# Permit File Memo

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| DATE: | March 8, 2011 |
| TO: | Permit File, Nebraska Corn Processing (Facility ID #84221) |
| FROM: | Robert Sheeder |
| THRU: | Shelley Schneider and Clark Smith |
| RE: | Changes to Permit Documents After Public Notice (Permit #OP09S2-008) |

Draft Permit OP09S2-008 for Nebraska Corn Processing, LLC (NCP) was public noticed and open for public comment from January 27, 2011 through February 26, 2011. During the public notice period, internal DEQ comments were made regarding the operating permit attachment and the NESHAP discussion of the fact sheet. As a result of the internal comments, the NDEQ found it necessary to revise the permit documents prior to presenting them for a decision. The revisions did not alter the project scope or increase emission limits of the permit, but were intended to clarify the source of emission factors to be used in calculations required by Attachment A of the permit, provide clarification concerning NESHAP DDDDD in the fact sheet, provide a brief discussion of NESHAP JJJJJJ in the fact sheet, and provide clarification concerning applicability of Greenhouse Gas (GHG) regulations to the facility.

A summary of the revisions follows:

Permit:

1. The first paragraph of Permit Attachment A now reads:

> To demonstrate compliance with the VOC and HAP emission limits specified in Specific Condition II.(G)(1)(a), emissions shall be calculated each calendar month using data from the most recent valid performance test. For cases where testing data is not available, the permittee shall continue down the list below until the required information is available. For example, when a unit or process has not been tested, the permittee shall use manufacturer's guarantees and MSDS to calculate emissions. If guarantees and MSDS are not available, the permittee shall continue down the list to option 3 and use manufacturer/engineering estimates to calculate HAP emissions. When the information specified in options 1, 2, and 3 are unavailable, the permittee shall use information in AP-42 or other EPA published documents to calculate HAP emissions. For compliance purposes, total HAP is equivalent to the sum of individual HAPs.
>
> 1. Most recent valid performance test results
> 2. Manufacturer's guarantees and Material Safety Data Sheet (MSDS)
> 3. Manufacturer/engineering estimates
> 4. Emission factors from AP-42 or other EPA published documents

The paragraph used in the public notice version of the permit stated that the listing of emission factors were in descending order by "preference." The word preference is not enforceable and implies that NDEQ would like the facility to use the sources of data listed, but it is not required. The new paragraph now makes it clear that NCP must use the most recent valid performance test results in VOC and HAP

emissions calculations, when available. If a unit or process has not been tested, Standard must continue down the list until it finds an option where the required information is available.

2. The effective date of Title 129 was changed from July 21, 2010 to January 9, 2011 to reflect the most current version of the regulations.

Fact Sheet:

1. The following paragraph was added to the NESHAP discussion of the fact sheet:

> Subpart JJJJJJ—National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers: This subpart, finalized on February 21, 2011 but not yet published in the Federal Register or in Title 129, applies to boilers at area sources of HAPs. According to the NESHAP JJJJJJ Fact Sheet published by USEPA, boilers that burn only gaseous fuels or solid waste are not subject to the rule. The boilers at NCP are restricted to burning natural gas only. Therefore, it appears that the boilers at NCP are not subject to this NESHAP. However, it is up to the permittee to evaluate the applicability of this rule to the boilers once the Subpart is official and published in the Federal Register.

This paragraph alerts the NCP to the fact that Subpart JJJJJJ has been finalized and that they are likely not subject to the new rule.

2. The discussion of NESHAP Subpart DDDDD was modified to remove the language concerning the vacatur of the rule. While this NESHAP had previously been vacated, a new Subpart DDDDD was finalized on February 21, 2011. The boilers at NCP are not subject to this rule because the facility is not a major source of HAPs.

3. The following paragraph was added to the discussion of Title 129, Chapter 5 to clarify how GHG regulations may impact this facility:

> On July 1, 2011 greenhouse gases (GHGs) will become a regulated air pollutant under 40 CFR Part 70 and Title 129, Chapter 1. Because GHGs is not a regulated air pollutant at this time, neither the source nor the NDEQ are obligated to provide emissions estimates on this pollutant. Although GHGs is not a regulated air pollutant at this time, NCP will become a major source on July 1, 2011 (as the program currently stands) and be obligated to submit a Class I operating permit application by July 1, 2012. In the event the proposed EPA exemption, or deferral, on biogenic emissions from the GHGs program becomes final, NCP may be eligible for synthetic minor limitations on the other sources of GHGs. Such a limitation would exempt this facility from the Class I requirements.

4. The effective date of Title 129 was changed from July 21, 2010 to January 9, 2011 to reflect the most current version of the regulations.

STATE OF NEBRASKA

**Dave Heineman**
*Governor*

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# AIR QUALITY CLASS II OPERATING PERMIT

**PERMIT NUMBER: OP09S2-008**

**Facility Name:**
Nebraska Corn Processing, LLC

**NDEQ Facility ID#:**
84221

**Mailing Address:**
PO Box 39
Zeeland, MI 49464-0039

**Facility Location:**
107 Potter Street
Cambridge, Furnas County, Nebraska 69022-6539

**Project Description:** This Operating Permit approves the operation of a denatured ethanol manufacturing facility.

**Standard Industrial Classification (SIC) Code:** 2869, Industrial Organic Chemicals

**Revised or Superseded Operating Permits:** None

Pursuant to Title 129, Chapter 14, of the Nebraska Air Quality Regulations, the public has been notified by prominent advertisement of the proposed operation of an air contaminant source and the thirty (30) day period allowed for comments has elapsed. This Operating Permit approves the operation of an ethanol manufacturing facility with capacity to produce approximately 61.2 million gallons of denatured ethanol. This Operating Permit approves the operation of the source as identified in the Air Quality Operating Permit Application 09S2-008 received March 5, 2009, including any supporting information received prior to issuance of this permit. Additional details on the source, including estimated pollutant emissions, can be found in the accompanying Fact Sheet.

Compliance with this permit shall not be a defense to any enforcement action for violation of an ambient air quality standard. Unless otherwise noted, the conditions of this permit are enforceable by the United States Environmental Protection Agency (USEPA) and the Nebraska Department of Environmental Quality (NDEQ). The permit holder, owner, and operator of the facility shall assure that the operation and maintenance of all equipment is in compliance with all of the conditions of this permit.

The undersigned issues this document on behalf of the Director in accordance with Title 129 – Nebraska Air Quality Regulations as amended January 9, 2011.

3/24/2011
Date

Shelley Schneider
Shelley Schneider, Air Administrator
Air Quality Division

Filename: 84221O01.doc

Total Pages: 53

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**ABBREVIATIONS, SYMBOLS, and UNITS OF MEASURE**

| | |
|---|---|
| AP-42 | Compilation of Air Pollutant Emission Factors, Volume I, Stationary Point and Area Sources |
| BACT | Best Available Control Technology |
| btu | British Thermal Unit |
| bu | Bushel |
| CAA | Clean Air Act |
| CE | Control Equipment |
| CEMS | Continuous Emissions Monitoring System |
| cf | Cubic feet |
| CFC | Chlorofluorocarbons |
| CFR | Code of Federal Regulations |
| CO | Carbon Monoxide |
| $CO_2$ | Carbon Dioxide |
| CP | Construction Permit |
| Director | Director of the Nebraska Department of Environmental Quality |
| dscf | Dry Standard Cubic Feet |
| dscfm | Dry Standard Cubic Feet per Minute |
| EMIS | Emergency Management Information System |
| EQC | Environmental Quality Council |
| EP | Emission Point |
| EU | Emission Unit |
| FIP | Federal Implementation Plan |
| FR | Federal Register |
| ft | Feet |
| FTIR | Fourier Transform Infrared |
| HAP | Hazardous Air Pollutant(s) |
| hp | Horsepower |
| hr | Hour |
| lb | Pound |
| LDAR | Leak Detection and Repair |
| LNB | Low $NO_x$ Burner |
| MACT | Maximum Achievable Control Technology |
| Mgal | One Thousand Gallons |
| MMBtu | One Million British Thermal Units |
| MMgal | One Million Gallons |
| MMscf | One Million Standard Cubic Feet |
| MSDS | Material Safety Data Sheet |
| n/a | Not Applicable |
| NAAQS | National Ambient Air Quality Standards |
| NDEQ | Nebraska Department of Environmental Quality |
| NESHAP | National Emission Standards for Hazardous Air Pollutants |
| $NO_2$ | Nitrogen Dioxide |
| $NO_x$ | Nitrogen Oxides |
| NSPS | New Source Performance Standard |
| NSR | New Source Review |
| OP | Operating Permit |
| PAL | Plant-wide Applicability Limit |
| Pb | Lead (chemical abbreviation) |
| PM | Particulate Matter |
| $PM_{10}$ | Particulate Matter with and aerodynamic diameter equal to or less than 10 microns |
| ppb | Parts per Billion |
| ppm | Parts per Million |
| ppmv | Parts per Million by volume |
| ppmvd | Parts per Million by volume, dry basis |
| PSD | Prevention of Significant Deterioration |
| PTE | Potential to Emit |
| scf | Standard Cubic Feet |
| SIC | Standard Industrial Classification |
| SIP | State Implementation Plan |
| $SO_2$ | Sulfur Dioxide |
| $SO_x$ | Sulfur Oxides |
| TDS | Total Dissolved Solids |
| Title 129 | Title 129, Nebraska Air Quality Regulations |
| tpy | Tons per year |
| TRS | Total Reduced Sulfur |
| TSP | Total Suspended Particulate Matter |
| USEPA | United States Environmental Protection Agency |
| UTM | Universal Transverse Mercator |
| VHAP | Volatile Hazardous Air Pollutant |
| VMT | Vehicle Miles Traveled |
| VOC | Volatile Organic Compound |
| yr | Year |

# I. GENERAL CONDITIONS

(A) Administrative amendment of this permit for a change in ownership or operational control of this source is allowed provided the NDEQ determines that no other change in the permit is necessary and a written agreement containing a specific date for transfer of permit responsibility, coverage, and liability between the current and new permittee has been submitted to the NDEQ (Title 129, Chapter 15, Section 001.01D).

