementation of each planned measure is scheduled.
- c.
- i. The Permittee shall submit a copy of the initial Plan to the Illinois EPA for review and comments at least 90 days prior to initial startup of the ammonia plant.
  - ii. The Permittee shall review the Plan on at least an annual basis and revise the Plan so that it is kept current and reflects any changes in the operation of the ammonia plant.
  - iii. The Permittee shall make changes to the Plan if required by the Illinois EPA or USEPA to address an apparent deficiency identified in the Plan or as otherwise needed to address apparent or possible deficiencies in the Plan identified by the Permittee.
  - iv. This Plan is a record required by this permit, which the Permittee must retain and make available in accordance with the general requirements for retention and availability of records. In addition, when the Permittee revises the Plan, the Permittee must also retain and make available the previous versions of the Plan for a period of at least 5 years after such revision.
- d. After the shakedown of the ammonia plant is complete, the Permittee shall also conduct an event-specific investigation or "Root-Cause Analysis" into each "Flaring Incident" (incident) at the ammonia plant to determine the causes of the incident, to take reasonable steps to correct the conditions that caused or contributed to such incident, and to further minimize emissions from flaring, as follows. For this purpose, a "Flaring Incident" is defined as a flaring event (i.e., the flaring of process gas from the ammonia plant) that results in an unscheduled shutdown of the plant or flaring for more than six hours.
- i. A Root Cause Analysis for a Flaring Incident shall consist of a systematic investigation of the incident by identifying and assessing corrective measures that are available to prevent or reduce the likelihood of recurrence of a similar incident (including design, operation and maintenance changes), and developing a program of interim and long-term corrective actions, if any, as are consistent with good engineering practice, to minimize the likelihood of a recurrence of the root cause

and all contributing causes to the incident, with a schedule for implementation of such measures if not already completed.

- ii. The Permittee shall submit a report to the Illinois EPA for each Root Cause Analysis, which report shall include the following information:
  - A. Date, time and duration of the incident, and a description of the incident. To the extent that the incident involved multiple releases within a 24-hour period or within subsequent, contiguous non-overlapping periods, the report shall set forth the date, start time and duration of each release.
  - B. The amount of process gas flared during the incident and the estimated actual emissions of NO<sub>x</sub>, CO, VOM, PM, PM<sub>10</sub>/PM<sub>2.5</sub>, methane and CO<sub>2</sub> from the incident, with supporting data and calculations.
  - C. A detailed analysis that sets forth the root cause and all contributing causes to the incident, to the extent determinable.
  - D. An analysis of the measures, if any, that are available to reduce the likelihood of a recurrence of an incident resulting from the same root cause or contributing causes in the future, which analysis discusses and evaluates the alternatives, if any, that are available, including possible operation and maintenance changes, the probable effectiveness of various alternatives, and the cost of the various alternatives.
  - E. If the analysis concludes that corrective actions are required, a description of those actions and, if not already completed, a schedule for their implementation, with planned commencement and completion dates of various actions.
  - F. If the analysis concludes that corrective action is not needed, an explanation of the basis for that conclusion.
- iii. A report for each such incident and investigation shall be submitted to the Illinois EPA within 45 days of the date of the incident. If the investigation is still underway on this date, the report shall include information for the investigation to that point and a statement of the anticipated date by which a complete follow-up report will be submitted, with explanation why it is not yet practical to submit a complete report for the incident. Thereafter, the Permittee shall submit follow-up report(s) for the incident at least every 45

days until a complete final report is submitted for the incident.

- e. Planning and other activities conducted by the Permittee pursuant to this Condition 2.1.5-3 may be combined with planning and activities conducted by the Permittee as part of the preparation and implementation of SSM Plan pursuant to Condition 2.1.5-2 provided that the requirements of this condition are also met.

2.1.6 Emission Limits

- a. The emissions from the ammonia plant shall not exceed the following limits:

Pollutant	Limit (tons/year)		
	CO <sub>2</sub> Vents	Flares	Total
NOx	---	15.1	15.1
CO	3.40	82.3	85.7
VOM	14.3	11.6	25.9
PM	---	0.15	0.15
PM <sub>10</sub> /PM <sub>2.5</sub>	---	0.15	0.15
SO <sub>2</sub>	---	0.13	0.13
Individual HAP*	2.40	---	2.40
Total HAPs	2.43	---	2.43
GHG	343,105	25,971	369,076

\* The individual HAP that is anticipated to be emitted in the greatest amount is methanol.

- b. Notwithstanding the above, until the commissioning of the ammonia plant is complete or one year after initial startup of the ammonia plant, whichever occurs first, the GHG emissions of the ammonia plant, including both the CO<sub>2</sub> vents and the flares shall not exceed the limit for total GHG emissions of the ammonia plant and the separate limits for GHG emissions of the CO<sub>2</sub> vents and the flares shall not apply and the limits for the flares for emissions of other pollutants shall apply on a bi-monthly basis rather than on an annual basis.

2.1.7 Operational Testing for the Affected Flares

- a. Within 30 days of initial startup of the ammonia plant, the Permittee shall:
  - i. Conduct observations for visible emissions from the flares in accordance with 40 CFR 60.18(f)(1) to verify compliance with 40 CFR 60.18(c)(1).
  - ii. Perform sampling and analysis of the heat content of the process gas streams that are sent to each flare in accordance with 40 CFR 60.18(f)(3) to verify compliance with 40 CFR 60.18(c)(3).

- b. Test notifications and test reports shall be submitted to the Illinois EPA in accordance with the Condition 3.1(b) and (c).

2.1.8-1 Monitoring and Instrumentation for the Ammonia Plant

- a. The Permittee shall install, calibrate, maintain, and operate continuous monitoring systems to measure the gas flow through each affected CO<sub>2</sub> vent (scf/hour). These monitoring systems shall be operated as specified by the relevant provisions of the NSPS, 40 CFR 60.107a(f).
- b. The Permittee shall install, operate and maintain continuous monitoring systems for the ammonia plant to measure production of the ammonia plant (tons/hour), as follows:
  - i. Total production.
  - ii. Production sent to storage.
- c. The Permittee shall operate instrumentation for key operating parameters of the ammonia plant, including:
  - i. Temperatures in the ammonia conversion reactor and the methanation reactor.
  - ii. Flow of off-gas to the reformer furnace for use as fuel.

2.1.8-2 Operational Monitoring for the Affected Flares

- a. The Permittee shall install, operate and maintain continuous monitoring systems on each affected flare for the total flow of process gas to the flare (scfm). These monitoring systems shall be operated as specified by the relevant provisions of the NSPS, 40 CFR 60.107a(f).
- b. The Permittee shall continuously monitor each affected flare for the presence of a flare pilot flame using a thermocouple or any other equivalent device to detect the presence of a flame, which monitoring shall be conducted as specified by 40 CFR 60.18(f)(2).
- c. The Permittee shall install, operate and maintain instrumentation on each affected flare for the usage of pilot gas, in scfm. If this instrumentation is equipped with an automatic data recorder, measured data shall be recorded on a daily average basis, as well on an hourly average basis.
- d. The Permittee shall monitor the liquid level and pressure of the knockout or seal drum that serves each affected flare.
- e. The Permittee shall develop and maintain written monitoring procedures for each affected flare addressing the required operational monitoring systems for each flare and associated equipment, which shall include the following information. A

copy of these procedures shall be submitted to the Illinois EPA for review prior to the initial startup of the ammonia plant.

- i. A process flow diagram of the affected flare and associated equipment as related to flaring, identifying major components, such as the header, stack, burner(s), purge gas system, pilot gas system, ignition system, assist system, and liquid seal for the flare and the process gas lines.
- ii. Drawing(s), with dimensions, showing the sampling location(s) at which sampling or monitoring is conducted, accompanied by an explanation of the methods used to select these sampling locations for sampling of flare process gas, flow of flare process gas and pilot gas; on/off flow indicators; operating parameters of the liquid seal; and operating parameters of the ammonia plant that could provide credible information on the occurrence or nature of flaring.
- iii. The type, make, and model of each monitoring device or instrument used for required monitoring, with a description of manufacturer's specifications for the device, including but not limited to range, precision, accuracy, calibration, and recommended procedures for quality control, quality assurance and maintenance.
- iv. A description of the data collection and recording device(s) used to store data collected by required monitoring systems.
- v. A description of the periods when visual observation(s) would be conducted to verify flame stability, as provided for by Condition 2.1.2-2(b)(ii), and the Permittee's protocols and procedures for these observations.
- vi. A description of the low flow operating conditions for the flare during which flow rates of process gas would be determined by engineering analysis, rather than by monitoring, if any, including an explanation why monitors would not provide reliable data during such conditions and the types of engineering analysis that would be used in place of monitoring.

#### 2.1.8-3 Sampling and Analysis of Process Gas Streams in the Ammonia Plant

- a. The Permittee shall take representative samples of the CO<sub>2</sub> stream from the regenerator that is emitted through the affected CO<sub>2</sub> vents and other gas streams in the ammonia plant that are or could be vented to the affected flares during startup, shutdown or malfunctions. The Permittee shall have these samples analyzed using applicable ASTM methods for CO, VOM, methane, CO<sub>2</sub> and HAP content. The process gas streams shall also be analyzed for heating value, in accordance with 40 CFR 60.18(f)(3).

- b. This activity shall be conducted:
  - i. Within 15 days after achieving the maximum production rate at which the ammonia plant will be operated but not later than 30 days after initial startup of the ammonia plant.
  - ii. On a periodic basis thereafter, as follows:
    - A. For the CO<sub>2</sub> stream from the regenerator, on at least a monthly basis.
    - B. For gas streams in the ammonia plant that are or could be vented to the flares, on at least a monthly basis during the first year (12 months) of operation of the ammonia plant and on a quarterly basis thereafter.
  - iii. Within 90 days of a written request from the Illinois EPA, for process streams as specified in the request.
- c. The Permittee shall maintain records for this sampling and analysis activity.

2.1.9-1 Recordkeeping Requirements for the Affected CO<sub>2</sub> Vents

- a. The Permittee shall keep records related to the GHG emissions of the affected CO<sub>2</sub> vents as would be required by 40 CFR 98 Subpart PP, including records for emissions in tons/day, tons/month and tons/year.
- b. The Permittee shall keep the following records related to the emissions of HAPs from each affected CO<sub>2</sub> vent:
  - i. A file containing the emission factors that the Permittee uses to calculate emissions, with supporting documentation.
  - ii. Total monthly and annual emissions, based on operating data and applicable emission factors, with supporting calculations.

2.1.9-2 Recordkeeping Requirements for the Affected Flares

- a. The Permittee shall maintain a file or other record for each affected flare containing the design destruction efficiencies of the flare for CO, VOM, and methane and the design emission rates of the pilot burners for NO<sub>x</sub> and CO, with supporting documentation.
- b. The Permittee shall maintain an operating log or other similar records for the ammonia plant that includes the information specified in Condition 3.2(a) and the following detailed information:

- i. For each startup, the nature of the startup, the timing of major steps in the startup, any unusual occurrences during the startup, and any deviations from the established startup procedures, with explanation.
  - ii. For each shutdown, the nature and reason for the shutdown, the timing of major steps in the shutdown, any unusual occurrences during the shutdown, and any deviations from the established shutdown procedures, with explanation.
- c. The Permittee shall keep the following operating records for each event when process gas was flared:
- i. Date, time and duration of flaring.
  - ii. Description of the event, including the flare(s) involved in the event and a discussion of the cause(s) and probable cause(s) of the event.
  - iii. Confirmation that established operating procedures were followed.
  - iv. Confirmation that the flare(s) functioned properly, i.e., a flame was present and any visible emissions that occurred were as specified in 40 CFR 60.18(f)(1).
  - v. The amount and nature of the process gas sent to the flare(s).
  - vi. The amount of CO and VOM contained in the gas sent to the flare(s) and the amount of CO and VOM emitted, pounds/event, with supporting calculations.
  - vii. Actions taken during the event to minimize emissions.
  - viii. A description of any actions taken to prevent or reduce the likelihood of similar future occurrences.
- d. The Permittee shall keep the following records related to emissions of NO<sub>x</sub>, CO, VOM, PM, PM<sub>10</sub>/PM<sub>2.5</sub>, SO<sub>2</sub>, HAPs and GHG from each affected flare:
- i. A file containing the emission factors that the Permittee uses to calculate emissions of each pollutant, with supporting documentation.
  - ii. Total daily, monthly and annual emissions of each pollutant from the flare, based on operating data and applicable emission factors, with supporting calculations.
- e. The Permittee shall keep records for any deviations from applicable requirements involving the affected flares, which records shall include the information specified by Condition

3.3. These records may be combined with other records required for the ammonia plant by this permit.

- f. The Permittee shall maintain inspection, maintenance and repair log(s) or other similar records for the affected flares that, at a minimum, include the information specified in Condition 3.2(b) and identify any occasion when the Permittee was unable to carry out its established maintenance procedures, with explanation.

#### 2.1.9-3 Recordkeeping Requirements for the Ammonia Manufacturing Process

- a. Beginning 12 months after the initial startup of the ammonia plant, the Permittee shall keep the following records to show compliance with the limit in Condition 2.1.2-3 for the ammonia manufacturing process (i.e., the combination of the affected CO<sub>2</sub> vents, the reformer furnace (Section 2.2) and the boiler (Section 2.3)) for GHG emissions, for each 12 consecutive months of operation in which ammonia is produced:
  - i. Total emissions (tons).
  - ii. Average emission rate (tons per ton of ammonia produced).
  - iii. The applicable BACT limit for GHG, calculated in accordance with Condition 2.1.2-3 (tons per ton of ammonia produced), with supporting calculations.

#### 2.1.10 Reporting Requirements

- a. The Permittee shall promptly notify the Illinois EPA of deviations of unit(s) in the ammonia plant with permit requirements as follows. Reports shall include the information specified by Condition 3.4:
  - i. Failure of an affected flare, e.g., loss of combustion, when operation continues for more than 1 hour (60 minutes) shall be reported to the Illinois EPA's regional office by telephone as soon as possible during normal working hours, but no later than three days.
  - ii. The deviations addressed above and all other deviations shall be reported in the quarterly compliance reports required by Condition 2.1.10(b).
- b. The Permittee shall submit quarterly compliance reports for the ammonia plant. The reports shall be submitted no later than 30 days after the end of each quarterly reporting period.
  - i. Information related to excess emissions and deviations during the reporting period, if any. When no excess emissions or deviations have occurred or the continuous emissions monitoring system(s) have not been inoperative, repaired, or adjusted, such information shall be stated in the report.