(B) The permittee shall allow the NDEQ, USEPA or an authorized representative, upon presentation of credentials to (Title 129, Chapter 8, Sections 012.02 and 015):

(1) Enter upon the permittee's premises at reasonable times where a source subject to this permit is located, emissions-related activity is conducted, or where records must be kept under the conditions of this permit, for the purpose of ensuring compliance with this permit or applicable requirements;

(2) Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit, for the purpose of ensuring compliance with this permit or applicable requirements;

(3) Inspect at reasonable times any facilities, pollution control equipment, including monitoring and air pollution control equipment, practices, or operations regulated or required under this permit, for the purpose of ensuring compliance with this permit or applicable requirements;

(4) Sample or monitor at reasonable times substances or parameters for the purpose of ensuring compliance with the permit or applicable requirements.

(C) Regulatory authority:

(1) Title 40 Protection of Environment, Code of Federal Regulations that apply to the source including those not currently delegated to Nebraska or not yet included in Title 129 - Nebraska Air Quality Regulations, and

(2) Title 129 - Nebraska Air Quality Regulations that apply to the source as amended January 9, 2011.

(D) This permit is issued for a fixed term of five (5) years. A renewal application shall be submitted to the NDEQ a minimum of six (6) months and a maximum of eighteen (18) months before permit expiration. Provided their application is submitted within the above timeframe, the source may continue to operate from the date the application is determined to be complete until final action on the application is taken by the NDEQ (Title 129, Chapter 8, Section 003, and Chapter 7, Sections 002.06 and 003.04).

(E) The permittee shall comply with all conditions of this permit. Any permit noncompliance shall constitute a violation of the Nebraska Environmental Protection Act and the Federal Clean Air Act, and is grounds for enforcement action; permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application (Title 129, Chapter 8, Section 007.01).

(F) It shall not be a defense for a permittee in an enforcement action to claim that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit (Title 129, Chapter 8,

Sections 007.02 and 015).

(G) This permit may be modified; revoked, reopened, and reissued; or terminated for cause in accordance with Title 129 and Title 115, Rules of Practice and Procedure. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not supersede any permit condition (Title 129, Chapter 8, Sections 007.03 and 015).

(H) Conditions under which this permit will be reopened, revoked, and reissued, or terminated during its term for cause, include but are not limited to (Title 129, Chapter 8, Sections 010 and015: and Chapter 15, Section 006):

(1) Additional applicable requirements under the Nebraska Environmental Protection Act or the Federal Clean Air Act, which become applicable to this source with a remaining permit term of three (3) or more years. No such reopening will occur if the effective date of the requirement is later than the date on which the permit is due to expire, unless the original permit or any of its terms and conditions has been extended;

(2) Additional requirements, including excess emissions requirements, that become applicable to an affected source under the acid rain program under Chapter 26;

(3) A determination by the Director, or the Administrator of USEPA that:

(a) The permit must be revoked and reissued to ensure compliance with the applicable requirements;

(b) The permit contains a material mistake or that inaccurate statements were made in the emissions standards or other terms or conditions of the permit;

(c) An applicable requirement or applicable requirement under the Federal Clean Air Act applies which was not identified by the permittee in its application;

(I) This permit may be revoked during its term for cause, including but not limited to (Title 129, Chapter 8, Sections 010 and 015: and Chapter 15, Section 006.02):

(1) The existence at the facility of unresolved noncompliance with applicable requirements or a term or condition of the permit, and refusal of the permittee to agree to an enforceable schedule of compliance to resolve the noncompliance;

(2) The submittal by the permittee of false, incomplete, or misleading information to the NDEQ or USEPA;

(3) A determination by the Director that the permitted facility or activity endangers human health or the environment and that the danger cannot be removed by a revision of the permit; or

(4) The failure of the permittee to pay a penalty owed pursuant to court order, stipulation and agreement, or order issued by the Administrator of the USEPA.

(J) The permit does not convey any property rights of any sort, or any exclusive privilege (Title 129, Chapter 8, Sections 007.04 and 015).

(K) The permittee shall furnish to the NDEQ, within the time specified by the

NDEQ, any information requested by the NDEQ in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating the permit or to determine compliance with the permit. Upon request, the permittee shall also furnish to the NDEQ copies of records required to be kept in accordance with the permit or, for information claimed to be confidential, the permittee may furnish such records along with a claim of confidentiality pursuant to Title 115 - Rules of Practice and Procedure (Title 129, Chapter 8, Section 007.05 and 015).

(L) The provisions of this permit supersede the provisions of any previously issued operating or construction permit. The applicable requirements of previously issued construction permits are now conditions of this permit (Title 129, Chapter 8, Sections 002, 007.06, and 015).

(M) In the event of a challenge to any portions of this permit, the unchallenged permit requirements shall remain valid (Title 129, Chapter 8, Section 006).

(N) The following methods may be used to determine compliance with the terms and conditions in this permit (Title 129, Chapter 34, Section 008):

(1) Any compliance test method specified in the State Implementation Plan;

(2) Any test or monitoring method approved for the source in a permit issued pursuant to Title 129, Chapters 8, 17, 19, or 26;

(3) Any test or monitoring method provided for in Title 129; or

(4) Any other test, monitoring, or information-gathering method that produces information comparable to that produced by any method described in (N)(1) through (3).

(O) Open fires are prohibited except as allowed by Title 129, Chapter 30.

(P) Particulate Matter – General Requirements (Title 129, Chapter 32).

(1) The permittee shall not cause or permit the handling, transporting or storage of any material in a manner which allows particulate matter to become airborne in such quantities and concentrations that it remains visible in the ambient air beyond the property line.

(2) The permittee shall not cause or permit the construction, use, repair or demolition of a building, its appurtenances, a road, a driveway, or an open area without applying all reasonable measures to prevent particulate matter from becoming airborne and remaining visible beyond the property line. Such measures include, but are not limited to, paving or frequent cleaning of roads, driveways and parking lots; application of dust-free surfaces; application of water; and planting and maintenance of vegetative ground cover.

(Q) Application for review of plans or advice furnished by the Director will not relieve the source of legal compliance with any provision of these regulations, or prevent the Director from enforcing or implementing any provision of these regulations (Title 129, Chapter 37).

(R) If and when the Director declares an air pollution episode as defined in Title 129, Chapter 38, Section 003.01B, 003.01C, or 003.01D, the permittee shall immediately take all required actions listed in Title 129, Appendix I, Paragraph 1.1, 1.2, and 1.3, respectively, until the Director declares the air pollution episode terminated (Title 129, Chapter 38, Section 003).

## II. SPECIFIC CONDITIONS

Terms and conditions of this permit are in accordance with the requirements of Title 129, Chapter 8, Section 001. The specific applicable requirement which is the basis for each specific permit condition is listed with each permit condition.

(A) Recordkeeping: To ensure compliance with this permit, records shall be maintained as outlined below. Records include, but are not limited to; copies of all applications, notifications, reports, test protocols, test results, and plans; and, originals of all monitoring results, measurements, inspections, and observations (Title 129, Chapter 8, Section 015.02).

(1) All records required by this permit shall be kept on-site for a minimum of five (5) years and shall be clear and readily accessible to NDEQ representatives, unless otherwise specified in this permit.

(2) Monthly calculations and records required throughout this permit shall be compiled no later than the fifteenth ($15^{th}$) day of each calendar month and shall include all records and calculations generated through the previous calendar month, unless otherwise specified in this permit.

(3) For each malfunction, start-up and shutdown, the source shall keep the following records: the date and time of occurrence: remedial action taken: when corrections were made to each piece of permitted equipment, required control equipment, and required monitoring equipment; and the emissions associated with the event (Title 129, Chapter 6, Sections 002 and 005; Chapter 8, Sections 004.03B; and 015.03: and Chapter 35, Sections 004 and 005).

(4) Records of maintenance performed on all permitted emission units, control equipment, and monitoring equipment (Title 129, Chapter 8, Section 004.01C; Chapter 11, Section 001; Chapter 34, Section 006; and Chapter 35, Sections 006.02 and 006.05).

(5) All records of opacity readings, instrument readings, visual equipment inspections, log book entries, and any other record of equipment performance shall be initialed by the individual who entered the record.

(6) Operation and Maintenance manuals detailing proper operation and maintenance of all permitted emission units, required control equipment and required monitoring equipment shall be kept for the life of the equipment.

(7) Should there be inconsistency between the recordkeeping requirements specified in Condition II.(A) and applicable NSPS or NESHAP recordkeeping requirements, the recordkeeping requirements of Condition II.(A) shall take precedence unless they are less stringent.

(B) Submittals/Reporting:

All submittals, including reports, required by this permit shall contain a certification by a responsible official of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete (Title 129, Chapter 1, Section 131; Chapter 7, Section 008; and Chapter 8 Sections 012.01 and 015).

The following reports shall be submitted to the NDEQ as specified:

(1) Certification of compliance with the terms and conditions of this permit, including emission limitations, standards, or work practices, for the preceding calendar year, shall be submitted to the NDEQ by March 31 of each year. The report must be certified by a responsible official and shall include the following (Title 129, Chapter 8, Sections 012.05C and 015.03):

(a) The identification of each term or condition of the permit that is the basis of the certification;

(b) The compliance status;

(c) A determination of whether compliance was continuous or intermittent;

(d) The methods used for determining the compliance status of the source, currently and over the reporting period; and,

(e) All instances of deviations from permit requirements, including those attributable to start-ups, shutdowns or malfunctions, the probable cause of such deviations, and any corrective actions or preventive measures taken.

(2) The permittee shall submit completed emission inventory forms for the preceding calendar year to the NDEQ by March 31 of each year (Title 129, Chapter 6).

(3) Any emissions due to malfunctions, unplanned shutdowns, and ensuing start-ups that are, or may be, in excess of applicable emission limitations shall be reported to the NDEQ in accordance with Title 129, Chapter 35, Section 005.

(4) Should there be inconsistency between the reporting requirements specified in Condition II.(B) and applicable NSPS or NESHAP reporting requirements, the reporting requirements of Condition II.(B) shall take precedence unless they are less stringent.

(C) The permittee may make changes to a permitted facility without a permit revision if the changes would not require a construction permit under Title 129, Chapter 17, 18, 19, 23, 27, or 28; would not result in an exceedence of emissions allowable under this permit; would not violate any terms of this permit related to monitoring, testing, recordkeeping, reporting or compliance certification; would not violate any applicable requirements; and, a written notice is provided as described below (Title 129, Chapter 15, Section 007).

(1) Notification requirements:

(a) Non emergencies:

(i) The written notification must be received by the NDEQ a minimum of thirty (30) days in advance of the proposed changes;

(b) Emergencies:

(i) Notification within two working days of the date on which the permittee first becomes aware of the need for the change;

(ii) A follow-up written notification must be submitted as

soon as practicable; and,

(iii) Include an explanation of the nature of the emergency.

(c) Required information:

(i) A brief description of the change within the permitted facility;

(ii) The date on which the change will occur;

(iii) Any change in emissions;

(iv) Any permit term or condition that is no longer applicable as a result of the change; and,

(v) A copy of the notification shall be attached to the facility's copy of the operating permit.

(2) Testing requirements:

(a) Testing may be required if the change involves a unit that was previously tested pursuant to a construction permit requirement.

(D) Testing:

(1) The owner or operator of the source shall conduct a performance test, using the procedures in Condition II.(D)(3), when the criteria in Conditions II.(D)(1)(a) and II.(D)(1)(b) are met. Such tests shall be completed within 60 days of reaching maximum capacity but no later than 180 days of when II.(D)(1)(b) is met (Title 129, Chapter 8, Section 012.01 and Chapter 34, Sections 001 and 007)

(a) A valid performance test has been conducted on the unit; and,

(b) The source makes changes that impact the data obtained from the most recent valid performance test. Actions that would impact the data include, but are not limited to, increasing the capacity of an emissions unit, changing the operational parameters of control equipment that potentially makes the control equipment less efficient, etc.

(2) Performance tests shall be conducted on emission points EP-6 and EP-7 identified in Condition III.(A)(1), all emission points identified in Condition III.(B)(1), and all emission points identified in Condition III.(I)(1). These tests shall verify compliance with the emission limitations listed in Conditions III.(A)(3), III.(B)(3), and III.(I)(3)(a). The performance test for the emission points identified in III.(A)(1) shall be conducted within sixty (60) days of permit issuance. The performance tests for the emission points identified in Condition III.(B)(1) shall be conducted according to Condition III.(B)(4)(c). Only one (1) quarterly performance test shall be conducted for the emission points identified in Condition III.(I)(1) in order to demonstrate compliance with Condition III.(I)(3)(a) [Title 129, Chapter 8, Section 012.01 and Chapter 34]

(3) Performance tests, as required in the permit or by NDEQ, shall be completed as follows:

(a) The owner or operator of a source shall provide the NDEQ at

least thirty (30) days written notice prior to testing to afford the NDEQ an opportunity to have an observer present (Title 129, Chapter 34, Section 003).

(b) The owner or operator shall provide the NDEQ with an emissions testing protocol at least thirty (30) days prior to testing (Title 129, Chapter 8, Section 004.01B and 012.01)

(c) Testing shall be conducted according to the methodologies found in Title 129, Chapter 34, Section 002, or other NDEQ approved methodologies (Title 129, Chapter 34, Section 002).

(d) Performance tests shall be conducted while operating at full capacity, unless otherwise specified by the NDEQ (Title 129, Chapter 8, Section 004.01B and 012.01).

(e) Performance tests shall be conducted for a minimum of three (3) one-hour runs unless another run-time is specified by the applicable Subpart or as deemed appropriate by the NDEQ (Title 129, Chapter 8, Section 004.01B and 012.01)

(f) The owner or operator shall monitor and record the operating parameters for process and control equipment during the performance testing required in the permit (Title 129, Chapter 8, Section 004.01B and 012.01 and Chapter 34, Section 001).

(g) A written copy of the test results, signed by the person conducting the test, shall be provided to the NDEQ within forty-five (45) days of completion of the test and will, at a minimum, contain the following items (Title 129, Chapter 8, Section 004.01B and 012.01 and Chapter 34, Section 002.07):

(i) A description of the source's operating parameters (i.e., production rates, firing rates of combustion equipment, fuel usage, etc.) control equipment parameters (i.e., baghouse fan speeds, scrubber liquid flow rates, etc.), and ambient conditions (i.e., weather conditions, etc.) during testing.

(ii) Copies of all data sheets from the test run(s.)

(iii) A description and explanation of any erroneous data or unusual circumstance(s) and the cause for such situation.

(iv) A final conclusion section describing the outcome of the testing.

(E) All permitted emission units, control equipment, and monitoring equipment shall be properly installed, operated and maintained (Title 129, Chapter 8, Section 004.01C; Chapter 11, Section 001; Chapter 34, Section 006 and Chapter 35 Section 006.02 and 006.05).

(F) Requirements Becoming Effective During the Term of this Permit: The source will meet, in a timely manner, applicable requirements that become effective during the permit term, unless a more detailed schedule is expressly required by the applicable requirement. New Federal applicable requirements are only enforceable by the USEPA until such time as they are adopted into Title 129 (Title 129, Chapter 7, Section 006.02H, and Chapter 8, Section 012.03 and 015).

(G) Source-Wide Limitations:

(1) Emission Limitations and Testing Requirements:

(a) Pollutant emission rates from each emission point identified in the table below shall not exceed the permitted limits. Performance testing, if required, shall be conducted in accordance with Condition II.(D).

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit |
|---|---|---|---|---|
| All | Any Individual HAP | < 10 Tons Per Year | 12 Month Rolling Total | Condition II.(F), August 6, 2009 CP; Title 129, Chapters 27 and 28 |
| All | Total Combined HAPs | < 25 Tons Per Year | 12 Month Rolling Total | Condition II.(F), August 6, 2009 CP; Title 129, Chapters 27 and 28 |
| All | VOCs | < 100 Tons Per Year | 12 Month Rolling Total | Title 129, Chapter 5, Section 001.03 |

(i) Compliance with the emission limitations above shall be demonstrated by performing emission calculations every month using data obtained from the most current valid performance test and the calculation methodology in Attachment A. The emission factors and pound per hour (lb/hr) emission rates presented in Attachment A shall be replaced with data obtained from the most current approved emissions test conducted in accordance with Specific Condition II.(D). Using the monthly emissions as calculated in this condition, the source shall determine rolling twelve (12) month total emissions every month (Condition II.(F), August 6, 2009 CP; Title 129, Chapter 5, Section 001.03 and Chapter 8, Section 015).