- ii. A summary of operation and emissions of the ammonia plant during the reporting period, including the total number of startups of the plant, the amount of ammonia produced by the plant, the amount of ammonia sent to storage, and the emissions of NOx, CO, PM, PM<sub>10</sub>/PM<sub>2.5</sub>, VOM, and GHG during the reporting period (tons).
  - iii. A listing of each flaring event during the reporting period, i.e., each period when process gas was flared, with date and duration, a description of the event, including cause(s), and whether an event-specific Root Cause Analysis was performed for the event pursuant to Condition 2.1.5-3(d).
- c. With its Annual Emission Report, the Permittee shall submit a report to the Illinois EPA for flaring during the previous year, which report shall:
- i. Provide the information specified in Condition 2.1.10(b)(iii) for flaring events during the previous year.
  - ii. Summarize flaring activity and emissions during the previous year, including an assessment of the cause(s) for such flaring as related to the number of events and share of emissions, a summary of each event-specific Root Cause Analysis was performed, and emissions of the flares as compared to the limits in Condition 2.1.6(a).
  - iii. Include copies of the summaries for flaring activity for the preceding two years as required by Condition 2.1.10(c)(ii), as reported in earlier reports, as these summaries become available.
  - iv. Summarize actions or measures implemented during the previous year to reduce flaring pursuant to the Root Cause Analyses required by Condition 2.1.5-3(d), and the observed effect of these actions, and the actions or measures planned for implementation during the current year to reduce flaring pursuant to Root Cause Analyses, and the expected effect of these actions.
  - v. Summarize other actions or measures implemented during the previous year to reduce flaring, not related to the required Root Cause Analyses, and the reason for and observed effect of these actions, and other actions or measures planned for implementation during the current year to reduce flaring, and the reason for and expected effect of these actions.
  - vi. Include a listing of changes, if any, made to the Flare Minimization Plan, as provided for by Conditions 2.1.5-3(c)(ii) and (iii), with a brief description.

- vii. Include a listing of significant changes, if any, made to the monitoring procedures required by Condition 2.1.8-2(e), with brief description.
  - viii. Provide confirmation that the required annual verification of the accuracy of the flow monitoring system was conducted, with a summary of results.
- d. The Permittee shall submit the following additional reports for the ammonia plant during the shakedown period and the year following the shakedown period:
- i. The Permittee shall provide the Illinois EPA with notice at least 15 days prior to initial startup of the ammonia plant.
  - ii. During the shakedown period for the ammonia plant, the Permittee shall promptly notify the Illinois EPA of any event(s) that disrupts orderly shakedown of the facility.
  - iii. During the shakedown period for the ammonia plant, the periodic compliance reports required by Condition 2.1.10(b) shall also include the following information:
    - A. Operating data for the ammonia plant, i.e., total operating hours and ammonia production during the reporting period.
    - B. Activities accomplished and significant events related to emissions of the ammonia plant.
    - C. Current schedule for emission testing.
    - D. A summary of any required emissions testing that was conducted or notice that all such testing has been completed.
    - E. When applicable, notice that shakedown of the ammonia plant is considered complete.
- e. The Permittee shall notify the Illinois EPA within 30 days of the date that commissioning of the ammonia plant is complete, if this date is different than the date that shakedown of the ammonia plant is complete, with explanation for the different date.

2.1.11 Revision of the BACT Limit for GHG Emissions Based on Actual Performance of the Facility

- a. i. The values for  $R_u$  and  $R_a$  used in the GHG emission limit for the facility in Condition 2.1.2-3(a) shall be lowered based on actual operation and emissions of the facility unless the Permittee demonstrates and the Illinois EPA concurs, based on an evaluation as provided pursuant Condition 2.1.11(b), that the limit that would result

could not be reliably met without unacceptable consequences, i.e., inability to comply with other emission limits or requirements or significant risk to equipment or personnel, and without unreasonable consequences, i.e., a significant increase in maintenance and repair needed for the facility.

- ii. This permit will be revised to set lower values for  $R_u$  and  $R_a$  that the Illinois EPA finds, after considering actual operation of the facility and the evaluation performed by the Permittee, that the facility can and should be able to consistently comply with a limit that uses such values without unreasonable consequences.
- b.
  - i. The Permittee shall perform an evaluation for GHG emissions in accordance with a plan submitted to the Illinois EPA for review and comment. The initial plan shall be submitted to the Illinois EPA no later than one year after initial start-up of the facility.
  - ii. Beginning one year after submittal of this plan, continuing until the final report for this evaluation is submitted, the Permittee shall submit an annual progress report for this evaluation. This report shall include information describing the status of the ammonia manufacturing process, including actions that have been carried out or are still planned to improve the energy efficiency of the process and reduce GHG emissions and any circumstances that acted to result in higher than normal GHG emissions, with description and explanation. This report shall also include data for the GHG emission rate of the ammonia manufacturing process (tons per ton of ammonia) and the values of  $R_u$  and  $R_a$  that were achieved on a monthly basis and on an annual basis (running total of 12 months of data).
  - iii.
    - A. This evaluation shall be completed and a detailed report submitted to the Illinois EPA within three years after the date that commissioning of the facility is complete or four years after initial startup, whichever occurs first. This report shall include proposed alternative values for  $R_u$  and  $R_a$ .
    - B. The Illinois EPA may extend this deadline for up to an additional two years if the Permittee submits a progress report demonstrating the need for additional data to effectively set revised values for  $R_u$  and  $R_a$ .
  - iv. The submittal by the Permittee of the final report for this evaluation shall constitute submittal of an application to the Illinois EPA for a revised permit for the purpose of implementation of Condition 2.1.11(a).

SECTION 2.2: UNIT-SPECIFIC CONDITIONS FOR THE REFORMER FURNACE

2.2.1 Description

The reformer furnace (the affected reformer) is a process heater used in the production of hydrogen for the manufacture of ammonia. In the reformer furnace, steam from the boiler (see Section 2.3) and pre-treated natural gas are catalytically converted to an intermediate stream that is composed primarily of hydrogen and carbon monoxide. The fuel fired in the reformer furnace is a combination of natural gas and process off-gases from the ammonia plant. The reformer will be equipped with a selective catalytic reduction (SCR) system for control of its emissions of nitrogen oxide (NOx).

2.2.2 Control Technology Determination - BACT

- a. i. The affected reformer shall be operated and maintained in conformance with the manufacturer's design, which shall include the following features:
  - A. Low-NOx burners and selective catalytic reduction.
  - B. Automated combustion management, with an oxygen trim system.
- ii. The affected reformer shall be operated and maintained in accordance with good combustion practices.
- b. The emissions of the affected reformer shall not exceed the following limits, in lbs/mmBtu:

Pollutant	Limit
NOx	0.0109, 30-day average, rolled daily
CO	0.020, 30-day average, rolled daily
PM	0.0019, 3-hour average
PM <sub>10</sub> /PM <sub>2.5</sub>	0.0024, 3-hour average
VOM	0.0054, 3-hour average

Note: The GHG emissions of the affected reformer are addressed by the BACT limit for GHG in Condition 2.1.2-3.

2.2.3 Applicable Emission Standards

The affected reformer is subject to the following state standards:

- a. The emission of smoke or other particulate matter shall not have an opacity greater than 20 percent, 6 minute average, except as allowed by 35 IAC 212.122(b) or 212.124. [35 IAC 212.109 and 212.122(a)]
- b. CO emissions shall not exceed 200 ppm, corrected to 50 percent excess air. [35 IAC 216.121]

Note: There are no federal emission standards under 40 CFR Parts 60 or 63 that apply to the affected reformer.

#### 2.2.4 Non-Applicability Provisions

- a. The affected reformer is not subject to the NSPS, 40 CFR 60 Subpart Db, because it is a “process heater” and not a “steam generating unit” as defined by 40 CFR 60.41b.
- b. The affected reformer is not subject to the NESHAP for Industrial, Commercial and Institutional Boilers at Area Sources, 40 CFR 63 Subpart JJJJJJ, because it is a process heater.

#### 2.2.5 Operational Requirements, Work Practices and Production Limits

- a. The nominal rated heat input capacity of the affected reformer shall not exceed 955 mmBtu/hour.
- b. The only fuels combusted in the affected reformer shall be natural gas and process off-gas from the ammonia plant.
- c. For purposes of Condition 1.6, which generally requires implementation of good air pollution control practice, the Permittee shall operate and maintain the affected reformer and associated SCR system in accordance with written procedures developed and maintained by the Permittee. These procedures may incorporate the manufacturer’s recommendations for operation and maintenance of the SCR system.

#### 2.2.6 Emission Limits

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

Pollutant	Limit	
	Pounds/Hour	Tons/Year
NOx	10.4	45.6
CO	41.0	83.6
PM	1.81	7.9
PM <sub>10</sub> /PM <sub>2.5</sub>	2.3	10.0
VOM	5.2	22.6
SO <sub>2</sub>	---	2.5
Hexane	0.10	0.44
Other Individual HAP*	0.7	3.0
Total HAP	1.0	4.3
GHG	---	488,159

\* The individual HAP that is anticipated to be emitted in the greatest amount is formaldehyde.

2.2.7 Emission Testing Requirements

a. The Permittee shall have emissions testing performed for the affected reformer as follows at its expense by a qualified testing service while the affected reformer is operating at maximum rates and under other representative operating conditions:

i. Emissions testing shall be conducted for emissions of filterable PM, filterable PM<sub>10</sub> and PM<sub>2.5</sub>, condensable PM, VOM, hexane, methane, N<sub>2</sub>O and HAP as specified below, provided, however, that if the Permittee considers all filterable PM<sub>10</sub> emissions to be emissions of filterable PM<sub>2.5</sub>, testing for emissions of filterable PM<sub>2.5</sub> need not be performed unless specifically requested by the Illinois EPA.

Note: Specific requirements for periodic emission testing may be established in the CAAPP permit for the facility.

ii. This testing shall be conducted as follows:

A. Within one year after initial startup of the reformer or 120 days after achieving the maximum production rate at which the reformer will be operated, whichever occurs first.

B. On a periodic basis thereafter, with testing conducted within at least five years from the date of the previous test.

C. In addition, the Permittee shall perform emission tests as provided below as requested by the Illinois EPA within 90 days of a written request by the Illinois EPA or such later date agreed to by the Illinois EPA.

iii. Appropriate USEPA test methods, including the following methods, shall be used for testing, unless other methods adopted by or being developed by USEPA or other alternative test methods are approved by the Illinois EPA.

Filterable PM	Method 5 or 5I
Filterable PM <sub>10</sub> & PM <sub>2.5</sub>	Method 5I or 201A
Condensable PM	Method 202
VOM	Method 25A
N <sub>2</sub> O and Methane	Method 320
Hexane	Method 320
HAPs	Method 320

c. i. Test plans, test notifications, and test reports shall be submitted to the Illinois EPA in accordance with the Condition 3.1.

- ii. In addition to other information required in a test report, test reports shall include detailed information on the operating conditions of the affected reformer during testing, including:
  - A. Firing rates, total and for natural gas, (mmBtu/hour).
  - B. Oxygen content in the flue gas and other significant operating parameters of the reformer.
  - C. Opacity of the exhaust, 6-minute averages, as determined by Method 9, if visible emissions, as determined by Method 22, are typically present during the operation of the reformer.

#### 2.2.8-1 Emission Monitoring Requirements

- a. For the affected reformer, the Permittee shall install, calibrate, operate and maintain CEMS for NO<sub>x</sub> and CO emissions and the concentration of CO<sub>2</sub> or O<sub>2</sub> in the exhaust.
  - i. The procedures under 40 CFR 60.13 shall be followed for installation, evaluation, and operation of these CEMS. This CEMS shall be operated during all periods of operation of the affected units except for CEMS breakdowns and repairs.
  - ii. The relevant provisions for monitoring NO<sub>x</sub> emissions in the NSPS, 40 CFR 60.48b shall be followed for the NO<sub>x</sub> CEMS. The relevant provisions of 40 CFR 60.48b(j)(4) shall be followed for the CO CEMS until and unless USEPA adopts procedures that would be directly applicable for continuous monitoring of CO emissions from this unit.
  - iii. The 1-hour average NO<sub>x</sub> and CO emission rates measured by the CEMS shall be expressed in lbs/mmBtu heat input and shall be used to calculate average emission rates. The 1-hour averages shall be calculated using data points as provided for by 40 CFR 60.13(h)(2), except as provided by 40 CFR 60.48b(b)(2).
  - iv. These CEMS shall also be used to determine compliance with the NO<sub>x</sub> and CO limits in Conditions 2.2.2(b), 2.2.3(b) and 2.2.6.
- b. For the affected reformer, the Permittee shall install, certify, operate and maintain a CEMS for CO<sub>2</sub> emissions. This CEMS shall be operated in accordance with applicable requirements of 40 CFR 75, including 40 CFR 75.10(a)(3).

#### 2.2.8-2 Operational Monitoring and Instrumentation Requirements

- a. The Permittee shall install, calibrate, operate and maintain a continuous operational monitoring system for the affected reformer for fuel consumption (scf/hour).
- b.
  - i. The Permittee shall equip, operate, and maintain instrumentation on the SCR system for the affected reformer for the SCR reagent injection rate, flue gas temperature at the inlet of the SCR catalyst and other operating parameters of the SCR system that are relevant to effective control of emissions.
  - ii. The Permittee shall maintain the records of the data from this instrumentation at least once per shift.

#### 2.2.8-3 Opacity Observations

The Permittee shall perform opacity observations for the affected reformer in accordance with Method 9 on at least an annual basis if visible emissions are normally present, as determined by Method 22.

#### 2.2.9 Recordkeeping Requirements

- a. The Permittee shall maintain a file that contains the following information for the affected reformer:
  - i. A record of the maximum design heat input capacity of the reformer, in mmBtu/hour, with supporting documentation.
  - ii. The Permittee's established operating and maintenance procedures for the reformer.
  - iii. Records for all opacity measurements made in accordance with USEPA Method 9 for the affected reformer that it conducts or that are conducted on its behalf by individuals who are qualified to make such observations. For each occasion on which such measurements are made, these records shall include the formal report for the measurements if conducted pursuant to Condition 2.2.8-3, or otherwise the identity of the observer, a description of the measurements that were made, the operating condition of the affected reformer, the observed opacity, and copies of the raw data sheets for the measurements.
- b. The Permittee shall maintain records for the amount of off-gas fired in the affected reformer (scf/month).
- c. The Permittee shall maintain an operating log or other similar records for the affected reformer that include the information specified in Condition 3.2(a) and the following information:
  - i. For each startup of the reformer, identification or any deviations from the normal startup procedures, as set

forth in the Permittee's written operating procedures, with explanation.

- ii. For each shutdown of the reformer, the nature and reason for the shutdown, any unusual occurrences during the shutdown, and any deviations from the normal shutdown procedures, as set forth in the Permittee's written operating procedures, with explanation.
- d. The Permittee shall keep the following records for the SCR system:
- i. A file containing the design NOx emission rates of the SCR system with supporting documentation, and manufacturer, vendor or source-specific operating and maintenance procedures, including a catalyst management plan.
  - ii. Usage of SCR reagent on a monthly basis.
- e. The Permittee shall maintain records of the following information for NOx and CO emissions from the affected reformer for each operating day:
- i. Calendar date.
  - ii. The measured average hourly emission rates (expressed in lbs/mmBtu and lbs/hour).
  - iii. The 30-day average emission rates (lbs/mmBtu and lbs/hour) calculated at the end of each operating day from the measured hourly emission rates for the preceding 30 unit operating days.
  - iv. Identification of the operating days when the calculated 30-day average emission rates are in excess of an applicable standard or limit, with the reasons for such excess emissions as well as a description of corrective actions taken.
  - v. Identification of the operating days in which NOx or CO emission data have not been obtained, including a description of corrective actions taken.
  - vi. Identification of the times when NOx or CO emission data have been excluded from the calculation of average emission rates and the reasons for excluding data.
  - vii. Identification of "F" factor used for calculations and the method of determination.
  - viii. Identification of the times when the concentration of NOx or CO exceeded full span of the CEMS.