(ii) During periods of scrubber downtime, or periods where scrubber operating parameters are not maintained in accordance with Condition III.(B)(4)(b)(vi), uncontrolled VOC and HAP emission factors shall be used in emissions calculations required in Condition II.(G)(1)(a)(i) and in emission totals submitted as part of the Annual Emissions Inventory (Title 129, Chapter 8, Section 015).

1. Scrubber downtime occurs when associated emission units are in operation (scrubber inlet pressure greater than zero) and the scrubber flow rate is below the facility's normal operating range (Condition III.(B)(3)(c), Aug. 6, 2009 CP).

(2) Operational and Monitoring Requirements

(a) To demonstrate compliance with Condition II.(D)(3)(d), the permittee shall monitor the daily production/throughput rate for emissions units that have had a performance test (Title 129, Chapter 34, Section 006).

(b) The permittee shall sufficiently restrict public access to the source at the ambient air boundary relied upon in the air dispersion modeling analysis for the NAAQS compliance demonstration (Condition II.(E)(2), August 6, 2009 CP).

(3) Recordkeeping and Reporting Requirements

(a) A site survey, or similar documentation, containing as-built stack dimensions shall be maintained on-site and kept for the life of the source (Condition II.(E)(1), August 6, 2009 CP).

(b) A site survey or similar documentation containing the locations of the site boundary vertices shall be maintained on-site and kept for the life of the source (Condition II.(E)(2), August 6, 2009 CP).

(c) To demonstrate compliance with Condition II.(G)(1)(a), the owner or operator of the source shall keep records of monthly and rolling 12 month total emissions of HAPs and VOCs on-site (Title 129, Chapter 8, Section 015).

(i) The permittee shall keep appropriate records to support the emissions calculations above. These records include, but are not limited to, actual material throughput rates, production rates, fuel usage rates, and operating hours (Title 129, Chapter 8, Section 015).

(d) To demonstrate compliance with Condition II.(G)(2)(a) above, the owner or operator of the source shall keep records of the daily production/throughput rate for all units that have had a performance test. Records shall include the daily production/throughput rate and the production/throughput rate on a 30 day rolling average basis (Title 129, Chapter 34, Section 006; Title 129, Chapter 8, Section 015).

(e) To demonstrate compliance with Condition II.(D)(3)(d), for emissions units that have had a performance test, the permittee shall notify the NDEQ within fifteen (15) days of (Title 129, Chapter 34, Section 006):

(i) When there is a ten (10) percent increase in daily production/throughput rate over the rate recorded during the most recent valid performance test.

(ii) Each cumulative five (5) percent increase in daily production/throughput rate, based on a 30 day rolling average, over the rate recorded during the most recent valid performance test.

(iii) Exemption: The reporting requirements of this condition do not apply to emissions units that have been tested and use a CEMS to demonstrate compliance.

(f) For purposes of Conditions II.(G)(2)(a), II.(G)(3)(d), and II.(G)(3)(e) above, "rate" shall mean the production or throughput rate of an emissions unit as recorded in the most recent valid performance test and reported to the NDEQ in the source's written copy of the test results, or test report, documenting maximum capacity of the unit(s). The rate shall be extrapolated to daily, i.e., convert pounds per hour to pounds per day, gallons per hour to gallons per day, etc. If the source does not know the rate reported, they can contact the NDEQ to obtain the information.

## III. SPECIFIC CONDITIONS FOR AFFECTED EMISSION POINTS

(A) Specific Conditions for Grain Receiving, Handling, Storage, and Hammermilling

(1) Permitted Emission Points:

The source is permitted to operate the emission points and associated emission units identified in the following table:

| Emission Point ID# | Required Control Equipment ID# and Description | Emission Unit Description |
|---|---|---|
| EP-2 | CE001: Corn Truck Dump Pit Baghouse #1 | EU01: Rail Dump Pit |
| | | EU02: Truck Dump Pit |
| | | EU03: Corn Conveyor #1 |
| | | EU04: Corn Elevator #1 |
| EP-4 | CE003: Corn Storage Silo Baghouse #1 | EU08: Corn Conveyor #3 |
| | | EU09: Corn Conveyor #4 |
| | | EU10: Corn Storage Silo #1 |
| EP-5 | CE004: Corn Storage Silo Baghouse #2 | EU11: Corn Conveyor #3 |
| | | EU12: Corn Conveyor #4 |
| | | EU13: Corn Storage Silo #2 |
| EP-6 | CE005: Corn Storage Silo Baghouse #3 | EU14: Corn Conveyor #3 |
| | | EU15: Corn Conveyor #5 |
| | | EU16: Corn Storage Silo #3 |
| EP-7 | CE006: Corn Storage Silo Baghouse #4 | EU17: Corn Conveyor #3 |
| | | EU18: Corn Conveyor #5 |
| | | EU 19: Corn Storage Silo #4 |
| EP-8 | CE007: Corn Elevator Baghouse | EU20: Corn Elevator #3 |
| EP-9 | CE008: Surge Bin Baghouse | EU21: Surge Bin |
| | | EU22: Scalper |
| EP-11 | CE010: Hammermilling Baghouse #1 | EU25: Hammermill #1 |
| EP-12 | CE011: Hammermilling Baghouse #2 | EU26: Hammermill #2 |

(2) Applicable NSPS and NESHAP Requirements:

No NSPS or NESHAP requirements apply to the emission points or emission units listed in Condition III.(A)(1)

(3) Emission Limitations and Testing Requirements:

Pollutant emission rates from each emission point identified in the table below shall not exceed the permitted limits. Performance testing, if required, shall be conducted in accordance with Condition II.(D).

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Performance Testing Required |
|---|---|---|---|---|---|
| EP-2 | $PM/PM_{10}$ | 0.74 lb/hr[1] | 3-hr or test method average | Title 129, Chapter 17; Condition III.(A)(2), Aug. 6, 2009 CP | No |

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Performance Testing Required |
|---|---|---|---|---|---|
| EP-4, EP5 | $PM/PM_{10}$ | 0.06 lb/hr[1] (each) | 3-hr or test method average | Title 129, Chapter 17; Condition III.(A)(2), Aug. 6, 2009 CP | No |
| EP-6, EP-7 | $PM/PM_{10}$ | 0.06 lb/hr (each) | 3-hr or test method average | Title 129, Chapter 17; Condition III.(A)(2), Aug. 6, 2009 CP | Yes |
| EP-8 | $PM/PM_{10}$ | 0.03 lb/hr[1] | 3-hr or test method average | Title 129, Chapter 17; Condition III.(A)(2), Aug 6, 2009 CP | No |
| EP-9 | $PM/PM_{10}$ | 0.02 lb/hr[1] | 3-hr or test method average | Title 129, Chapter 17; Condition III.(A)(2), Aug. 6, 2009 CP | No |
| EP-11, EP-12 | $PM/PM_{10}$ | 0.19 lb/hr[1] (each) | 3-hr or test method average | Title 129, Chapter 17; Condition III.(A)(2), Aug. 6, 2009 CP | No |
| EP-2, EP-4, EP-5, EP-6, EP-7, EP-8, EP-9, EP-11, EP-12 | Opacity | < 20%[1] (each) | 6 minutes | Title 129, Chapter 20, Section 004 | No |

[1] Testing and monitoring requirements are satisfied through compliance with Condition III.(A)(4).

(4) Operational and Monitoring Requirements:

(a) Emissions from the emission units identified in Condition III.(A)(1) shall be controlled by pollution control equipment as follows: EU01 through EU04 shall be controlled by CE001; EU08 through EU10 shall be controlled by CE003; EU11 through EU13 shall be controlled by CE004; EU14 through EU16 shall be controlled by CE005; EU17 through EU19 shall be controlled by CE006; EU20 shall be controlled by CE007; EU21 and EU22 shall be controlled by CE008; EU25 shall be controlled by CE010; and EU26 shall be controlled by CE011 (Title 129, Chapters 17 and 20; Condition III.(A)(3)(a), Aug. 6, 2009 CP).

(b) Operation and maintenance of each baghouse shall be in accordance with the following requirements: (Title 129, Chapter 8, Section 015; Title 129, Chapters 17 and 20; Condition III.(A)(3)(b), Aug.6, 2009 CP).

(i) The baghouse shall be operated and be controlling emissions at all times when the associated emission units are in operation.

(ii) The baghouse shall be properly installed, operated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection, and maintenance of the baghouse shall be kept on site and readily available to NDEQ

representatives.

(iii) The baghouse shall be equipped with an operational pressure differential indicator. Pressure differential indicator readings shall be recorded at least once each day that the associated baghouse is operating. The pressure indicator shall be properly installed, operated, calibrated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection, and maintenance of the pressure differential indicator shall be kept on site and readily available to NDEQ representatives.

(iv) Baghouse filter bags are to be inspected and/or replaced as often as necessary to ensure proper operation or more frequently as indicated by pressure differential indicator readings or other indication of bag failure.