- ix. Description of any modifications to the CEMS that could affect the ability of the CEMS to comply with Performance Specification 2 or 3.
  - x. Results of daily CEMS drift tests and quarterly accuracy assessments as required by 40 CFR Part 60 Appendix F, Procedure 1.
- f. The Permittee shall keep inspection, maintenance and repair logs or other similar records for the affected reformer and associated SCR system that contain the information specified in Condition 3.2(b), including information related to management of catalyst in the SCR system (e.g., replacement of catalyst).
  - g. The Permittee shall keep the following records related to the emissions of NO<sub>x</sub>, CO, PM, PM<sub>10</sub>/PM<sub>2.5</sub>, VOM, SO<sub>2</sub>, GHG, hexane, other individual HAP, and total HAPs from the affected reformer:
    - i. If continuous monitoring is performed for a pollutant, the emissions of the pollutant from the affected reformer based on continuous emissions monitoring data, in tons/month and tons/year.
    - ii. If continuous monitoring is not performed for a pollutant:
      - A. A file containing the emission factors that it uses to calculate emissions, with supporting documentation; and
      - B. The emissions of the affected reformer based on operating data and applicable emission factors (tons/month and tons/year), with supporting calculations.

#### 2.2.10 Notification and Reporting Requirements

- a. The Permittee shall promptly notify the Illinois EPA of any deviations from the requirements of this permit for the affected reformer as follows. These notifications shall include the information specified by Condition 3.4.
  - i. Deviations from the NO<sub>x</sub> and CO limits in Conditions 2.2.2, 2.2.3 and 2.2.6 shall be reported with the reports required by Condition 2.2.10(b).
  - ii. Other deviations shall be reported within 30 days and include a description of the incident, a discussion of the probable cause of such deviation, a description of the corrective actions taken, and a description of the preventative measures taken.
- b. The Permittee shall submit periodic compliance reports to the Illinois EPA for the affected reformer, which reports shall

include the following information. These reports shall be submitted on a semi-annual basis, with each report submitted no later than 30 days following the end of the reporting period:

- i. Information related to excess emissions and deviations:
  - A. As related to the limits for NO<sub>x</sub> and CO emission, the information required for reporting of exceedances under 40 CFR 60.7(c) or (d) and 60.49b(h) and (j). If there are no such exceedances during the reporting period, the report shall state that no exceedances occurred during the reporting period.
  - B. Information for other deviations during the reporting period, if any.
  - C. When no excess emissions or deviations have occurred or the CEMS have not been inoperative, repaired, or adjusted, such information shall be stated in the report.

SECTION 2.3: UNIT-SPECIFIC CONDITIONS FOR THE BOILER

2.3.1 Description

The boiler (the affected boiler) will supply steam to the reformer for production of hydrogen. The boiler will fire natural gas.

2.3.2 Control Technology Determination - BACT

- a. i. The affected boiler shall be operated and maintained in conformance with the manufacturer's design, which shall include the following features:
  - A. Low-NOx burners and selective catalytic reduction (SCR) or equivalent (see Condition 2.3.10(d)).
  - B. An automated combustion management system, with oxygen trim system.
  - C. Air preheater and automated blowdown management control system.
- ii. The affected boiler shall be operated and maintained in accordance with good combustion practices.
- b. The emissions of the affected boiler shall not exceed the following limits, in lbs/mmBtu:

Pollutant	Limit
NOx	0.0120, 30-day, rolled daily
CO	0.020, 30-day, rolled daily
PM	0.0019, 3-hour
PM <sub>10</sub>	0.0024, 3-hour
PM <sub>2.5</sub>	0.0010, 3-hour
VOM	0.0054, 3-hour

Note: The BACT limit for GHG in Condition 2.1.2-3 addresses the GHG emissions of the affected boiler.

2.3.3-1 Applicable Federal Emission Standards

- a. The affected boiler is an affected facility under the federal NSPS for Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60 Subpart Db. For the affected boiler, the Permittee must comply with applicable requirements of this NSPS and applicable requirements of 40 CFR 60 Subpart A, General Provisions.
- b. The NOx emissions of the affected boiler shall not exceed 86 ng/J (0.20 lb/million Btu) on a 30-day rolling average, pursuant to 40 CFR 60.44b(a), on and after the date on which the initial performance test is completed or is required to be completed under 40 CFR 60.8, whichever date comes first.

- c. Pursuant to the NSPS, 40 CFR 60.11(d), at all times the Permittee shall, to the extent practicable, maintain and operate the affected boiler in a manner consistent with good air pollution control practice for minimizing emissions.

#### 2.3.3-2 Applicable State Emission Standards

The affected boiler is subject to the following state standards:

- a. The emission of smoke or other particulate matter shall not have an opacity greater than 20 percent, 6-minute average, except as allowed by 35 IAC 212.122(b) or 212.124. [35 IAC 212.109 and 212.122(a)]
- b. CO emissions shall not exceed 200 ppm, corrected to 50 percent excess air. [35 IAC 216.121]

#### 2.3.4 Non-Applicability Provisions

- a. The affected boiler is not subject to the Title IV (i.e., Acid Rain) provisions of the federal Clean Air Act since it does not qualify as a utility unit or an electrical generating unit for the purpose of the Acid Rain program.
- b. The affected boiler is not subject to the NSPS, 40 CFR 60 Subpart Da, because it does not meet the definition of an "electric utility steam generating unit" in 40 CFR 60.41Da.
- c. This permit is issued based on certain provisions of the NSPS, 40 CFR 60 Subpart Db, as follows, not being applicable to the affected boiler:
  - i. The limits of this NSPS for PM and opacity, because this boiler only burns natural gas.
  - ii. The SO<sub>2</sub> standards of this NSPS because this boiler only fires fuel with a potential SO<sub>2</sub> emission rate of 0.32 lb/mmBtu heat input or less. [40 CFR 60.42b(k)(2), 60.47b(f) and 60.49b(r)]
  - iii. The opacity monitoring requirements of this NSPS, 40 CFR 60.48b, because this boiler only burns gaseous fuels, without post-combustion technology to reduce SO<sub>2</sub> or PM emissions. [40 CFR 60.48b(j)(2)]
- d. The affected boiler is not subject to any requirements of the NSPS, 40 CFR 60 Subpart D, because it is subject to the NSPS, 40 CFR 60 Subpart Db. [40 CFR 60.40b(j)]
- e. The affected boiler is not subject to the NESHAP for Industrial, Commercial, and Institutional Boilers at Area Sources, 40 CFR 63 Subpart JJJJJJ, because the affected boiler meets the definition of a gas-fired unit. [40 CFR 63.11195(e)]

2.3.5 Operational Requirements, Work Practices and Production Limits

- a. The nominal rated heat input capacity of the affected boiler shall not exceed 864 mmBtu/hour.
- b. The only fuel fired in the affected boiler shall be natural gas.
- c. The steam from the affected boiler shall not be used to produce electricity for commercial sale to the grid.
- d. For purposes of Condition 1.6, which generally requires implementation of good air pollution control practice, if the affected boiler is equipped with an SCR system, the Permittee shall operate and maintain the affected boiler and associated SCR system in accordance with written procedures developed and maintained by the Permittee. These procedures may incorporate the manufacturer's recommendations for operation and maintenance of the SCR system.

2.3.6 Emission Limits

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

Pollutant	Limits	
	Pounds/Hour	Tons/Year
NOx	17.28	45.4
CO	31.1	75.7
PM	1.64	7.20
PM <sub>10</sub>	2.11	9.10
PM <sub>2.5</sub>	0.88	3.90
VOM	4.67	20.4
SO <sub>2</sub>	---	2.23
Individual HAP*	1.52	6.70
Total HAP	1.60	7.00
GHG	---	442,339

\* The individual HAP that is anticipated to be emitted in the greatest amount is n-hexane.

2.3.7 Emission Testing Requirements

- a. The Permittee shall conduct performance testing for the affected boiler for emissions of NOx as required under the NSPS, including 40 CFR 60.8 and 60.46b(e).
- b. The Permittee shall have emissions testing conducted for the affected boiler as follows, at its expense by a qualified testing service under representative operating conditions, for emissions of PM, filterable PM<sub>10</sub> and PM<sub>2.5</sub>, condensable PM, VOM, formaldehyde, hexane, methane and N<sub>2</sub>O provided, however, that if the Permittee considers all filterable PM<sub>10</sub> emissions to be emissions of filterable PM<sub>2.5</sub>, testing for emissions of

filterable PM<sub>2.5</sub> need not be performed unless specifically requested by the Illinois EPA.

- i. The timing of testing shall be as follows:
  - A. Testing shall initially be conducted within 60 days after achieving the maximum rate at which the boiler will be operated but not later than 365 days after initial startup of the boiler.
  - B. On a periodic basis thereafter, with testing conducted within at least five years from the date of the previous test.
  - C. In addition, the Permittee shall have testing performed as requested by the Illinois EPA for the affected boiler within 45 days of a written request by the Illinois EPA or such later date agreed to by the Illinois EPA.

- ii. Appropriate USEPA test methods, including the following methods, shall be used for testing, unless other methods adopted by or being developed by USEPA or other alternative test methods are approved by the Illinois EPA.

Filterable PM	Method 5 or 5I or 201A
Filterable PM <sub>10</sub> /PM <sub>2.5</sub>	Method 5I or 201A
Condensable PM	Method 202
VOM	Method 18 or 25A
N <sub>2</sub> O and methane	Method 320
Hexane	Method 320
HAPs	Method 320

- c. i. Test plans, test notifications, and test reports shall be submitted to the Illinois EPA in accordance with the Condition 3.1.
- ii. In addition to other information required in a test report, test reports shall include detailed information on the operating conditions of the affected boiler during testing, including:
  - A. Fuel consumption (scf);
  - B. Firing rate (mmBtu/hour) and other significant operating parameters of the affected boiler;
  - C. Opacity of the exhaust, 6-minute averages, as determined by USEPA Method 9, if visible emissions are normally present, as determined by Method 22.

#### 2.3.8-1 Emissions Monitoring Requirements

- a. Pursuant to 40 CFR 60.48b, for the affected boiler, the Permittee shall install, calibrate, operate and maintain a CEMS for NOx emissions discharged from the affected boiler and the concentration of CO<sub>2</sub> or O<sub>2</sub> in the exhaust.
  - i. The procedures under 40 CFR 60.13 shall be followed for installation, evaluation, and operation of these CEMS. This CEMS shall be operated during all periods of operation of the affected boiler except for CEMS breakdowns and repairs. This CEMS shall obtain emission data for at least 75 percent of the operating hours in at least 22 out of 30 successive units operating days as specified and pursuant to 40 CFR 60.48b(f). Data is to be obtained in the scheduling and course of performing calibration checks, and zero and span adjustments as specified in the NSPS.\*
    - \* Fulfillment of the above criteria for availability of emission data from the CEMS does not shield the Permittee from potential enforcement for failure to properly maintain and operate the CEMS.
  - ii. The 1-hour average NOx emission rates measured by the CEMS shall be expressed in lbs/mmBtu heat input and shall be used to calculate average emission rates pursuant to the NSPS. The 1-hour averages shall be calculated using the data points required under 40 CFR 60.13(h)(2), except as allowed under 60.48b(b)(2).
  - iii. This CEMS shall also be used to determine compliance with the NOx limits in Conditions 2.3.3-1(b), 2.3.2(b) and 2.3.6(a).
- b. The Permittee shall install, calibrate, operate and maintain CEMS for measuring CO emissions from the affected boiler.
  - i. The relevant monitoring procedures in 40 CFR 60.48b(j)(4) shall be followed for these CEMS until and unless USEPA adopts procedures that would be directly applicable for continuous monitoring of CO emissions from the boiler.
  - ii. This CEMS shall be used to determine compliance with the CO limitations in Conditions in 2.3.2(b), 2.3.3-2(b) and 2.3.6(a).

#### 2.3.8-2 Operational Monitoring and Instrumentation Requirements

- a. The Permittee shall install, calibrate, operate and maintain continuous operational monitoring systems for the affected boiler for fuel usage, scf/hour.
- b. i. If the boiler is equipped with an SCR system, the Permittee shall equip, operate, and maintain

instrumentation on the SCR system for the affected reformer for the SCR reagent injection rate, flue gas temperature at the inlet of the SCR catalyst and other operating parameters of the SCR system that are relevant to effective control of emissions.

- ii. The Permittee shall maintain the records of the data from this instrumentation at least once per shift.

#### 2.3.8-3 Opacity Observations

- a. The Permittee shall perform opacity observations for the affected boiler in accordance with Method 9 on at least an annual basis if visible emissions are normally present, as determined by Method 22.

#### 2.3.9 Recordkeeping Requirements

- a. The Permittee shall maintain a file or other record containing the following information for the affected boiler:
  - i. The maximum design heat input capacity of the affected boiler, mmBtu/hour, with supporting documentation.
  - ii. The Permittee's established operating and maintenance procedures for the affected boiler.
- b. An operating log or other records for the affected boiler that, at a minimum, shall include the information specified in Condition 3.2 and the following information:
  - i. Information for each startup and shutdown, including date, time and duration, as required by 40 CFR 60.7(b).
  - ii. Information for any incident in which the operation of the affected boiler continued during malfunction or breakdown, including: date, time, and duration; a description of the incident; whether emissions exceeded or may have exceeded any applicable standard; a description of the corrective actions taken to reduce emissions and the duration of the incident; and a description of the preventative actions taken, as addressed by 40 CFR 60.7(b).
- c. The Permittee shall maintain the following operating records for the affected boiler:
  - i. Daily records of fuel use, which records shall be prepared and maintained following the procedures of 40 CFR 60.49b(d);
  - ii. Amount of fuel consumed, (scf/month and scf/year) and the annual capacity factor, determined on a 12-month rolling basis with a new annual capacity factor calculated for each month pursuant to 40 CFR 60.49b(d);

- iii. For the affected boiler, pursuant to 40 CFR 60.49b(r), the fuel receipts from the fuel supplier that certify that the gaseous fuel meets the definition of natural gas as defined in 40 CFR 60.41b and the applicable sulfur limit.
- d. The Permittee shall maintain records of the following information for the NO<sub>x</sub> emissions of the affected boiler for each operating day, pursuant to 40 CFR 60.49b(g) unless alternative recordkeeping requirements are approved for the boiler in conjunction with USEPA approval of alternative monitoring procedures under the NSPS:
  - i. Calendar date.
  - ii. The measured average hourly emission rates (expressed in lbs/mmBtu heat input).
  - iii. The 30-day average emission rate (lbs/mmBtu heat input and lbs/hour) calculated at the end of each operating day from the measured hourly emission rates for the preceding 30 unit operating days.
  - iv. Identification of the operating days when the calculated 30-day average emission rates are in excess of an applicable standard or limit, with the reasons for such excess emissions as well as a description of corrective actions taken.
  - v. Identification of the operating days for which emission data have not been obtained, including a description of corrective actions taken.
  - vi. Identification of the times when emission data have been excluded from the calculation of average emission rates and the reasons for excluding data.
  - vii. Identification of "F" factor used for calculations, method of determination, and type of fuel combusted.
  - viii. Identification of the times when the pollutant concentration exceeded the full span of the CEMS.
  - ix. Description of any modifications to the CEMS that could affect the ability of the CEMS to comply with Performance Specification 2 or 3.
  - x. Results of daily CEMS drift tests and quarterly accuracy assessments as required by 40 CFR Part 60 Appendix F, Procedure 1.
- e. The Permittee shall keep the following records for the CO emissions of the affected boiler:

- i. All measurements needed to demonstrate compliance with the applicable standards and limits for CO including, but not limited to, 15-minute averages of CEMS data and raw performance evaluation measurements that support data that the Permittee is required to report.
  - ii. Records of CO emissions as compared to applicable limits and standards and the date, start time and duration of any deviation from an applicable standard or limitation, and whether the deviation occurred during startup, shutdown or malfunction.
  - iii. Each period during which the CEMS is malfunctioning or inoperative.
  - iv. All results of CEMS performance evaluations.
  - v. All CEMS calibration checks and all adjustments and maintenance performed on the CEMS.
  - vi. All measurements as may be necessary to determine the conditions of performance tests and performance evaluations.
- f. The Permittee shall keep inspection, maintenance and repair logs or other similar records for the affected boiler that contain the information specified in Condition 3.2(b).
  - g. The Permittee shall keep the following records related to the emissions of NO<sub>x</sub>, CO, VOM, SO<sub>2</sub>, PM, PM<sub>10</sub>/PM<sub>2.5</sub>, GHG, hexane, other individual HAP and total HAPs from the affected boiler:
    - i. If continuous monitoring is performed for a pollutant, the emissions of the pollutant from the affected boiler based on continuous emissions monitoring data, in tons/month and tons/year.
    - ii. If continuous monitoring is not performed for a pollutant:
      - A. A file containing the emission factors that are used to calculate emissions, with supporting documentation; and
      - B. The emissions of the affected boiler based on operating data and applicable emission factors, in tons/month and tons/year, with supporting calculations.