(v) Observations at least once each day during daylight hours of baghouse operation shall be conducted to determine whether there are visible emissions from the stack, leaks, noise, or other indications that corrective action is needed. If corrective action is required, it shall occur immediately.

(vi) The owner or operator shall maintain an on-site inventory of spare bags of each type used to ensure rapid replacement n the event of bag failure.

(vii) Collected waste material from the baghouse shall be handled, transported, and stored in a manner that ensures compliance with Condition I.(P).

(c) Grain receiving operations shall be located inside a building and shall utilize choke feed practices during receipt of grain (Title 129, Chapters 17 and 20; Condition III.(A)(3)(c), Aug. 6, 2009 CP).

(5) Recordkeeping and Reporting Requirements:

The permittee shall maintain the following records for the grain receiving, handling, storage, and hammermilling operations in order to demonstrate compliance with Condition III.(A)(4) [Title 129, Chapter 8, Section 015; Condition III.(A)(5), Aug. 6, 2009 CP]:

(a) Records documenting when routine observations were performed with a description, including operating parameters (e.g., pressure differential readings) and any atypical observations for the baghouse.

(b) Records documenting when routine maintenance and preventive actions were performed with a description of the maintenance and/or preventive action conducted for the baghouse.

(c) Filter replacement records, including filter position, type, and date of filter installation, for the baghouse.

(d) Records documenting date, time, observations indicating corrective action is necessary, and corrective action taken for each day the associated baghouse is in operation.

## III. SPECIFIC CONDITIONS FOR AFFECTED EMISSION POINTS

(B) Specific Conditions for Fermentation and Distillation

(1) Permitted Emission Points:

The source is permitted to operate the emission points and associated emission units identified in the following table:

| Emission Point ID# | Required Control Equipment ID# and Description | Emission Unit Description |
|---|---|---|
| EP-18 | CE017: Fermentation and Distillation $CO_2$ Scrubber with chemical addition | EU29: Slurry Tank |
| | | EU30: Liquefaction Tank |
| | | EU31: Yeast Tank |
| | | EU33: Process Condensate Tank |
| | | EU34 Beer Column |
| | | EU36: Stripper |
| | | EU38: Rectifier |
| | | EU40: Evaporator |
| | | EU42: Whole Stillage Tank |
| | | EU43: Thin Stillage Tank |
| | | EU44: Syrup Tank |
| | | EU45: Centrifuge #1 |
| | | EU46: Centrifuge #2 |
| | | EU47: Centrifuge #3 |
| | | EU48: Centrifuge #4 |
| | | EU52: Molecular Sieve #1 |
| | | EU53: Molecular Sieve #2 |
| | | EU56: 200 Proof Condenser |
| | | EU57: 200 Proof Condenser |
| | | EU58: Fermenter #1 |
| | | EU59: Fermenter #2 |
| | | EU60: Fermenter #3 |
| | | EU64: Beer Well |
| | | EU79: Stillage Conveyor #1 |
| | | EU80: Stillage Conveyor #2 |

(2) Applicable NSPS and NESHAP Requirements:

No NSPS or NESHAP requirements apply to the emission points or emission units listed in Condition III.(B)(1).

(3) Emission Limitations and Testing Requirements:

Pollutant emission rates from each emission point identified in the table below shall not exceed the permitted limits. Performance testing, if required, shall be conducted in accordance with Condition II.(D).

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Performance Testing Required |
|---|---|---|---|---|---|

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Performance Testing Required |
|---|---|---|---|---|---|
| EP-18 | VOC | 13.9 lb/hr[1] | 3-hour or test method average | Title 129, Chapter 17; Condition III.(B)(2), Aug.6, 2009 CP | Yes |
| EP-18 | HAP | 65% Control Efficiency for Combined HAPs | Speciation and Quantification of HAP composition at inlet and outlet | Title 129, Chapter 27; Condition III.(B)(2), Aug 6, 2009 CP | Yes |

[1] Expressed as mass of VOC

(4) Operational and Monitoring Requirements:

(a) Emissions from the emission units identified in Condition III.(B)(1) shall be controlled by pollution control equipment as follows: EU29 through EU31, EU33, EU34, EU36, EU38, EU40, EU42 through EU48, EU53, EU56 through EU60, EU64, EU79, and EU80 shall be controlled by CE017 (Title 129, Chapters 17 and 27; Condition III.(B)(3)(a), Aug. 6, 2009 CP).

(b) Operation and maintenance of the scrubber shall be in accordance with the following requirements: (Title 129, Chapter 8, Section 015; Title 129, Chapters 17 and 27; Condition III.(B)(3)(b), Aug. 6, 2009 CP)

(i) The scrubber shall be operated and controlling emissions at all times when the associated emission units are in operation (scrubber inlet pressure greater than zero), except for up to 50 hours of scrubber down time during each calendar year. Scrubber downtime occurs when the associated emission units are in operation (scrubber inlet pressure greater than zero) and the scrubber flow rate is below the facility's normal operating range [Condition III.(B)(3)(c), Aug.6, 2009 CP].

(ii) The scrubber shall be properly designed, installed, operated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the scrubber shall be kept on site and readily available to NDEQ representatives.

(iii) The scrubber shall be equipped with devices capable of monitoring the following operating parameters in the manner described below:

1. Scrubbing liquid flow rate shall be monitored continuously;

2. Chemical addition flow rate shall be monitored continuously;

3. Scrubber pressure differential shall be monitored continuously; and,

4. Scrubber liquid temperature shall be monitored

by direct measurement.

Note: Condition III.(B)(4)(b)(iii)(4) above differs from Condition III.(B)(3)(b)(ii) of the August 6, 2009 CP. These differences must be noted due to the provisions of Title 129, Chapter 8, Section 002.01. The CP condition required that the scrubber be equipped with a device capable of continuously monitoring scrubbing liquid temperature. However, since Nebraska Corn Processing, LLC uses groundwater wells with nearly constant water temperature to supply water to the scrubber, NDEQ has determined that it is more appropriate that the facility be able to measure water temperature at a particular instant in time, as opposed to measuring temperature continuously while the scrubber is in operation. Therefore, NCP is only required to be able to measure liquid temperature with a direct measurement method.

(iv) The total monthly amount and type of chemical added to the scrubber shall be monitored and recorded by the permittee.

(v) Chemical draw down checks shall be performed upon request from NDEQ personnel to verify that the flow meter is working correctly.

(vi) All monitored scrubber operating parameters shall be maintained at the levels recorded during the most recent valid performance test that demonstrated compliance with the permitted emissions limits as described below:

1. Scrubber liquid shall be comprised of only well water to ensure consistent liquid temperature. In the event that Nebraska Corn Processing, LLC chooses to use an alternate scrubber liquid source, or scrubber liquid recirculation, compliance testing will be required to determine an appropriate scrubber liquid temperature limit.

2. For pressure differential, "maintained at the levels recorded during the most recent valid performance test" shall mean within a range that is representative of the tested level(s) under normal operating conditions, as determined by NDEQ.

3. The scrubbing liquid flow rate, flow rate of chemical additions, and concentration of the chemical injected into the scrubber shall be maintained at or above the levels recorded; or,

Note: Condition III.(B)(4)(b)(vi) above differs from Condition III.(B)(3)(b)(iii) of the August 6, 2009 CP. These differences must be noted due to the provisions of Title 129, Chapter 8, Section 002.01. The original CP required the facility to submit operating parameters to NDEQ with submittal of the operating permit application. Given the requirements of Condition III.(B)(4)(b)(vi), though, NDEQ has determined that there is no need for the facility to submit normal operating parameters at this time.

(vii) Flow meters for recording scrubbing liquid and chemical addition flow rates shall be maintained and calibrated according to manufacturer's instructions.

(viii) Observations at least once each day during daylight hours of scrubber operation shall be conducted to determine whether there are leaks, noise, or other indications that corrective action is necessary. If corrective action is required, it shall occur immediately.

(c) In order to demonstrate compliance with the VOC and HAP limitations in Conditions II.(G)(1)(a) and Condition III.(B)(3), the permittee shall derive pounds per hour (lb/hr) emission factors for VOCs and HAPs by conducting performance testing on Scrubber CE017. The performance testing shall be as described below: (Title 129, Chapter 34).

(i) By March 31st of each year, the source shall calculate the facility-wide rolling 12-month total emissions of the largest single HAP.

1. To calculate the VOC and HAP emissions from the fermentation scrubber, the source shall use the emission factor derived from the testing as required in Condition III.(B)(4)(c)(iii) below.

2. The source shall use the same calculation methodology as required in Condition II.(G)(1)(a)(i) to calculate the HAP emissions from the fermentation scrubber.

3. The source shall submit to the air division their 12-month rolling total emissions, including supporting calculations, by April 30 of each year.

(ii) To calculate the tons/yr VOC emissions from the fermentation scrubber, the permittee shall use the emission factor derived from performance testing as required in Condition III.(B)(4)(c)(iii).