#### 2.3.10 Notification and Reporting Requirements

- a. The Permittee shall fulfill applicable notification and reporting requirements of the NSPS, 40 CFR 60.7 and 60.49b, for the affected boiler by sending required notifications and reports to the Illinois EPA, including the following reports:

- i. Reports containing the information recorded under 40 CFR 60.49b(g) and (j).
  - ii. Periodic reports for excess emissions, as further addressed by Condition 2.3.10(c).
  - iii. With the periodic compliance reports, reports certifying that only natural gas that is known to contain insignificant amounts of sulfur were combusted in the affected boiler during the reporting period, pursuant to 40 CFR 60.49b(r).
- b. The Permittee shall promptly notify the Illinois EPA of any deviations from the requirements of this permit for the affected boiler as follows. These notifications shall include the information specified by Condition 3.4.
- i. Deviations from the NO<sub>x</sub> limits in Conditions 2.3.2(b), 2.3.3-1(b) and 2.3.6(a) shall be reported with the periodic compliance reports required by the NSPS.
  - ii. Deviations from the CO limits in Conditions 2.3.2(b), 2.3.3-2(b) and 2.3.6(a) shall also be reported with the periodic compliance reports required by the NSPS.
  - iii. Other deviations shall be reported within 30 days and include a description of the incident, a discussion of the probable cause of such deviation, a description of the corrective actions taken, and a description of the preventative measures taken.
- c. The Permittee shall submit periodic compliance reports to the Illinois EPA for the affected boiler, which reports shall include the following information related to excess emissions and deviations. These reports shall be submitted on a semi-annual basis, with each report submitted no later than 30 days following the end of the reporting period:
- i. As related to the NSPS standard for NO<sub>x</sub> (Condition 2.3.3-1(b)) or the NO<sub>x</sub> limits in Conditions 2.3.2(b) and 2.3.6(a), the information required for reporting of exceedances under 40 CFR 60.7(c) or (d) and 60.49b(h) and (j). If there are no such exceedances during the reporting period, the report shall state that no exceedances occurred during the reporting period.
  - ii. Information for other deviations during the reporting period, if any, which shall include the information specified by Condition 3.4.
  - iii. When no excess emissions or deviations have occurred or the CEMS have not been inoperative, repaired, or adjusted, such information shall be stated in the report.

- d. If the Permittee proposes to use an add-on control technology other than SCR for the affected boiler, at least 30 days before commencing construction of the affected boiler, the Permittee shall submit a copy of a performance guarantee from the manufacturer of the boiler that shows the combination of low-NOx burners and the proposed equivalent add-on control technology will comply with the NOx emission limit in Condition 2.3.2(b), i.e., 0.0120 lb/mmBtu, 30-day average, rolled daily.

## SECTION 2.4: UNIT-SPECIFIC CONDITIONS FOR THE STARTUP HEATER

### 2.4.1 Description

The startup heater (the "affected unit") is a natural gas-fired process heater for the ammonia plant. This heater is used during startup of the ammonia plant to heat a process stream (i.e., a recycle stream going to the catalyst beds in the ammonia converter) until the temperature is high enough that this reaction is self-sustaining.

### 2.4.2 Control Technology Determination - BACT

- a.
  - i. The affected unit shall be operated and maintained in accordance with the manufacturer's design, which shall include low-NOx burners.
  - ii. The affected unit shall be operated and maintained in accordance with good combustion practices.
- b.
  - i. The design emission rates of the affected unit shall not exceed 0.08, 0.037, 0.0054, 0.0019 and 0.0075 lb/mmBtu for NOx, CO, VOM, PM and PM<sub>10</sub>/PM<sub>2.5</sub>, respectively.
  - ii. The annual emissions of GHG from the affected unit shall not exceed the limit in Condition 2.4.6.

### 2.4.3 Applicable Emission Standards

The affected unit is subject to the following state standards:

- a. The emission of smoke or other particulate matter shall not have an opacity greater than 30 percent, 6-minute average, except as allowed by 35 IAC 212.123(b) or 212.124. [35 IAC 212.109 and 212.122(a)]
- b. CO emissions shall not exceed 200 ppm, corrected to 50 percent excess air. [35 IAC 216.121]

### 2.4.4 Non-Applicability Provisions

- a. The affected unit is not subject to the NSPS for Industrial-Commercial-Institutional Steam Generating Units, 40 CFR 60 Subpart Db, because the affected unit is a process heater.
- b. The affected unit is not subject to the NESHAP, 40 CFR 63 Subpart JJJJJJ, Industrial, Commercial, and Institutional Boilers at Area Sources because the affected unit is a process heater, as defined by 40 CFR 63.11237.

### 2.4.5 Operational Production Limits and Work Practices

- a. The rated heat input capacity of the affected unit shall not exceed 104 mmBtu/hour.

- b. The only fuel fired in the affected unit shall be natural gas.
- c. After the completion of commissioning of the ammonia plant or one year after the initial startup of the ammonia plant, whichever occurs first, the fuel usage of the affected unit shall not exceed 14.61 million scf per year.

2.4.6 Emission Limits

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

Pollutant	Hourly Limits (Pounds/Hour)	Annual Limits (Tons/Year)
NOx	18.6	0.60
CO	3.80	0.27
PM	0.20	0.02
PM <sub>10</sub> /PM <sub>2.5</sub>	0.80	0.06
VOM	0.60	0.04
SO <sub>2</sub>	---	0.01
Total HAPs	---	0.01
GHG	---	871

- b. Notwithstanding the above, until the commissioning of the ammonia plant is complete or one year after initial startup of the ammonia plant, whichever occurs first, the above limits for annual emissions of the Startup Heater shall apply on a bi-monthly basis rather than on an annual basis.

2.4.7 Recordkeeping Requirements

- a. For the affected unit, the Permittee shall maintain a file containing information for the heat input capacity and design emission rates, with supporting documentation as provided by manufacturer of the burner.
- b. The Permittee shall maintain records of the fuel usage of the affected unit (scf/month and scf/year).
- c. The Permittee shall maintain an operating log or other similar records for the affected unit that include the information specified in Condition 3.2(a).
- d. The Permittee shall keep inspection, maintenance and repair logs or other similar records for the affected unit that contain the information specified in Condition 3.2(b).
- e. The Permittee shall keep records for any deviations from applicable requirements involving the affected unit, which records shall include the information specified by Condition 3.3. These records may be combined with other records required for the affected unit.
- f. The Permittee shall maintain records of the emissions of NOx, CO, PM, PM<sub>10</sub>/PM<sub>2.5</sub>, VOM, SO<sub>2</sub>, GHG and total HAPs from the

affected unit (tons/month and tons/year), with supporting documentation and calculations.

2.4.8 Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations of the affected unit with the permit requirements with the periodic compliance reports required by Condition 2.1.10(b). These notifications shall include the information specified in Condition 3.4.

## SECTION 2.5: UNIT-SPECIFIC CONDITIONS FOR THE AMMONIA STORAGE FLARE

### 2.5.1 Description

The ammonia storage flare (the "affected flare") combusts ammonia at times when the amount of ammonia in the refrigerated pressure tanks in which it is stored must be lowered. This is necessary in certain circumstances to keep the pressure in the tanks within safe levels. The ammonia that is released is ducted to the ammonia storage flare, where it is combusted, resulting in emissions of NO<sub>x</sub>. The events that commonly lead to increased pressure in the tanks, with the need to flare ammonia, include loss of electrical power or mechanical failures of the refrigeration system for the storage tanks and sudden drops in atmospheric pressure.

### 2.5.2 Control Technology Determination - BACT

- a. i. As the operation of the ammonia storage plant affects the occurrence of flaring and emissions from flaring, the ammonia storage plant, including the affected flare, shall be operated and maintained in conformance with its physical and process design.
- ii. The operating practices for the ammonia storage plant shall include implementation of practices to minimize flaring, as further addressed in Condition 2.5.4(c)
- b. The design emission rates of the pilot burner in the affected flare shall not exceed 0.07 and 0.37 lb/mmBtu for NO<sub>x</sub> and CO, respectively.
- c. The emissions of NO<sub>x</sub>, CO, PM, PM<sub>10</sub>/PM<sub>2.5</sub>, VOM and GHG of the affected flare shall not exceed the limits in Condition 2.5.5(a).

### 2.5.3 Applicable State Emission Standards

- a. The emission of smoke or other particulate matter from the affected flare shall not have an opacity greater than 30 percent, 6 minute average, except as allowed by 35 IAC 212.122(b) or 212.124. [35 IAC 212.109 and 212.122(a)]

### 2.5.4 Operational Work Practices

- a. Ammonia releases from the primary pressure relief valves on the ammonia storage tanks shall be ducted through a closed vent system to the affected flare.
- b. The flare shall be operated with a flame present when ammonia is being vented to it.
- c. i. The work practices to minimize flaring conducted by the Permittee for the affected flare pursuant to Condition 2.5.2(a) shall include the preparation and maintenance of

a Flare Minimization Plan (Plan) for the ammonia plant that includes the following:

- A. A general description of the Permittee's written procedures for the storage of ammonia.
  - B. A general description of the Permittee's procedures for preventative maintenance of equipment for ammonia storage, including the provisions in these procedures that should act to minimize flaring.
  - C. A description of the established responsibilities of different personnel at the facility for the operation and maintenance of ammonia storage equipment.
- ii. After the shakedown of the ammonia plant is complete, the Plan shall also include a description of additional procedures or other measures that are installed or implemented to reduce flaring from the affected flare.
- iii. A. The Permittee shall review the Plan on at least an annual basis and revise the Plan so that it is kept current and reflects any changes in the operation of the ammonia plant.
- B. The Permittee shall submit a copy of the Plan to the Illinois EPA for review and comments upon written request.
- C. This Plan is a record required by this permit, which the Permittee must retain and make available to the Illinois EPA and USEPA in accordance with the general requirements for retention and availability of records. In addition, when the Permittee revises the Plan, the Permittee must also retain and make available the previous version of the Plan for a period of at least 5 years after such revision.
- d. After the shakedown of the ammonia plant is complete, the Permittee shall also conduct an event-specific investigation or "Root-Cause Analysis" into each "Flaring Incident" associated with ammonia storage to determine the causes of the incident, to take reasonable steps to correct the conditions that caused or contributed to such incident, and to further minimize emissions from flaring, consistent with the requirements of Condition 2.1.5-3(d). For this purpose, a "Flaring Incident" is defined as a flaring event that results in flaring of more than 500 pounds of ammonia.
- e. The Permittee shall operate and maintain the affected flare in accordance with written procedures developed and maintained by the Permittee. These procedures may incorporate procedures provided by the supplier of equipment.

2.5.5 Emission Limits

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

Pollutant	Limit (tons/year)
NOx	12.8
CO	1.52
VOM	0.21
PM	0.10
PM <sub>10</sub> /PM <sub>2.5</sub>	0.25
SO <sub>2</sub>	0.02
GHG	479

2.5.6 Operational Monitoring and Instrumentation Requirements

- a. The Permittee shall install, calibrate, maintain, and operate a continuous monitoring system to measure the flow of ammonia to the affected flare (scfm).
- b. The Permittee shall install, maintain, and operate instrumentation on the affected flare for:
- i. The presence of a pilot flame, as identified by a thermocouple, ultra-violet beam sensor, infrared sensor or other device capable of continuously detecting a flame.
  - ii. The usage of fuel by the pilot burner (scf).

2.5.7 Recordkeeping Requirements

- a. The Permittee shall maintain a file or other record for the affected flare containing the design destruction efficiency of the flare for ammonia and the design emission rates of the pilot burner for NOx and CO, with supporting documentation.
- b. The Permittee shall keep an inspection, maintenance and repair log for the affected flare, which lists activities that are performed, with date and responsible individual(s).
- c. The Permittee shall keep a log or other records that includes information that confirms that the affected flare functions properly, i.e., a flame was present.
- d. The Permittee shall keep the following records related to emissions of NOx, CO, PM, PM<sub>10</sub>/PM<sub>2.5</sub>, VOM, SO<sub>2</sub> and GHG from the affected flare:
- i. A file containing the factors used by the Permittee to determine emissions of the affected flare (lbs/hour), with supporting documentation, including:

- A. The emissions of each pollutant from combustion of fuel (lbs/million scf).
  - B. The emissions of NOx and GHG from flaring of ammonia (lbs/lb ammonia flared).
- ii. Records of the emissions of each pollutant (tons/month and tons/year), with supporting calculations.

2.5.8 Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations of the affected flare with the permit requirements with the periodic compliance reports required by Condition 2.1.10(b). These notifications shall include the information specified in Condition 3.4.

## SECTION 2.6: UNIT-SPECIFIC CONDITIONS FOR THE UREA PLANT

### 2.6.1 Description

In the urea plant, a water urea solution is produced from the reaction of liquid ammonia and gaseous CO<sub>2</sub> under pressure in a closed process. The ammonia plant supplies both the ammonia and CO<sub>2</sub> for the process. As the amount of CO<sub>2</sub> is slightly greater than the amount that is needed to make urea, the excess CO<sub>2</sub> is vented from a pressure control CO<sub>2</sub> vent that is located at the urea plant.