1. The source shall use the same calculation methodology as required in II.(G)(1)(a) to calculate VOC emissions from the fermentation scrubber.

(iii) The testing frequency for Scrubber CE017 is based upon the facility-wide rolling 12-month total emissions of the largest single HAP as calculated in Condition III.(B)(4)(c)(i). Testing frequency is determined each March 31 using the Tiers listed below.

| Tier | Rolling 12-Month Total Emissions of Largest Single HAP | Testing Frequency |
|---|---|---|
| 1 | < 2.5 tons per year | Twice per permit term |
| 2 | ≥ 2.5 tons per year and < 5 tons per year | Annual |
| 3 | ≥ 5 tons per year and < 8 tons per year | Semi-Annual |
| 4 | ≥ 8 tons per year | Quarterly |

1. Under each tier, one test must be completed during the third quarter (July through September) each year testing is required.

2. For Tier 3 and Tier 4 sources, the timeframe between tests shall be approximately the same.

3. For Tier 1 sources:

   a. The first test must be completed within one year of permit issuance or becoming a Tier 1 source; and,

   b. The second test must be completed in the third quarter before the permit renewal application is due.

(iv) Upon issuance of this permit, initial testing frequency shall be in accordance with Tier 2 identified in Condition III.(B)(4)(d)(i).

(v) The protocol required in Condition II.(D)(3)(b) will identify all operating ranges that testing, as required in this condition, will cover.

(vi) Only one valid performance test may be conducted at each operating range when conducting performance tests on Scrubber CE017.

1. Subsequent performance tests may be conducted if the facility chooses to change any one or all operational parameters (chemical addition rate, type of chemical used, chemical concentration, and liquid flow rate) in order to demonstrate compliance with permitted limits.

(d) The testing and monitoring requirements in Conditions III.(B)(4)(b)(iii) through III.(B)(4)(b)(vii) and Condition III.(B)(4)(c) are no longer in effect when the permittee uses an approved CEMS or PEMS monitoring system (Title 129, Chapter 8, Section 015).

(i) If the permittee chooses to utilize a CEMS or PEMS monitoring system, the permittee shall notify the NDEQ at least sixty (60) days prior to installation of the monitoring system.

(ii) Upon installation of a CEMS or PEMS monitoring system, the permittee shall meet the following, as appropriate:

1. All CEMS shall:

A. Comply with applicable Performance Specifications found in 40 CFR Part 60, Appendix B and F; and,

B. Sample, analyze, and record data at least every 15 minutes while the emissions unit is operating.

2. All PEMS shall:

A. Comply with applicable Performance Specifications found in Title 129, Chapter 34, Section 009 through 015, or Appendix B, Performance Specification 16; and,

B. Sample, analyze, and record data at least every 15 minutes, or at another less frequent interval approved by the NDEQ, while the emissions unit is operating.

Note: Condition III.(B)(4)(d) above differs from Condition III.(B)(3)(b)(iii) of the August 6, 2009 CP. These differences must be noted due to the provisions of Title 129, Chapter 8, Section 002.01. The original CP condition stated that alternate scrubber operating parameters could be used if test results or operation of a CEMs device demonstrated that the facility was achieving better emissions control. However, NDEQ has determined that there is no need to adhere to scrubber operating parameters when a CEMs device is used to demonstrate compliance.

(5) Recordkeeping and Reporting Requirements:

The permittee shall maintain the following records for fermentation and distillation in order to demonstrate compliance with Condition III.(B)(4)

[Title 129, Chapter 8, Section 015; Condition III.(B)(5), August 6, 2009 CP]:

(a) Records that document the continuous operating parameter data for the scrubber. The records shall include:

(i) Scrubbing liquid flow rate;

(ii) Chemical addition flow rate; and,

(iii) Scrubber pressure differential readings.

(b) Monthly records that document the amount of chemical injected into the water supplied to the scrubber.

(c) Monthly records that document the purchase date, concentration, amount, and type of chemical purchased for chemical injection associated with the scrubber.

(d) Records that document the operating parameters developed during the most recent valid performance test conducted at the facility.

(e) Records documenting the date, time, observations, and corrective actions are taken for each day the associated scrubber is in operation.

(f) Monthly records documenting the number of hours the fermentation scrubber was not operating, the pieces of equipment routed to the fermentation scrubber while it was not operating, and the reason(s) why the fermentation scrubber was not in operation to demonstrate compliance with II.(G)(1)(a) and III.(B)(4)(b)(i).

(g) Records documenting when routine maintenance and preventive actions were performed with a description of the maintenance and/or preventive action performed.

(h) Records that document the facility-wide rolling 12 month total emissions of the single largest HAP.

(i) If a CEMS or PEMS is utilized, all CEMS or PEMS recorded data shall be documented and kept on-site.

## III. SPECIFIC CONDITIONS FOR AFFECTED EMISSION POINTS

(C) Specific Conditions for Boilers

(1) Permitted Emission Points:

The source is permitted to operate the emission points and associated emission units identified in the following table:

| Emission Point ID# | Control Equipment ID# and Description | Emission Unit ID# and Description | Maximum Capacity | Permitted Fuel Type |
|---|---|---|---|---|
| EP-20 | Low $NO_x$ Burner #1 | EU73: Boiler #1, Boiler B | 92.1 MMBtu/hr | Natural Gas[1] |
| EP-21 | Low $NO_x$ Burner #2 | EU74: Boiler #2, Boiler A | 92.1 MMBtu/hr | Natural Gas[1] |

[1] Permitted Fuel Type Specified in Aug. 6, 2009 CP

(2) Applicable NSPS and NESHAP Requirements:

| Applicable Requirement | Title | Rule Citation |
|---|---|---|
| NSPS, Subpart A | General Provisions | Title 129, Chp. 18, Sec 001.01; 40 CFR 60.1 |
| NSPS, Subpart Dc | Small Industrial, Commercial, and Institutional Steam Generating Units | Title 129, Chp. 18, Sec. 001.52; 40 CFR 60.40b |

(a) The NSPS for Small Industrial, Commercial, and Institutional Steam Generating Units, Subparts A and Dc, (Title 129, Chapter 18, Sections 001.01 and 001.52) apply to both boiler units (EU73 and EU74) at Nebraska Corn Processing, LLC (Condition III.(C)(4), August 6, 2009 CP). In the event of any discrepancies between this condition and the NSPS requirements, the NSPS requirements take precedence unless they are less stringent.

(b) The NDEQ has not identified any NESHAP requirements that apply to the emission points or emission units listed in Condition III.(C)(1).

(3) Emission Limitations and Testing Requirements:

Pollutant emission rates from each emission point identified in the table below shall not exceed the permitted limits. Performance testing, if required, shall be conducted in accordance with Condition II.(D).

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Performance Testing Required |
|---|---|---|---|---|---|
| EP-20, EP-21 | $PM/PM_{10}$ | 0.90 lb/hr[1] | 3 hour or test method average | Title 129, Chapter 17; Condition III.(C)(2), Aug. 6, 2009 CP | No |
| | $SO_2$ | 0.20 lb/hr[1] | 3-hour or test method average | Title 129, Chapter 17; Condition III.(C)(2), Aug 6, 2009 CP | No |

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Performance Testing Required |
|---|---|---|---|---|---|
| | $NO_x$ | 2.970 lb/hr[1] | 3-hour or test method average | Title 129, Chapter 17; Condition III.(C)(2), Aug. 6, 2009 CP | No |
| | CO | 3.663 lb/hr[1] | 3-hour or test method average | Title 129, Chapter 17; Condition III.(C)(2), Aug. 6, 2009 CP | No |
| | VOC | 0.297 lb/hr[1] | 3-hour or test method average | Title 129, Chapter 17; Condition III.(C)(2), Aug. 6, 2009 CP | No |
| | PM | 55.23 lb/hr[1] | Hourly | Title 129, Chapter 20, Section 002 | No |
| | Opacity | < 20 percent [1] | 6 minutes | Title 129, Chapter 20, Section 004 | No |

[1] Testing and monitoring requirements are satisfied through compliance with Condition III.(A)(4).

(4) Operational and Monitoring Requirements:

(a) The boilers (EP-20 and EP-21) shall use only natural gas as a fuel source (Condition III.(C)(1), Aug. 6, 2009 CP).

(b) The boilers (EP-20 and EP-21) shall be properly designed, installed, operated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection and maintenance of the boilers shall be kept on site and readily available to NDEQ representatives (Title 129, Chapter 8, Section 015).

(c) The permittee shall comply with the operational and monitoring requirements and limitations as specified in NSPS Subpart Dc [Condition III.(C)(3), Aug. 6, 2009 CP].

(5) Recordkeeping and Reporting Requirements:

The permittee shall maintain the following records for the boiler units in order to demonstrate compliance with Condition III.(C)(4) [Title 129, Chapter 8, Section 015; Condition III.(C)(5), Aug. 6, 2009 CP]:

(a) Records documenting when routine maintenance and preventive actions were performed with a description of the maintenance and/or preventive action performed.