A portion of the urea solution initially produced in the urea plant may be used for making diesel exhaust fluid by adding more water. This fluid would be stored in tanks pending shipment from the facility.

The urea solution that is not made into diesel exhaust fluid is further processed in the urea plant to make solid urea. First, water is removed from the urea solution in evaporators to produce a concentrated urea solution. The concentrated solution is then processed in a drier or granulator. The hot solution provides the heat for the drying process. A small amount of an anti-caking additive, a urea-formaldehyde resin solution, is added to the urea solution fed to the granulator. This additive reacts with the urea granules to reduce caking and dust formation during subsequent handling of the granular urea product, both at the facility and by customers. The granulator emits particulate and formaldehyde, which are controlled by a two-stage control system consisting of an acid scrubber (first-stage scrubber) followed by a venturi scrubber (second-stage scrubber). The acid scrubber also serves to control traces of ammonia in the exhaust. The flows of spent scrubbant are recycled back into the urea solution to recover the urea and ammonia.

The hot urea from the granulator is processed in a screen and a final cooler. The particulate emissions of these units are also controlled by the two-stage scrubber system for the granulator.

The particulate emissions from the evaporators are also controlled by the first-stage scrubber on the granulator. As such, the emissions of all the emission units in the urea plant that are involved in the production of solid urea, including the evaporators, the granulator, the coolers and associated material transfer systems all occur through a single stack, the stack on the second-stage scrubber.

For purposes of these unit-specific conditions, the "affected urea units" are the emission units in the urea plant involved in the production of granular urea. The handling, storage and loadout of finished urea are addressed in Section 2.9 of this permit. The pressure control CO<sub>2</sub> vent at the urea plant is addressed with the CO<sub>2</sub> vents at the ammonia plant in Section 2.1 of this permit.

#### 2.6.2 Control Technology Determination - BACT

- a. The emissions of the affected urea units shall be controlled by a high-efficiency scrubber whose PM emissions shall not exceed 0.005 grains per dry standard cubic foot (gr/dscf).
- b. The emissions of the affected urea units, in total, shall not exceed the following limits:
  - i. PM and PM<sub>10</sub>/PM<sub>2.5</sub>: 0.140 and 0.121 lbs/ton of urea, respectively, 3-hour average.
  - ii. VOM: 0.36 lbs/hour, 3-hour average.

Note: The BACT limit for GHG in Condition 2.1.2-3 addresses the GHG emissions of the CO<sub>2</sub> vent located at the Urea Plant.

#### 2.6.3 Applicable Emission Standards

- a. The emission of smoke or other PM from the affected urea units shall not have an opacity greater than 30 percent, 6 minute average, except as allowed by 35 IAC 212.124. [35 IAC 212.109 and 212.123(a)]
- b. The PM emissions from the affected urea units shall comply with the applicable limit pursuant to 35 IAC 212.321, which rule limits emissions based on the process weight rate of the units.

Note: There are no federal emission standards under 40 CFR Parts 60 or 63 that apply to the affected urea plant.

#### 2.6.4 Operational Requirements

- a. The Permittee shall operate and maintain the scrubbers associated with the affected urea units in accordance with written procedures developed and maintained by the Permittee.
- b.
  - i. The key operating parameters of the second-stage scrubber, as specified below, shall be maintained at levels that are consistent with levels at which emission testing demonstrated compliance with applicable requirements, on a 3-hour average basis, rolled hourly:
    - A. Minimum scrubbant flow rate.
    - B. Minimum differential pressure across the scrubber.
  - ii. Notwithstanding the above, for the purpose of evaluation of this scrubber and further emission testing, the Permittee may operate this scrubber at different operating parameters in accordance with a detailed plan describing the evaluation and testing program submitted to and approved by the Illinois EPA.

2.6.5 Emission Limits

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

Pollutant	Limits	
	Pounds/hour	Tons/year
PM	28.5	124.7
PM <sub>10</sub> /PM <sub>2.5</sub>	24.7	108.1
VOM	0.36	1.60
Total HAPs	---	1.60

2.6.6-1 Testing Requirements

- a. The Permittee shall have the emissions of PM, filterable PM<sub>10</sub> and PM<sub>2.5</sub>, condensable PM, VOM and formaldehyde of the affected urea units (i.e., the second-stage scrubber) conducted by a qualified testing service as follows:

- i. Within 60 days after achieving the maximum production rate at which the affected urea units will be operated, but not later than 180 days after initial startup of these units.
- ii. Within 12 months and 18 months after the initial testing required above.
- iii. Within 90 days of a written request from the Illinois EPA, for such pollutants as specified in the request.

- b. i. Testing for particulate shall be conducted using appropriate USEPA Test Methods, for measurement of PM, filterable PM<sub>10</sub> and PM<sub>2.5</sub>, and condensable PM, provided, however, that if the moisture level in the stack makes measurements of filterable PM<sub>10</sub> and PM<sub>2.5</sub> infeasible or if the Permittee considers all PM emissions to be emissions of filterable PM<sub>10</sub> and PM<sub>2.5</sub>, testing for emissions of filterable PM<sub>10</sub> and PM<sub>2.5</sub> need not be performed. In such case, compliance with the PM limit shall be determined based on the emissions of filterable particulate and compliance with the PM<sub>10</sub>/PM<sub>2.5</sub> limit shall be determined based on the total of filterable and condensable particulate.
- ii. The following methods shall be used for testing VOM and formaldehyde unless other methods adopted by or being developed by USEPA or other alternative test methods are approved by the Illinois EPA.

VOM	Method 25A
Formaldehyde	Method 320

- c. Test plan(s) and test notifications shall be submitted to the Illinois EPA in accordance with Conditions 3.1(a) and (b).

- d. The Permittee shall expeditiously submit Final Report(s) for required emission testing to the Illinois EPA, no later than 60 days after the date of testing. These reports shall include the information specified in Condition 3.1(c) and the following information:
  - i. The data measured by the continuous monitoring systems and instrumentation required by Condition 2.6.7 during each test run and the levels of operating parameters within which the Permittee plans to operate pursuant to Condition 2.6.4(b), with explanation.
  - ii. Representative opacity data (6-minute average) during testing as determined by USEPA Method 9.

#### 2.6.6-2 Opacity Observations

- a. Within 45 days of a written request by the Illinois EPA or such later date agreed to by the Illinois EPA, the Permittee shall have opacity observations conducted for the affected urea units by Method 9 while units are operating at conditions that are representative of maximum emissions, as follows:
  - i. The duration of opacity observations for each test shall be at least 60 minutes (ten 6-minute averages) unless the average opacities for the first 18 minutes of observations (three six-minute averages) are all less than 5 percent.
  - ii. A. The Permittee shall notify the Illinois EPA at least 7 days in advance of the date and time of these observations, in order to allow the Illinois EPA to witness observations. This notification shall include the name and employer of the qualified observer(s).  
B. The Permittee shall promptly notify the Illinois EPA of any changes in the time or date for observations.
  - iii. The Permittee shall provide a copy of its observer's readings to the Illinois EPA at the time of observations, if Illinois EPA personnel are present.
  - iv. The Permittee shall submit a written report for these observations within 15 days of the date of observations. This report shall include:
    - A. Date and time of observations.
    - B. Name and employer of qualified observer and a copy of the current Method 9 certification.
    - C. Description of the operating conditions of the affected units.

- D. Raw data.
- E. Opacity determinations.
- F. Conclusion.

#### 2.6.7 Operational Monitoring and Instrumentation

- a.
  - i. The Permittee shall operate a continuous monitoring system on the granulator for the rate of urea solution into the unit (volume or weight).
  - ii. The Permittee shall operate continuous monitoring systems on all scrubbers for the affected urea units for the following operating parameters.
    - A. Pressure drop across the scrubber.
    - B. Scrubbant flow rate.
    - C. Scrubbant recirculation rate, if scrubbant is recirculated.
    - D. Acid content or pH of scrubbant (first-stage scrubber only).
  - iii. Data measured by these monitoring systems shall be recorded on an hourly average basis and on a 3-hour average basis, rolled hourly.
- b. The Permittee shall operate instrumentation for the rates at which urea solution and the anti-caking additive are fed to the granulator.

#### 2.6.8 Inspection Requirements

- a. The Permittee shall perform detailed inspections of the scrubbers for the affected urea units while the units are out of service, with an initial inspection performed before any maintenance and repair activities are conducted during the period the units are out of service and a follow-up inspection performed after any such activities are completed. These inspections shall be conducted at least every 18 months.
- b. The Permittee shall keep records for these inspections, which may be combined with the records required by Condition 2.6.9(c).

#### 2.6.9 Recordkeeping Requirements

- a. The Permittee shall maintain a file or other records for the affected urea units that contain the following information, with supporting material, which records shall be kept current:

- i. The maximum production capacity of the affected units (tons urea/hour).
  - ii. The standard emission factors used by the Permittee to determine emissions of the affected units, with supporting documentation.
  - iii. The maximum hourly rates of emissions of PM, PM<sub>10</sub>/PM<sub>2.5</sub>, VOM and formaldehyde of the affected units (pounds/hour).
  - iv. The maximum process weight rate of the affected units, with supporting analysis, and a demonstration that the maximum hourly PM emissions of the affected units will comply with the limit set by 35 IAC 212.321.
- b. The Permittee shall maintain records for the amount of urea produced by the affected urea units (tons/month and tons/year).
- c. The Permittee shall keep inspection and maintenance log(s) or other records for the affected units and associated scrubbers that, at a minimum, include:
- i. Type of activity.
  - ii. Date and time and name(s) of personnel involved.
  - iii. For inspections, a description of the observed condition of equipment.
  - iv. For maintenance or repair, a description of the actions taken, with reason, e.g., routine maintenance or replacement of failed components.
- d. The Permittee shall maintain records of the following for each incident when any affected unit operated without the control as required by Condition 2.6.4(b) (i):
- i. The date of the incident and identification of the unit(s) that were involved.
  - ii. A description of the incident, including: the established control measures that were not present or implemented; the established control measures that were present, if any; and other control measures or mitigation measures that were implemented, if any.
  - iii. The time at and means by which the incident was identified, e.g., scheduled inspection or observation by operating personnel.
  - iv. Operational data for the incident.
  - v. The corrective action(s) taken and the length of time after the incident was identified that the unit(s) continued to operate before established control measures

were in place or the operations were shutdown (to resume operation only after established control measures were in place) and, if this time was more than one hour, an explanation why this time was not shorter, including a detailed description of any mitigation measures that were implemented during the incident.

- vi. The estimated total duration of the incident, i.e., the total length of time that the unit(s) ran without established control measures and the estimated amount of material processed during the incident.
  - vii. A discussion of the probable cause of the incident and any preventative measures taken.
  - viii. An estimate of any additional emissions of particulate, VOM, formaldehyde, methanol and any other HAPs (pounds) above the emissions associated with normal operation that resulted from the incident, if any, with supporting calculations.
- e. The Permittee shall maintain records for the emissions of PM, PM<sub>10</sub>/PM<sub>2.5</sub>, VOM, formaldehyde, methanol and any other HAPs of the affected urea units (tons/month and tons/year), with supporting documentation and calculations.

#### 2.6.10 Reporting Requirements

- a. The Permittee shall promptly notify the Illinois EPA of deviations of the affected units from applicable requirements, as follows. These notifications shall also include the information specified by Condition 3.4.
  - i. Notification within 30 days for deviations from the operational requirements in Condition 2.6.4(b)(i) that continue for more than 24 hours.
  - ii. Notification for other deviations with the quarterly reports required by Condition 2.1.10(b).

## SECTION 2.7: UNIT-SPECIFIC CONDITIONS FOR THE COOLING TOWER

### 2.7.1 Description

A multi-cell cooling tower will supply the cooling water needed by various units in the urea and ammonia plants. The cooling tower (the affected unit) emits particulate from mineral material present in the water supply. This material is emitted with water droplets that escape from the cooling tower or completely evaporate. These particulate emissions are controlled by drift eliminators, which collect water droplets entrained in the air in the tower.

### 2.7.2 Control Technology Determination - BACT

- a. The affected unit shall be equipped, operated, and maintained with drift eliminators designed to limit the loss of water droplets from the unit to no more than 0.0005 percent of the circulating water flow.
- b. The Total Dissolved Solids content of the water used in the affected unit shall not exceed 2000 mg/l, daily average.
- c. The particulate emissions of the affected unit shall not exceed the limits in Condition 2.7.6.

### 2.7.3 Applicable Emission Standards

- a. The emission of particulate matter from the affected unit shall not have opacity greater than 30 percent, 6-minute average. [35 IAC 212.109 and 212.123(a)]
- b. The affected unit shall comply with 35 IAC 212.301 and 212.314, which provide that emissions of fugitive PM shall not be visible from any process, including any material handling or storage activity, when looking generally toward the zenith at a point beyond the property line of the source, except when the wind speed exceeds 25 miles per hour.
- c. The PM emissions from the affected unit shall comply with the applicable limit pursuant to 35 IAC 212.321.

### 2.7.4 Non-Applicability Provisions

This permit is issued based on the affected unit not being subject to the NESHAP for Industrial Process Cooling Towers (40 CFR 63, Subpart Q) because chromium-based water treatment chemicals will not be used.

### 2.7.5 Operating Requirements

- a. Chromium-based water treatment chemicals, as defined in 40 CFR 63.401, shall not be used in the affected unit.
- b. i. Only non-VOM additives shall be used in the affected unit.

- ii. Plant process wastewater shall not be introduced into cooling water, other than through unintentional leaks, which shall promptly be repaired.
- c. The Permittee shall operate and maintain the affected unit, including the drift eliminators, in accordance with written procedures. These procedures shall address the practices that will be followed as good air pollution control practice and the actions that will be implemented if needed to prevent a significant contribution to icing and fogging on offsite roadways.

#### 2.7.6 Emission Limits

- a. The emissions of the affected unit for PM and PM<sub>10</sub>/PM<sub>2.5</sub>, respectively, shall not exceed the following limits. Compliance with these limits shall be determined from relevant operating data for the cooling tower and the efficiency of the drift eliminators, using engineering calculations for emissions.
  - i. 1.0 and 0.6 pounds/hour, 24-hour average basis.
  - ii. 4.42 and 2.47 tons/year.

#### 2.7.7 Operational Measurements

- a. Within one year after initial startup of the ammonia plant, the Permittee shall test the drift loss (percent) from the affected unit in accordance with the Cooling Technology Institute's Acceptance Test Code No. 140. This test shall be performed by a licensed performance testing service.

#### 2.7.8 Sampling and Analysis of Cooling Water

- a. The Permittee shall sample and analyze the water being circulated in the affected unit on at least a monthly basis for the total dissolved solids content. Measurements of the total dissolved solids content in the wastewater discharge associated with the affected unit, as required by a National Pollution Discharge Elimination System permit, may be used to satisfy this requirement if the effluent has not been diluted or otherwise treated in a manner that would significantly reduce its total dissolved solids content.
- b. Upon written request by the Illinois EPA, the Permittee shall promptly have the water circulating in the affected unit sampled and analyzed for the presence of hexavalent chromium in accordance with the procedures of 40 CFR 63.404(a) and (b).
- c. The Permittee shall keep records for this sampling and analysis activity, including documentation for sampling and analysis as well as the resulting data that is collected.