(b) Notifications and recordkeeping as required by NSPS Subpart A, as found in 40 CFR 60.7.

(c) Recordkeeping as required by NSPS Subpart Dc, as found in 40 CFR 60.48c.

## III. SPECIFIC CONDITIONS FOR AFFECTED EMISSION POINTS

(D) Specific Conditions for Tanks

(1) Permitted Emission Points:

The source is permitted to operate the storage and process tanks identified in the following table at the capacities and for the storage of the products listed:

| Emission Point ID# and Emission Unit ID# | Maximum Storage Capacity (Gallons) | Product Stored in Tank |
|---|---|---|
| TK001 | 541,456 | Denatured Ethanol |
| TK002 | 541,456 | Denatured Ethanol |
| TK003 | 155,820 | Anhydrous Ethanol |
| TK004 | 155,820 | Anhydrous Ethanol |
| TK005 | 91,406 | Denaturant |
| TK011 | 2,000 | Corrosion Inhibitor |

(2) Applicable NSPS and NESHAP Requirements:

| **Applicable Requirement** | **Title** | **Rule Citation** |
|---|---|---|
| NSPS, Subpart A | General Provisions | Title 129, Chp. 18, Sec 001.01; 40 CFR 60.1 |
| NSPS, Subpart Kb | Volatile Organic Liquid Storage Vessels (Including Liquid Storage Vessels) | Title 129, Chp. 18, Sec. 001.62; 40 CFR 60.110b |

(a) The NSPS for Volatile Organic Liquid Storage Vessels (Including Liquid Storage Vessels), [Title 129, Chapter 18, Sections 001.01 and 001.62] apply to tanks TK001 through TK005 at Nebraska Corn Processing, LLC (Condition III.(G)(4), August 6, 2009 CP). In the event of any discrepancies between this condition and the NSPS requirements, the NSPS requirements take precedence unless they are less stringent.

(b) The NDEQ has not identified any NESHAP requirements that apply to the emission points or emission units listed in Condition III.(D)(1).

(3) Emission Limitations and Testing Requirements:

The source shall comply with the emission limitations and testing requirements for TK001 through TK005 as specified in NSPS Subpart Kb (Condition III.(G)(2), Aug. 6, 2009 CP).

(4) Operational and Monitoring Requirements:

For tanks TK001 through TK005, Nebraska Corn Processing, LLC shall comply with the operational and monitoring requirements and limitations as specified in NSPS, Subpart Kb (Condition III.(G)(3), Aug. 6, 2009 CP).

(a) Tanks TK001 through TK005 shall be equipped with internal floating roofs and primary seals that comply with NSPS Subpart Kb [40 CFR 60.112b(a)(1)].

(b) The floating roofs and primary seals associated with Tanks TK001 through TK005 shall be visually inspected and repaired in accordance with the inspection and testing procedures of NSPS Subaprt Kb [40 CFR 60.113b(a)].

(5) Recordkeeping and Reporting Requirements:

The permittee shall complete notifications, reporting, and recordkeeping as required by NSPS Subparts A and Kb, as found in 40 CFR 60.7 and 40 CFR 60.115b, respectively (Condition III.(G)(5), Aug. 6, 2009 CP).

(a) Keep a record of each inspection performed as required by 40 CFR 60.113b(a)(1). Each record shall identify the storage vessel on which the inspection was performed and shall contain the date the vessel was inspected and the observed condition of each component of the control equipment (seals, internal floating roof, and fittings) [40 CFR 60.115b(a)(2)].

(b) If any of the conditions described in 40 CFR 60.113b(a)(2) are detected during the annual visual inspection, a report shall be furnished to the Administrator within 30 days of the inspection. Each report shall identify the storage vessel, the nature of the defects, and the date the storage vessel was emptied or the nature of and date the repair was made [40 CFR 60.115b(a)(3)].

(c) After each inspection required by 40 CFR 60.113b(a)(3) that finds holes or tears in the seal or seal fabric, or defects in the internal floating roof, or other control equipment defects listed in 40 CFR 60.113b(a)(3)(ii), a report shall be furnished to the Administrator within 30 days of the inspection. The report shall identify the storage vessel and the reason it did not meet the specifications of 40 CFR 61.112b(a)(1) and list each repair made [40 CFR 60.115b(a)(4)].

## III. SPECIFIC CONDITIONS FOR AFFECTED EMISSION POINTS

(E) Specific Conditions for Ethanol Loadout

(1) Permitted Emission Points:

The source is permitted to operate the emission points and associated emission units identified in the following table:

| Emission Point ID# | Control Equipment ID# and Description | Emission Unit ID# and Description | Maximum Capacity | Permitted Fuel Type |
|---|---|---|---|---|
| EP-23 | CE020: Loadout Flare | EU76: Ethanol Truck Loadout | - | - |
| | | EU76: Ethanol Rail Loadout | - | - |
| | | EU76: Ethanol Loadout Flare | 2.0 MMBtu/hr (Flare); 0.03 MMBtu/hr (Pilot) | Natural Gas[1] |

[1] Permitted Fuel Type Specified in Aug. 6, 2009 CP

(2) Applicable NSPS and NESHAP Requirements:

No NSPS or NESHAP requirements apply to the emission points or emission units listed in Condition III.(E)(1).

(3) Emission Limitations and Testing Requirements:

Pollutant emission rates from each emission point identified in the table below shall not exceed the permitted limits. Performance testing, if required, shall be conducted in accordance with Condition II.(D).

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Performance Testing Required (Yes/No) |
|---|---|---|---|---|---|
| EP-23 | PM | 1.2 lb/hr[1] | Hourly | Title 129, Chapter 20, Section 002 | No |
| | Opacity | < 20 percent[2] | 6 minutes | Title 129, Chapter 20, Section 004 | No |

[1] Emission factor for PM is well below the permitted limit from Chapter 20 (See Fact Sheet Attachment). Therefore, no monitoring or testing is required for this emission point.
[2] Compliance with Condition III.(E)(4) satisfies the testing and monitoring requirements for opacity.

(4) Operational and Monitoring Requirements:

(a) The source shall used submerged loading when transferring liquid product from the storage tanks to tanker railcar or tanker trucks (Title 129, Chapters 17 and 27; Condition III.(D)(3)(a), Aug. 6, 2009 CP).

(b) Truck and rail loadout of liquid product shall be controlled by a closed vapor recovery system with an enclosed flare (CE020) at all times liquid product loadout is occurring (Title 129, Chapters 17 and 27; Condition III.(D)(3)(b), Aug. 6, 2009 CP).

(c) Operation and maintenance of the closed vapor recovery system with flare shall be in accordance with the following requirements (Title 129, Chapters 17 and 27; Condition III.(D)(3)(c), Aug. 6, 2009 CP):

(i) The vapor recovery system and flare shall be properly designed, installed, operated, and maintained. Manufacturer's documentation shall be kept on site and readily available to NDEQ representatives.

(ii) When ethanol loadout is occurring, a flame shall be present at the flare. The facility must install an appropriate safety device or flame monitoring system to ensure that truck and rail loadout cannot occur without the presence of a flame. The safety device or flame monitoring system shall be properly installed, operated, calibrated, and maintained. Manufacturer's documentation shall be kept on site and readily available to NDEQ representatives.

(5) Recordkeeping and Reporting Requirements:

The permittee shall maintain records that document when routine maintenance and preventive actions were performed on the vapor recovery system and flare with a description of the maintenance and/or preventative action performed [Condition III.(D)(5), Aug. 6, 2009 CP].

## III. SPECIFIC CONDITIONS FOR AFFECTED EMISSION POINTS

(F) Specific Conditions for Equipment Leaks

(1) Permitted Emission Points:

Each valve, pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, flange, or other connector in VOC service and any device or system required by NSPS Subpart VV located throughout the facility.

(2) Applicable NSPS and NESHAP Requirements:

| Applicable Requirement | Title | Rule Citation |
|---|---|---|
| NSPS, Subpart A | General Provisions | Title 129, Chp. 18, Sec 001.01; 40 CFR 60.1 |
| NSPS, Subpart VV | Equipment Leaks in the Synthetic Organic Chemicals Manufacturing Industry | Title 129, Chp. 18, Sec. 001.14; 40 CFR 60.480 |

(a) The NSPS for Equipment Leaks in the Synthetic Organic Chemicals Manufacturing Industry, Subparts A and VV, (Title 129, Chapter 18, Sections 001.01 and 001.14) applies to equipment leaks at Nebraska Corn Processing, LLC (Condition III.(I)(4), August 6, 2009 CP). In the event of any discrepancies between this condition and the NSPS requirements, the NSPS requirements take precedence unless they are less stringent.

(b) The NDEQ has not identified any NESHAP requirements that apply to the emission points or emission units listed in Condition III.(E)(1).