### 2.7.9 Recordkeeping Requirements

- a. The Permittee shall keep a file that contains the following information for the affected unit:
  - i. The design loss specification for the drift eliminators installed in the affected unit.
  - ii. The supplier's recommended procedures for inspection and maintenance of the drift eliminators.
  - iii. The operating factors, if any, used to determine the amount of water circulated in the unit or the PM, PM<sub>10</sub>, PM<sub>2.5</sub> from the unit, with supporting documentation.
  - iv. Copies of the Material Safety Data Sheets or other comparable information from the suppliers of the various water treatment chemicals that are added to the water circulated in the unit.
  - v. Calculations for the maximum PM, PM<sub>10</sub> and PM<sub>2.5</sub> emissions from the affected unit (pounds/hour on a 24-hour average basis for PM, PM<sub>10</sub> and PM<sub>2.5</sub>), based on the maximum operating rate of the affected unit and other factors that result in greatest emissions.
- b. The Permittee shall keep the records for the amount of water circulated in the affected unit, gallons/month. As an alternative to direct data for water flow, these records may contain other relevant operating data for the affected unit (e.g., water flow to the affected unit) from which the amount of water circulated in the affected unit may be reasonably determined.
- c. The Permittee shall maintain an operating log or other similar records for the affected unit that include the information specified in Condition 3.2(a).
- d. The Permittee shall keep inspection and maintenance logs for the affected unit, including the drift eliminators installed in the affected unit, which shall include the information specified in Condition 3.2(b).
- e. The Permittee shall maintain records for the PM, PM<sub>10</sub> and PM<sub>2.5</sub> emissions of the affected unit based on the above records, the measurements required by Conditions 2.7.7 and 2.7.8, and appropriate USEPA emission estimation methodology and emission factors, with supporting calculations.

### 2.7.10 Reporting Requirements

- a. The Permittee shall promptly notify the Illinois EPA of deviations of the affected unit with permit requirements. These notifications shall include the information specified by Condition 3.4.

- i. If the affected unit is damaged so there is a deviation from an applicable requirement that is not repaired or otherwise corrected within 24 hours, the Permittee shall notify the Illinois EPA as soon as possible during normal working hours, but no later than three days after the event occurred.
  - ii. All other deviations shall be reported with the periodic compliance reports required by Condition 2.7.10(b).
- b. The Permittee shall submit periodic compliance reports to the Illinois EPA for the affected units, which reports shall include information for deviations during the reporting period, if any. These reports shall be submitted with the periodic reports required by Condition 2.1.10(b).

## SECTION 2.8: UNIT-SPECIFIC CONDITIONS FOR EQUIPMENT COMPONENTS

### 2.8.1 Description

Certain equipment, piping and ductwork at the facility have components, including valves, flanges and other connectors, pump seals, compressor seals, and pressure relief valves, that handle fluid streams containing VOM and/or methane and have the potential to emit VOM or methane when they leak. Three streams are present at this facility that contain or potentially contain VOM and/or methane: 1) Natural gas streams, either as natural gas is being used as fuel or is handled as the feedstock for steam reforming; 2) The off-gases from the ammonia plant that are ducted to the reformer for use as fuel, and 3) The process vent gases from the ammonia plant that are flared. Two other streams are present that contain or potentially contain only VOM: 1) The CO<sub>2</sub> absorption solvent used in the ammonia plant, and 2) The urea-formaldehyde resin solution used in the urea plant. As appropriate, the emissions of VOM and methane from these components are addressed through timely identification and repair of any leaks that occur or, in the case of the pumps and valves handling urea-formaldehyde resin solution, by use of "leakless components".

The piping that transports CO<sub>2</sub> from the regenerator to the urea plant also has components that have the potential to emit CO<sub>2</sub> when they leak. The emissions of CO<sub>2</sub> from these components are also addressed by provisions for timely identification and repair of any leaks that occur.

For purposes of these unit-specific conditions, the "affected components" are all components that contain fluids containing VOM and/or methane. The "affected natural gas components" are the components that handle natural gas. The "affected off-gas components" are the components that handle off-gases from the ammonia plant that are used as fuel. The "affected process-gas components" are the components in the ammonia plant that handle gas streams that are flared. The "affected absorption solvent components" are the components that handle the CO<sub>2</sub> absorption solvent. The "affected resin components" are the components that handle the urea-formaldehyde resin for the urea plant. The "affected CO<sub>2</sub> components" are the components that handle the CO<sub>2</sub> stream from the regenerator to the urea plant.

### 2.8.2 Control Technology Determination - BACT

- a. i. For affected natural gas, off-gas and process-gas components, emissions from leaks shall be controlled by compliance with the provisions of the NSPS for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006, 40 CFR 60 Subpart VVa, that apply to "fuel gas system" or "closed vent systems," including 40 CFR 60.482-10a(a) and other relevant provisions of this NSPS for work practices, testing, recordkeeping and reporting.

- ii. For this purpose, a component shall be "in VOM service" if it contains a gas stream that contains more than 1 percent VOM and a leak shall be a VOM concentration of 500 ppm or more. A component shall be in "methane service" if it contains a gas stream that contains more than 5 percent methane and a leak shall be a methane concentration of 2000 ppm or more.
- b. For affected absorption solvent components, emissions from leaks shall be controlled by compliance with the provisions of the NSPS, 40 CFR 60 Subpart VVa, that apply to components "in heavy liquid service," including 40 CFR 60.482-8a(a) and other relevant provisions of this NSPS for work practices, testing, recordkeeping and reporting.
- c. For affected resin components, emissions from leaks shall be controlled by:
  - i. For components other than connectors and pressure relief valves, by use of components that are of "leakless" design.
  - ii. For connectors and pressure relief valves, by compliance with the provisions of the National Emission Standards for Organic Hazardous Air Pollutants for Equipment Leaks, 40 CFR 63 Subpart H, that apply to components "in heavy liquid service," including 40 CFR 63.169(a) and other relevant provisions of these standards for work practices, testing, recordkeeping and reporting.
- d. For affected CO<sub>2</sub> components, emissions from leaks shall be controlled by implementing the following practices:
  - i. If evidence of a potential leak is found by sound or any other detection method, the Permittee shall make a first attempt at repair within 5 calendar days, which shall include best practices such as tightening of flange bolts, as practicable, and eliminating the sound or other indication of a potential leak within 15 calendar days of detection unless repair is technically infeasible without a process unit shutdown, in which case repair shall occur before the end of the next scheduled process unit shutdown.
  - ii. Notwithstanding Condition 2.8.2(d)(i), if a method for monitoring the concentration of CO<sub>2</sub> from a leak is specified by the Illinois EPA in the Clean Air Act Permit Program (CAAPP) permit for the source, if evidence of a potential leak is found by sound or any other detection method, either one of the following procedures shall be followed:

- A. The Permittee shall eliminate the sound or other indication of a potential leak within 5 calendar days of detection.
- B. The Permittee shall monitor the equipment within 5 days to determine whether a leak is present and shall then comply with the following requirements:
  - 1) If an instrument reading of 25,000 ppm or greater is measured, a leak is detected;
  - 2) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, unless repair is technically infeasible without a process unit shutdown, in which case repair shall occur before the end of the next scheduled process unit shutdown;
  - and 3) The first attempt at repair shall be made no later than 5 calendar days after each leak is detected and include best practices such as tightening of flange bolts, as practicable.

#### 2.8.3 Applicable Emission Standards

- a. For the affected resin components, the Permittee is subject to and shall comply with all applicable requirements of the NSPS, 40 CFR 60 Subpart VVa.

#### 2.8.4 Non-Applicability Provisions

- a.
  - i. This permit is issued based on affected components in the urea plant other than the affected resin components not being subject to NSPS, 40 CFR 60 Subpart VVa. This is because these components are not in VOC service since urea is not a VOC and components that handle urea are not "in VOC service" as defined by 40 CFR 60.481a.
  - ii. This permit is issued based on the other affected components at the facility (i.e., components at the facility other than components at the urea plant) not being subject to the requirements of the NSPS, 40 CFR 60 Subpart VVa. This is because they are not located at a synthetic chemical manufacturing facility for purposes of this NSPS because they do not produce as an intermediate or final product any chemical listed in 40 CFR 60.489.
- b. This permit is issued based on affected components in the urea plant not being subject to 35 IAC Part 215 Subpart Q, Leaks for Synthetic Organic Chemical and Polymer Manufacturing Equipment, because this plant does have any VOM components that are in "gas service" or "light liquid service," as defined by 35 IAC 211.2530 or 211.3410, respectively.
- c. This permit is issued based on affected pumps and compressors not being subject to the control requirement of 35 IAC 215.142 because none of these components will handle a volatile organic liquid with a vapor pressure of 2.5 psia or greater at 70°F.

#### 2.8.5 Work Practice Requirements

- a. The CO<sub>2</sub> absorption solvent used in the ammonia plant shall be such that the affected absorption solvent components (i.e., the components that handle this material) are "in heavy liquid service" as defined by 40 CFR 60.481a.
- b. For the affected resin components, the Permittee shall comply with the relevant work practice requirements set forth in 40 CFR 60 Subpart VVa.

#### 2.8.6 Emission Limits

- a. Emissions of VOM, methane and HAPS from the affected components shall not exceed 9.92, 28.1 and 0.44 tons/year, respectively, as determined by use of appropriate USEPA methodology for estimating emissions from leaking components.
- b. GHG emissions from the affected CO<sub>2</sub> components shall be addressed with the GHG emissions of the CO<sub>2</sub> vents. (See Condition 2.1.6.)

#### 2.8.7 Recordkeeping Requirements

- a. For the affected resin components, the Permittee shall maintain relevant records as specified by the NSPS, 40 CFR 60 Subpart VVa.
- b. For affected components other than the affected resin components, the Permittee shall maintain a log or other records that identify leaking components and a compilation of leaking components by month by type of component, the nature of the leaks and the duration of the leaks.
- c. For the affected components, the Permittee shall maintain the following records related to emissions of VOM, methane and HAPs:
  - i. A file containing the emission factors used by the Permittee to determine the emissions from leaks in different types of components, with supporting documentation and calculations.
  - ii. Records of the actual emissions of each pollutant (tons/month and tons/year), with supporting data and calculations.
- d. For affected CO<sub>2</sub> components, the Permittee shall maintain records to address compliance with Condition 2.8.2(d), including:
  - i. Records for the identification of potential leaks from an affected CO<sub>2</sub> component, including date, identification of the component and the method by which the potential leak was identified.

- ii. The actions taken in response to a potential leak from an affected CO<sub>2</sub> component, including data, description and further explanation if repair was not feasible until the next scheduled process unit shutdown.

#### 2.8.8 Reporting Requirements

- a. The Permittee shall promptly notify the Illinois EPA of deviations from the requirements of this permit for affected components, as follows. Reports shall include the information specified in Condition 3.4.
  - i. Deviations from requirements that must be reported in reports pursuant to the NSPS, as required by Condition 2.8.2(a) and (b), shall be reported in such reports.
  - ii. Other deviations shall be reported with the periodic compliance reports required by Condition 2.1.10(b).

SECTION 2.9: UNIT-SPECIFIC CONDITIONS FOR HANDLING OF UREA PRODUCT

2.9.1 Description

The finished urea product from the urea plant is transferred to storage, reclaimed from storage and then loaded out from the facility by truck or rail. Emissions of particulate from these operations are controlled by work practices and by a fabric filter or baghouse.

For purposes of these unit-specific conditions, the "affected units" are the units involved in the handling of finished urea product, including transfer, storage and loadout.

2.9.2 Control Technology Determination - BACT

- a. Particulate matter emissions from the affected units shall be controlled by enclosure and baghouse(s).
- b. There shall be no visible emissions from the affected units.
- c. The PM emissions from the baghouse(s) for the affected units shall each not exceed 0.005 gr/dscf, 3-hour average.

2.9.3 Applicable State Emission Standards

- a. The emission of smoke or other PM from the affected units shall not have an opacity greater than 30 percent, 6 minute average, except as allowed by 35 IAC 212.124. [35 IAC 212.109 and 212.123(a)]
- b. The PM emissions of the affected units shall comply with the applicable limit pursuant to 35 IAC 212.321, which rule limits emissions based on the process weight rate of emission units.
- c. With respect to emissions of fugitive PM, the affected units shall comply with 35 IAC 212.301, which provides that emissions of fugitive PM shall not be visible from any process, including any material handling or storage activity, when looking generally toward the zenith at a point beyond the property line of the source, except when the wind speed exceeds 25 miles per hour, as provided by 35 IAC 212.314.

2.9.4 Operational Requirements and Limits

- a. The Permittee shall implement and maintain practices for the loadout of urea and other work practices for the affected units that provide assurance of compliance with the applicable standards and limits in Conditions 2.9.2, 2.9.3 and 2.9.5.
- b. For the affected units, the Permittee shall also operate and maintain the affected units with a written Operating Plan setting forth the work practices used to reduce the generation of particulate emissions by the affected units.

2.9.5 Emission Limits

- a. Emissions of PM/PM<sub>10</sub>/PM<sub>2.5</sub> from the affected units shall not exceed 0.21 pounds/hour and 0.94 tons/year.

2.9.6-1 Emission Testing Requirements

- a. The Permittee shall have the emissions of PM, filterable PM<sub>10</sub> and PM<sub>2.5</sub> and condensable PM of the affected units (i.e., the baghouse) conducted by a qualified testing service as follows:
  - i. Within 60 days after achieving the maximum production rate at which the affected units will be operated, but not later than 180 days after initial startup of these units.
  - ii. Within 90 days of a written request from the Illinois EPA.
- b. Testing shall be conducted using appropriate USEPA Test Methods, for measurement of PM, filterable PM<sub>10</sub> and PM<sub>2.5</sub> and condensable PM, provided, however, if the Permittee considers all PM emissions to be emissions of filterable PM<sub>10</sub> and PM<sub>2.5</sub>, testing for emissions of filterable PM<sub>10</sub> and PM<sub>2.5</sub> need not be performed.
- c. Test plan(s), test notifications and test reports shall be submitted to the Illinois EPA in accordance with Conditions 3.1(a) and (b).
- d. The Permittee shall expeditiously submit Final Report(s) for required emission testing to the Illinois EPA, no later than 60 days after the date of testing. These reports shall include the information specified in Condition 3.1(c) and the following information:

Opacity data (6-minute average) for each test run by Method 9.

2.9.6-2 Observations for Opacity

- a. Within 45 days of a written request by the Illinois EPA or such later date agreed to by the Illinois EPA, the Permittee shall have opacity observations conducted for the affected units by Method 9 while units are operating consistent with conditions that are representative of maximum emissions, with such observations conducted in accordance with the requirements of Conditions 2.6.6-2(a)(i), (ii), (iii) and (iv).

2.9.7 Inspections

- a. The Permittee shall conduct inspections of affected units on at least a monthly basis with personnel who are not directly responsible for the day-to-day operation of these units.

- i. These inspections shall verify that the work practices used to prevent emissions from affected units are being properly implemented.
- ii. These inspections shall also include observation for the presence of visible emissions, performed in accordance with Method 22.
- b. The Permittee shall perform detailed inspections of the baghouse for the affected units while these units are out of service, with an initial inspection performed before any maintenance and repair activities are conducted during the period the affected unit is out of service and a follow-up inspection performed after any such activities are completed. These inspections shall be conducted at least every 18 months.

#### 2.9.8 Recordkeeping Requirements

- a. The Permittee shall keep file(s) or other records for the affected units containing the following information, with supporting material, which records shall be kept current:
  - i. The maximum operating rates of the different affected units (tons/hour).
  - ii. The standard emission factors used by the Permittee to determine emissions of the affected units.
  - iii. The maximum hourly rates of PM, PM<sub>10</sub> and PM<sub>2.5</sub> emissions of the affected units (pounds/hour), with supporting information, which records shall be kept current.
  - iv. The maximum process weight rate of the affected units, with supporting analysis, and a demonstration that the maximum hourly PM emissions of the units will comply with the limit set by 35 IAC 212.321.
- b. The Permittee shall maintain operating records of the amount of urea shipped from the facility (tons/month and tons/year, by truck and by rail).
- c. The Permittee shall maintain records of the following for each incident when any affected unit operates without the work practices used to reduce emissions of particulate.
  - i. A description of the incident, including the required work practices that were not present or implemented; the work practices that were present, if any; other control measures or mitigation measures that were implemented, if any; and the magnitude of the PM emissions during the incident.
  - ii. The length of time after the incident was identified that the affected unit(s) continued to operate before the work practices were in place or the affected unit(s) were

shutdown (to resume operation only after work practices were in place) and, if this time was more than one hour, an explanation why this time was not shorter, including a description of any mitigation measures that were implemented during the incident.

- iii. The estimated total duration of the incident, i.e., the total length of time that the affected unit(s) ran without work practices and the estimated amount of material handled during the incident.
  - iv. A discussion whether any applicable emission standards or limits in Conditions 2.9.2, 2.9.3, and 2.9.5, may have been violated during the incident, with supporting explanation.
- d. The Permittee shall keep records of the emissions of PM, PM<sub>10</sub> and PM<sub>2.5</sub> of the affected units (tons/month and tons/year), with supporting documentation and calculations.

#### 2.9.9 Reporting Requirements

- a. The Permittee shall report deviations from requirements set by this permit for the affected units with the quarterly reports required by Condition 2.1.10(b). These reports shall include the information specified in Condition 3.4.

## SECTION 2.10: UNIT-SPECIFIC CONDITIONS FOR ROADWAYS

### 2.10.1 Description

The "affected units" are roadways and parking areas at the facility, which may be sources of fugitive particulate matter due to vehicle traffic or windblown dust. These emissions are controlled by paving and implementation of work practices to prevent the generation and emissions of particulate matter.

### 2.10.2 Control Technology Determination - BACT

- a. The opacity of fugitive particulate matter emissions from affected units shall not exceed 10 percent. For this purpose, opacity shall be determined in accordance with 35 IAC 212.109.
- b.
  - i. Best management practices shall be implemented to reduce dust emissions from affected units in accordance with a written operating program, as further addressed by Condition 2.10.4. After construction activity is complete, these practices shall provide for pavement on all regularly traveled roads and treatment of roadways that are routinely subject to vehicle traffic.
  - ii. For this purpose, roads that serve any office building, employee parking areas or are normally used by trucks transporting urea or ammonia shall be considered to be subject to regular travel and are required to be paved.
- c. The handling of material collected from affected units by sweeping or vacuuming trucks shall be enclosed or shall utilize spraying, pelletizing, screw conveying or other equivalent methods to control PM emissions.

### 2.10.3 Applicable State Emission Standards

- a. The affected units shall comply with 35 IAC 212.301 and 212.314, which provides that emissions of fugitive particulate matter shall not be visible from any process, including material handling and storage activities, when looking generally toward the zenith at a point beyond the property line of the source, except when the wind speed is greater than 25 miles per hour.

### 2.10.4 Operating Program for Control of Fugitive Particulate Emissions

- a. The Permittee shall carry out control of fugitive particulate emissions from affected units in accordance with a written operating program describing the measures being implemented in accordance with Condition 2.10.2(b) to control emissions from these units, which program shall be kept current.
  - i. The written operating program shall include:

- A. Maps or diagrams indicating the location of affected units, with description of the unit (length, width, surface material, etc.) and volume and nature of expected vehicle traffic, or other activity on such unit, and an identification of any roadways that are not considered routinely traveled, with justification.
  - B. A detailed description of the emissions control technique(s) (e.g., sweeping) for the affected unit, including: typical application rate; type and concentration of additives; normal frequency with which measures would be implemented; circumstances in which the measure would not be implemented, e.g., recent precipitation; triggers for additional control (e.g., observation of 8 percent opacity); and calculated control efficiency for PM emissions.
- ii. The Permittee shall submit copies of the written operating program to the Illinois EPA for review as follows:
    - A. A program addressing affected units during the construction of the facility shall be submitted within 30 days of beginning actual construction of the facility.
    - B. A program addressing affected units with the operation of the facility shall be submitted within 90 days of initial startup of the ammonia plant.
    - C. Significant amendments to the program by the Permittee shall be submitted within 30 days of the date that the amendment is made.
  - iii. A revised operating program shall be submitted to the Illinois EPA for review within 90 days of a request from the Illinois EPA for revision to address observed deficiencies in control of fugitive particulate emissions.

#### 2.10.5 Emission Limits

Emissions of PM, PM<sub>10</sub>, and PM<sub>2.5</sub> from the affected units shall not exceed 11.71, 2.34, and 0.57 tons/year, respectively. Compliance with these limits shall be determined from the amount and nature of vehicle traffic associated with the operation of the plant, specific operating information for affected units, and appropriate emission factors published by USEPA.

#### 2.10.6-1 Opacity Observations

- a. The Permittee shall conduct observations, which include a series of observations of the opacity of fugitive emissions from the affected units as follows, to determine the range of

opacity from affected units and the change in opacity as related to the amount and nature of vehicle traffic and implementation of the operating program.

- b. "Performance observations" for the opacity of emissions shall be conducted as follow. For performance observations, the Permittee shall submit test plans, test notifications and test reports, as specified by Condition 3.1.
  - i. In conjunction with the measurements of silt loading on the affected units required by Condition 2.10.7, performance observations shall first be completed no later than 30 days after the date that construction of process units in the ammonia or urea plant are completed, provided, however, that observation may be deferred as long as heavy construction equipment is on site preventing paving of roadways.
  - ii. Performance observations shall be repeated within 30 days in the event of changes involving affected units that would act to increase opacity (so that observations that are representative of the current circumstances of the affected units have not been conducted), including changes in the amount or type of traffic on affected units, changes in the standard operating practices for affected units, such as application of salt or traction material during cold weather, and changes in the operating program for affected units.
- c. "Compliance observations" shall be conducted for affected units on at least a quarterly basis to verify opacity levels and confirm the effectiveness of the operating program in controlling emissions.
- d. Upon written request by the Illinois EPA, the Permittee shall conduct performance or compliance observations, as specified in the request. Unless another date is agreed to by the Illinois EPA, performance observations shall be completed within 30 days and compliance observations shall be completed within 5 days of the Illinois EPA's request.

#### 2.10.6-2 Inspections

- a. i. The Permittee shall conduct inspections of affected units for the specific purpose of verifying that the operating program required by Condition 2.10.4 for the affected units is being implemented. These inspections shall be conducted by supervisory or management personnel or shall be overseen by such personnel.
- ii. The Permittee shall conduct these inspections of affected units on at least a weekly basis during construction of the facility and on a monthly basis thereafter with personnel not directly responsible for the day-to-day implementation of the operating program.

- b. The Permittee shall keep records for these inspections, which shall include the following information, at a minimum:
  - i. Date and time the inspection was performed and the name(s) and position(s) of inspection personnel.
  - ii. The observed condition of the control practices for the affected units.
  - iii. A description of any changes to control practices that are recommended as a result of the inspection.
  - iv. A summary of the observed implementation or status of the operating program.
  - v. If the inspection was not performed by supervisory or management personnel, the name(s) and position(s) of the supervisory or management personnel who oversaw the inspection.
  - vi. The condition of the pavement on principal roadways.

#### 2.10.7 Operational Measurements

- a. The Permittee shall conduct measurements of the silt loading on various affected roadway segments as follows. This sampling and analysis shall be conducted using the "Procedures for Sampling Surface/Bulk Dust Loading," Appendix C.1 in Compilation of Air Pollutant Emission Factors, USEPA, AP-42. A series of samples shall be taken to determine the average silt loading and address the change in silt loadings as related to the amount and nature of vehicle traffic and implementation of the operating program.
- b. Measurements shall be performed by the following dates:
  - i. Measurements shall first be completed no later than 30 days after construction is completed.
  - ii. Measurements shall be repeated within 30 days in the event of changes involving affected units that would act to increase silt loading (so that data that is representative of the current circumstances of the affected units has not been collected), including changes in the amount or type of traffic on affected units, changes in the standard operating practices for affected units, such as application of salt or traction material during cold weather, and changes in the operating program for affected units.
  - iii. Upon written request by the Illinois EPA, the Permittee shall conduct measurements, as specified in the request, which shall be completed within 75 days of the Illinois EPA's request.

- c. The Permittee shall submit test plans, test notifications and test reports for these measurements as specified by Condition 3.1, provided, however, that once a test plan has been accepted by the Illinois EPA, a new test plan need not be submitted if the accepted plan will be followed unless a new test plan is requested by the Illinois EPA.
- d. The Permittee shall keep records for the measurements conducted for affected units pursuant to Condition 2.10.7, including records for the sampling and analysis activities and results.

#### 2.10.8 Recordkeeping Requirements

- a. The Permittee shall keep a file that contains:
  - i. The operating factors used to determine the amount of activity associated with the affected units or the particulate emissions from the affected units, with supporting documentation.
  - ii. The maximum PM, PM<sub>10</sub> and PM<sub>2.5</sub> emission of the facility, in tons/year, considering the maximum amounts of vehicle traffic needed for the operation of the facility, with supporting calculations and documentation, and confirmation that the control measures in the operating program are sufficient to ensure compliance with the emission limits in Condition 2.10.5.
- b. The Permittee shall maintain records documenting implementation of the operating program required by Condition 2.10.4(a), including:
  - i. Records for each treatment of an affected unit or units:
    - A. The identity of the affected unit(s), the date and time, and the identification of the truck(s) or treatment equipment used;
    - B. For application of dust suppressant by truck: Target application rate or truck speed during application, total quantity of water or chemical used and, for application of a chemical or chemical solution, the identity of the chemical and concentration, if applicable;
    - C. For sweeping or cleaning: Identity of equipment used and identification of any deficiencies in the condition of equipment; and
    - D. For other type of treatment: A description of the action that was taken.
  - ii. Records for each incident when control measures were not implemented and each incident when additional control

measures were implemented due to particular activities, including description, date, a statement of explanation, and expected duration of such circumstances.

- c. The Permittee shall keep records for any periods during which affected unit(s) were not properly controlled as required by this permit, which records shall include the information specified by Condition 3.3, including the following, and an estimate of the additional emissions of PM, PM<sub>10</sub> and PM<sub>2.5</sub> that resulted, if any, with supporting calculations.
  - i. The dates that control measures were not implemented with a listing of those control measures.
  - ii. The reasons that the control measures were not implemented.
  - iii. The dates when controls measures were not implemented based on a belief that implementation of such control measures would have been unreasonable given prevailing weather conditions.
- d. The Permittee shall maintain records for the PM, PM<sub>10</sub>, and PM<sub>2.5</sub> emissions of the affected units, based on data for shipments of ammonia and urea and other activities at the plant, the above records for the affected units including data for implementation of the operating program, and appropriate USEPA emission estimation methodology and emission factors, with supporting calculations.

#### 2.10.9 Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations of affected units with permit requirements with the periodic reports required by Condition 2.1.10(b). These notifications shall include the information specified by Condition 3.4.

SECTION 2.11: UNIT-SPECIFIC CONDITIONS FOR ENGINES

2.11.1 Description

The facility has three diesel-fueled emergency engine generators and one smaller diesel-fueled firewater pump engine (the affected emergency engine generator engines and affected firewater pump engine, respectively). The emergency generators will supply electricity to critical equipment during power outages. The firewater pump would be used in the event of fire. Other than during power outages or fires, these engines (the affected engines) will each normally be operated for less than one hour per week for purposes of operational testing.

2.11.2 Control Technology Determination - BACT

- a. i. The emergency generator engines shall be designed and operated to comply with the following limits, in grams/kW-hour, power output:

Pollutant	Limit
NOx	0.67
CO	3.5
PM/PM <sub>10</sub> /PM <sub>2.5</sub>	0.10
VOM (as NMHC)	0.40

Note: These limits reflect the USEPA's Tier IV standards for nonroad engines in 40 CFR Part 1039, Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines, for engines with a maximum power greater than 900 kW that power electrical generators (40 CFR 1039.102, Table 7).

- ii. The GHG emissions of the emergency generator engines shall not exceed 432 tons/year, combined.

- b. i. The firewater pump engine shall be designed and operated to comply with the following limits, grams/kW-hr power output:

Pollutant	Limit
NOx	3.5
CO	3.5
PM/PM <sub>10</sub> /PM <sub>2.5</sub>	0.10
VOM (as NMHC)	0.40

Note: These limits reflect the USEPA's Tier IV standards for nonroad engines in 40 CFR Part 1039, Control of Emissions from New and In-Use Nonroad Compression-Ignition Engines, for engines with a maximum power that is no than 900 kW (40 CFR 1039.102, Table 7).

- ii. The GHG emissions of the firewater pump engine shall not exceed 72 tons/year.

### 2.11.3-1 Applicable Federal Emission Standards

- a.
  - i. The affected engines are subject to the NSPS for Stationary Compression Ignition Internal Combustion Engines, 40 CFR 60 Subpart IIII, and related provisions in the General Provisions of the NSPS, 40 CFR 60 Subpart A.
  - ii. The emergency generator engines, as new emergency stationary compression ignition internal combustion engines with a displacement of less than 10 liters per cylinder that are not fire pump engines, must comply with the NSPS standards for new emergency stationary internal combustion engines with rated power output greater than 560 kW, as follows. The Permittee shall comply with these standards by purchasing an engine certified to these standards for the same model year and maximum engine power. The engine must be installed and configured according to the manufacturer's specifications. [40 CFR 60.4205(b), 60.4202(b) and 60.4211(c) and 40 CFR 89.112(a) and 89.113(a)]
    - A. NOx + NMHC: 6.7 g/kW-hour.
    - B. CO: 3.5 g/kW-hour.
    - C. PM: 0.20 g/kW-hour.
  - iii. The firewater pump engine, as a new firewater pump engine with a displacement of less than 30 liters per cylinder, must comply with the emission standards in Table 4 of 40 CFR 60 Subpart IIII applicable to units with a maximum engine power greater than 225 kW but less than 450 kW, as follows. The Permittee shall comply with these standards by purchasing an engine certified to these standards for the same model year and maximum (i.e., NFPA nameplate) engine power. The engine must be installed and configured according to the manufacturer's specifications. [40 CFR 60.4205(c) and 60.4211(c)]
    - A. NOx + NMHC: 4.0 g/kW-hour.
    - B. CO: 3.5 g/kW-hour.
    - C. PM: 0.20 g/kW-hour.
  - iv. The diesel fuel used in the affected engines shall meet the requirements of 40 CFR 80.510(b) for nonroad diesel fuel. [40 CFR 60.4207(b)].
- b. As new stationary engines located at an area source for HAPs, the affected engines must meet the requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Stationary Reciprocating Internal Combustion Engines, 40 CFR 63 Subpart ZZZZ, by meeting the requirements of the NSPS, 40 CFR

60 Subpart IIII, for compression ignition engines. No further requirements apply for the affected engines under 40 CFR 63 Subpart ZZZZ. [63.6590(c)]

#### 2.11.3-2 Applicable State Emission Standards

- a. The affected engines are subject to 35 IAC 212.123(a), which provides that no person shall cause or allow the emission of smoke or other particulate matter, with an opacity greater than 30 percent, 6-minute average, from any emission unit, except as allowed by 35 IAC 212.123(b) and 212.124.
- b. The affected engines are subject to 35 IAC 214.301, which limits emissions of SO<sub>2</sub> to no more than 2000 ppm.

#### 2.11.4 Operational Limits and Work Practices

- a. Except as provided by 40 CFR 60.4211(g), the Permittee shall operate and maintain the affected engines according to the manufacturer's written instructions related to emissions. In addition, the Permittee may only change those emission-related settings that are permitted by the manufacturer. The Permittee must also meet the requirements of 40 CFR Parts 89, 94 and/or 1068, as applicable. [40 CFR 60.4211(a)]
- b. Pursuant to the NSPS and this permit, the affected engines may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the affected engine. Maintenance checks and readiness testing of the each engine are limited to 100 hours per year. There is no time limit on the use of an affected engine in emergency situations. The Permittee may petition the USEPA Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the Permittee maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency engines beyond 100 hours per year. Emergency engines may operate up to 50 hours per year in nonemergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply non-emergency power as part of a financial arrangement with another entity. Any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as provided herein, is prohibited. [40 CFR 60.4211(f)]

#### 2.11.5 Emission Limits

- a. The emissions of the affected emergency generator engines shall not the following limits:

Pollutant	Limit (Each Engine)		Combined Limit
	Pounds/Hour	Tons/Year	
NOx	4.14	0.41	1.20
CO	21.6	2.16	6.48
PM	0.62	0.06	0.19
PM <sub>10</sub> /PM <sub>2.5</sub>	0.62	0.06	0.19
VOM	2.47	0.25	0.75
GHG	---	---	430
SO <sub>2</sub>	---	---	0.10
Total HAPs	---	---	0.10

- b. The emissions of the affected firewater pump engine shall not exceed the following limits:

Pollutant	Limit	
	Pounds/Hour	Tons/Year
NOx	2.15	0.11
CO	2.15	0.11
PM	0.06	0.003
PM <sub>10</sub> /PM <sub>2.5</sub>	0.06	0.003
VOM	---	0.10
GHG	---	72.0
SO <sub>2</sub>	---	0.04
Total HAPs	---	0.02

2.11.6 Operational Monitoring

- a. The Permittee shall operate and maintain a non-resettable hour meter on each affected engine.

2.11.7 Recordkeeping Requirements

- a. If an affected engine does not also meet the standards of the NSPS, 40 CFR 60 Subpart IIII, applicable to non-emergency engines in the applicable model year, the Permittee must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The Permittee must record the time of operation of the engine and the reason the engine was in operation during that time. [40 CFR 60.4214(b)]
- b. The Permittee shall keep a file for the affected engines containing copies of the certifications from the manufacturers for the emission rates of the engines and their fuel consumption rates, in gallons per kW-hour.
- c. The Permittee shall maintain records of consumption of fuel by the affected engines (gallons/month, separately for the affected emergency generator engines and the affected firewater pump engine).
- d. For the affected emergency generator engines and the affected firewater pump engine, the Permittee shall maintain the

following records related to emissions of NO<sub>x</sub>, CO, SO<sub>2</sub>, VOM, PM, PM<sub>10</sub>/PM<sub>2.5</sub>, GHG and total HAPs:

- i. A file containing the maximum emission rates of each pollutant from the affected engines in pounds per gallon of fuel, pounds per hour and in the terms used in Conditions 2.11.2(a)(i) and (b)(i) and 2.11.3-1(a)(ii) and (iii), with supporting documentation and calculations.
- ii. Records of the actual emissions of each pollutant separately for the affected emergency generator engines and the affected firewater pump engine (tons/month and tons/year), with supporting calculations.

#### 2.11.8 Reporting Requirements

- a. The Permittee shall notify the Illinois EPA of deviations of the affected engines with the permit requirements with the periodic compliance reports required by Condition 2.1.10(b). These notifications shall include the information specified in Condition 3.4.

PART 3: GENERAL PERMIT CONDITIONS

CONDITION 3.1: GENERAL REQUIREMENTS FOR EMISSION TESTING

- a.
  - i. At least 60 days prior to the actual date of initial emission testing required by this permit, a written test plan shall be submitted to the Illinois EPA for review. This plan shall describe the specific procedures for testing and shall include at a minimum:
    - A. The person(s) who will be performing sampling and analysis and their experience with similar tests.
    - B. The specific conditions, e.g., operating rate and control device operating conditions, under which testing shall be performed including a discussion of why these conditions will be representative and the means by which the operating parameters will be determined.
    - C. The specific determinations of emissions that are intended to be made, including sampling and monitoring locations.
    - D. The test method(s) that will be used, with the specific analysis method if the method can be used with different analysis methods.
  - ii. As provided by 35 IAC 283.220(d), the Permittee need not submit a test plan for subsequent emissions testing that will be conducted in accordance with the procedures used for previous tests accepted by the Illinois EPA or the previous test plan submitted to and approved by the Illinois EPA, provided that the Permittee's notification for testing, as required below, contains the information specified by 35 IAC 283.220(d)(1)(A), (B) and (C).
- b.
  - i. The Permittee shall notify the Illinois EPA prior to performing emissions testing required by this permit to enable the Illinois EPA to observe the tests. Notification for the expected date of testing shall be submitted a minimum of 30 days\* prior to the expected date, and identify the testing that will be performed. 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 testing. Notwithstanding 40 CFR 60.8(d), the Illinois EPA may at its discretion accept notifications with shorter advance notice provided that the Illinois EPA will not accept such notifications if it interferes with the Illinois EPA's ability to observe testing.
  - ii. This notification shall also identify the parties that will be performing testing and the set or sets of operating conditions under which testing will be performed.
- c. Three copies of the Final Reports for emission tests shall be forwarded to the Illinois EPA within 30 days after the test results

are compiled and finalized but not later than 90 days after the date of testing. At a minimum, the Final Report for testing shall contain the following. Copies of emission test reports shall be retained for at least five years after the date that an emission test is superseded by a more recent test.

- i. A tabular summary of results which includes:
  - Process rates (e.g., feedstock usage rate or firing rate).
  - Measured emission rates for different pollutants tested.
  - Emission factor, calculated using the average test results in the terms of the applicable limits, for example, in units of lbs/mmBtu.
  - Compliance demonstrated - Yes/No.
- ii. Description of test method(s) and procedures, including a description of sampling points, sampling train, analysis equipment, and test schedule
- iii. Detailed description of test conditions, including:
  - Pertinent process information (e.g., usage of raw material or fuel and composition).
  - Control equipment information (i.e., monitored data and other relevant operating parameters during testing).
- iv. Data and calculations, including copies of all raw data sheets and records of laboratory analysis, sample calculations, and data on equipment calibration.

CONDITION 3.2: GENERAL REQUIREMENTS FOR "LOGS" OR SIMILAR RECORDS

- a. Operating logs or other similar records required by this permit shall, at a minimum, include the following information related to the emission units and associated control system:
  - 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 and control system 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), the potential consequences for additional emissions from the unit(s), the potential of any excess emissions from the affected unit(s), the actions taken to restore normal operation, and any actions taken to prevent similar events in the future.

- iv. Other information as may be appropriate to show that the emission unit or group of related emission units is operated in accordance with good air pollution control practice.
- b. Inspection, maintenance and repair logs or other similar information required by this permit shall, at a minimum, include the following information related to the emission units and associated control system:
  - 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), probable cause for requiring maintenance or repair if not routine or preventative, and the condition of equipment following completion of the activity.
  - iv. Other information as may be appropriate to show that the emission unit or group of related emission units is maintained in accordance with good air pollution control practices, including prompt repair of defects that interfere with effective control of emissions.
- 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.

CONDITION 3.3: GENERAL REQUIREMENTS FOR RECORDKEEPING FOR DEVIATIONS

- a. Except as specified in a particular provision of this permit or in a subsequent CAAPP Permit for the plant, records for deviations from applicable requirements shall include at least the following information: the date, time and estimated duration of the deviation; a description of the deviation; the manner in which the deviation was identified, if not readily apparent; the probable cause for deviation, if known, including a description of any equipment malfunction or breakdown associated with the deviation; information on the magnitude of the deviation, including actual emissions or performance in terms of the applicable standard if measured or readily estimated; confirmation that standard procedures were followed or a description of any event-specific corrective actions taken; and a description of any preventative measures taken to prevent future occurrences, if appropriate.

CONDITION 3.4: GENERAL REQUIREMENTS FOR REPORTING OF DEVIATIONS

- a. The Permittee shall include the following information in records and reports for deviations:

- i. Identity of 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. Unless otherwise specified in a particular condition of this permit, if deviation(s) from requirements of this permit occurs during a reporting period, a compliance report shall be submitted no later than 45 days after the end of the reporting period. This report shall also provide a listing of all deviations for which immediate or 30-day reporting was required, but need not include copies of the previously submitted information.
  - ii. If there are no deviations during a reporting period, the Permittee shall still submit a compliance report, which report shall state that no deviations occurred during the reporting period.
- c. Upon issuance of a Clean Air Act Permit Program (CAAPP) permit for the plant, the provisions of the CAAPP permit with respect to reporting of deviations will supersede the requirements of this permit.

ATTACHMENTS

ATTACHMENT 1: SUMMARY OF THE PERMITTED EMISSIONS OF THE FACILITY<sup>a</sup>

Table 1: Emissions of the Facility (tons/year)

Pollutant	Ammonia Plant		Reformer Furnace	Boiler	Urea Plant	"Other Units" (See Table 2)	Total
	Flares	CO <sub>2</sub> Vents <sup>b</sup>					
NOx	15.1	---	45.6	45.4	---	14.71	120.8
CO	82.3	3.4	83.6	75.7	---	8.36	253.4
VOM	11.6	14.3	22.6	20.4	1.60	11.21	81.7
PM	0.15	---	7.90	7.20	124.7	17.38	157.3
PM <sub>10</sub>	0.15	---	10.0	9.10	108.1	6.25	133.6
PM <sub>2.5</sub>	0.15	---	10.0	3.90	108.1	4.48	126.6
SO <sub>2</sub>	0.13	---	2.46	2.23	---	0.17	5.0
GHG	25,971	343,105	488,159	442,339	---	2,591	1,302,165

Notes:

- a. This summary addresses operation of the facility after the commissioning of the facility is complete. In the period prior to commissioning, operation and emissions of the flares in the Ammonia Plant and the Startup Heater would potentially be greater but operation and emissions of other units would be lower.
- b. Emissions from the CO<sub>2</sub> Vent in the Urea Plant are addressed with the CO<sub>2</sub> Vent in the Ammonia Plant.

Table 2: Emissions of "Other Units" (tons/year)

Pollutant	Startup Heater	Cooling Tower	Engines <sup>a</sup>	Equipment Components	Roadways	Product Urea Handling	Ammonia Storage Flare	Tanks <sup>b</sup>	Sub Total
NOx	0.60	---	1.31	---	---	---	12.8	---	14.71
CO	0.27	---	6.59	---	---	---	1.52	---	8.36
VOM	0.04	---	0.85	9.92	---	---	0.20	0.20	11.21
PM	0.02	4.42	0.19	---	11.71	0.94	0.10	---	17.38
PM <sub>10</sub>	0.06	2.47	0.19	---	2.34	0.94	0.25	---	6.25
PM <sub>2.5</sub>	0.06	2.47	0.19	---	0.57	0.94	0.25	---	4.48
SO <sub>2</sub>	0.01	---	0.14	---	---	---	0.02	---	0.17
GHG	871	---	502	739	---	---	479	---	2,591

Notes:

- a. The engines are the three emergency generator engines and the firewater pump engine.
- b. The tanks are the storage tanks at the facility for organic liquids, e.g., amine absorption solvent.

ATTACHMENT 2: SUMMARY OF THE PERMITTED HAP EMISSIONS OF THE FACILITY<sup>a, b</sup>

Table 1: Emissions of the Facility (tons/year)

Pollutant	Ammonia Plant		Reformer Furnace	Boiler	Urea Plant	"Other Units" (See Table 2)	Total
	Flares	CO <sub>2</sub> Vents <sup>c</sup>					
Total HAPs	2.43		4.30	6.74	1.60	0.90	15.97
Any Individual HAP <sup>d</sup>						0.04	0.04
Hexane	---	0.01	0.01	6.7	---	0.01	6.73
Formaldehyde	---	0.01	3.0	0.01	1.38	0.13	4.53
Methanol	---	2.40	0.01	0.02	0.22	0.44	3.09
Other Individual HAP (i.e., a HAP other than hexane, formaldehyde or methanol)	---	0.01	1.28	0.01	---	0.04	1.34

Notes:

- a. This summary addresses operation of the facility after the commissioning of the facility is complete. In the period prior to commissioning, operation and emissions of the flares in the Ammonia Plant and the Startup Heater would potentially be greater but operation and emissions of other units would be lower.
- b. Emissions of at most negligible amounts of HAPs (i.e., at most 0.001 tons/year) are shown by "---".
- c. Emissions from the CO<sub>2</sub> Vent in the Urea Plant are addressed with the CO<sub>2</sub> Vent in the Ammonia Plant.
- d. The limits for individual HAPs from the various emission units are either: 1) "Generic," with only an emission limit set for any individual HAP, or 2) "Speciated," with emission limits set for hexane, formaldehyde and methanol and for "other individual HAPs," i.e., any individual HAP other than hexane, formaldehyde and methanol.

Table 2: Emissions of the "Other Units" (tons/year)

Pollutant	Startup Heater	Ammonia Storage Flare	Cooling Tower	Equipment Components	Product Urea Handling	Roadways	Generator Engines	Fire Pump Engine	Resin Tank	Sub Total
Total HAPs	0.03	0.01	0.01	0.47	0.01	0.01	0.13	0.13	0.10	0.90
Any Indiv. HAP		0.01	0.01		0.01	0.01				0.04
Hexane	---			0.01			---	---	---	0.01
Formaldehyde	0.02			0.01			---	---	0.10	0.13
Methanol	---			0.44			---	---	---	0.44
Other Indiv. HAP	0.01			0.01			0.01	0.01	---	0.04

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 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, shall have 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.
- 6a. 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.