(3) Emission Limitations and Testing Requirements:

The facility shall comply with the emission limitations and testing requirements as specified in 40 CFR 60 Subpart VV (Condition III.(I)(2), Aug. 6, 2009 CP).

(4) Operational and Monitoring Requirements:

The facility shall comply with the operational and monitoring requirements and limitations as specified in 40 CFR 60 Subpart VV (Condition III.(I)(3), Aug. 6, 2009 CP).

(5) Recordkeeping and Reporting Requirements:

The permittee shall maintain the following records for equipment leaks at the facility [Condition III.(I)(5), Aug. 6, 2009 CP]:

(a) Notifications and recordkeeping as required by 40 CFR 60.7.

(b) Recordkeeping and reporting as required by 40 CFR 60.486 and 40 CFR 60.487.

(c) Records documenting the date leak detection testing occurred; which valves, pumps, seals, open-ended lines, flanges, connectors, etc. were tested; and who conducted the testing.

(d) The owner or operator shall submit a semi-annual leak detection and repair report every six (6) calendar months to the NDEQ. Reports for each six (6) calendar month reporting period shall be submitted within 45 days following June 30 and December 31 of each year. Each report must be certified by a responsible official and include the following items:

(i) Date and time testing occurred

(ii) Who conducted the testing

(iii) Additional information required to be reported to the NDEQ in accordance with 40 CFR 60.480.

## III. SPECIFIC CONDITIONS FOR AFFECTED EMISSION POINTS

(G) Specific Conditions for Cooling Tower

(1) Permitted Emission Points:

The source is permitted to operate the emission points and associated emission units identified in the following table:

| Emission Point ID# | Control Equipment ID# and Description | Emission Unit ID# and Description | Number of Cooling Tower Cells | Maximum Circulation Rate (gal/hr) |
|---|---|---|---|---|
| EP-25 | N/A | FS006 | 4 | 1,500,000 (total) |

(2) Applicable NSPS and NESHAP Requirements:

No NSPS or NESHAP requirements apply to the emission points or emission units listed in Condition III.(G)(1).

(3) Emission Limitations and Testing Requirements:

(a) Pollutant emission rates from each emission point identified in the table below shall not exceed the permitted limits. Performance testing, if required, shall be conducted in accordance with Condition II.(D).

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Performance Testing Required (Yes/No) |
|---|---|---|---|---|---|
| EP-25 | PM | 103.86 lb/hr[1] | Hourly | Title 129, Chapter 20, Section 001 | No |

[1] Testing and monitoring requirements satisfied through compliance with Condition III.(G)(4).

Note: Condition III.(G)(3)(a) differs from Condition III.(F)(2)(a) of the August 6, 2009 CP. The original CP condition stipulated that the cooling tower was not subject to any emission limitations. However, NDEQ has determined this to be an error, as the cooling tower is subject to a PM limitation under Title 129, Chapter 20, Section 001. Therefore, a PM limitation was added in order to correct this error.

(b) A representative TDS sample shall be collected and tested from the cooling tower a minimum of once per calendar month. The test method used to determine TDS concentration shall be in accordance with an EPA approved method and shall be documented (Condition III.(F)(2)(b), Aug. 6, 2009 CP).

(4) Operational and Monitoring Requirements:

(a) Drift loss from the cooling tower shall be limited to 0.005 percent. Verification of drift loss shall be by manufacturer's guarantee. Manufacturer's drift loss guarantee shall be kept on site and readily available to Department representatives, upon request, for the life of the unit (Title 129, Chapters 17 and 20; Condition III.(F)(3)(a), Aug. 6, 2009 CP).

(b) TDS concentration of the cooling water in the cooling tower shall not exceed 2,500 ppm (Title 129, Chapters 17 and 20; Condition III.(F)(3)(b), Aug. 6, 2009 CP).

(5) Recordkeeping and Reporting Requirements:

The permittee shall maintain the following records for the cooling tower in order to demonstrate compliance with Condition III.(G)(4) [Condition III.(F)(5), Aug. 6, 2009 CP]:

(a) Records documenting when routine maintenance and preventative actions were performed with a description of the maintenance and/or preventative action performed.

(b) TDS concentration in cooling tower water for each sampling event and test method used.

## III. SPECIFIC CONDITIONS FOR AFFECTED EMISSION POINTS

(H) Specific Conditions for Emergency Equipment

(1) Permitted Emission Points:

The source is permitted to operate the emission points and associated emission units identified in the following table:

| Emission Point ID# | Emission Unit ID# and Description | Capacity (HP) | Permitted Fuel Type |
|---|---|---|---|
| EP-24 | EU77: Fire Pump | 290 | No. 1 and No. 2 Diesel Fuel[1] |
| EP-38 | EU78: Emergency Generator | 2,220 | No. 1 and No. 2 Diesel Fuel[1] |

[1] Permitted Fuel Type Specified in Aug. 6, 2009 CP

(2) Applicable NSPS and NESHAP Requirements:

| Applicable Requirement | Title | Rule Citation |
|---|---|---|
| NSPS, Subpart A | General Provisions | Title 129, Chp. 18, Sec 001.01; 40 CFR 60.1 |
| NSPS, Subpart IIII | Stationary Compression Ignition Internal Combustion Engines | Title 129, Chp. 18, Sec. 001.76; 40 CFR 60.4200 |
| NESHAP, Subpart ZZZZ | Stationary Reciprocating Internal Combustion Engines | Title 129, Chp. 28, Sec. 001.88; 40 CFR 63.6580 |

(a) The NSPS for Stationary Compression Ignition Internal Combustion Engines, Subparts A and IIII, (Title 129, Chapter 18, Sections 001.01 and 001.14) applies to the fire pump and emergency generator (EU77 and EU78) at Nebraska Corn Processing, LLC (Condition III.(I)(4), August 6, 2009 CP). In the event of any discrepancies between this condition and the NSPS requirements, the NSPS requirements take precedence unless they are less stringent.

(b) The NDEQ has identified NESHAP Subpart ZZZZ as applicable to the fire pump and emergency generator (EU77 and EU78). However, per 40 CFR 63.6590(c), the facility meets the requirements of this subpart through compliance with NSPS Subpart IIII.

(3) Emission Limitations and Testing Requirements:

Pollutant emission rates from each emission point identified in the table below shall not exceed the permitted limits. Performance testing, if required, shall be conducted in accordance with Condition II.(D).

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Performance Testing Required (Yes/No) |
|---|---|---|---|---|---|

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Performance Testing Required (Yes/No) |
|---|---|---|---|---|---|
| EP-24 | NMHC + $NO_x$ | 7.8 g/hp-hr[1] | Test Method Average | 40 CFR 60.4205(c): Table 4 to Subpart IIII | No |
| EP-24 | CO | 2.6 g/hp-hr[1] | Test Method Average | 40 CFR 60.4205(c): Table 4 to Subpart IIII | No |
| EP-24 | PM | 0.40 g/hp-hr[1] | Test Method Average | 40 CFR 60.4205(c): Table 4 to Subpart IIII | No |
| EP-38 | Hydrocarbons | 1.0 g/hp-hr[1] | Test Method Average | 40 CFR 60.4205(a): Table 1 to Subpart IIII | No |
| EP-38 | $NO_x$ | 6.9 g/hp-hr[1] | Test Method Average | 40 CFR 60.4205(a): Table 1 to Subpart IIII | No |
| EP-38 | CO | 8.5 g/hp-hr[1] | Test Method Average | 40 CFR 60.4205(a): Table 1 to Subpart IIII | No |
| EP-38 | PM | 0.40 g/hp-hr[1] | Test Method Average | 40 CFR 60.4205(a): Table 1 to Subpart IIII | No |
| EP-24 | PM | 1.21 lb/hr[1] | Hourly | Title 129, Chapter 20, Section 002 | No |
| EP-38 | PM | 8.39 lb/hr[1] | Hourly | Title 129, Chapter 20, Section 002 | No |
| EP-24, EP-38 | Opacity | < 20 percent (each)[1] | 6 minutes | Title 129, Chapter 20, Section 004 | No |

[1] Testing and monitoring requirements satisfied through compliance with Condition III.(H)(4).

(4) Operational and Monitoring Requirements:

(a) EU77 and EU78 shall each be limited to 500 hours of use per any period of twelve (12) consecutive calendar months. At no time during the first eleven (11) calendar months after the permit issuance date shall the sum of all the previous months' operating hours exceed 500 hours for each EU (Title 129, Chapter 17; Condition III.(E)(3)(a), Aug. 6, 2009 CP).

(b) The facility shall comply with the operational and monitoring requirements and limitations as specified in NSPS Subpart IIII (Condition III.(E)(3)(b), Aug. 6, 2009 CP).

(c) The facility shall comply with the operational and monitoring requirements and limitations as specified in NESHAP Subpart ZZZZ (Condition III.(E)(3)(b), Aug. 6, 2009 CP). As per 40 CFR 63.6590(c), the operational and monitoring requirements of NESHAP ZZZZ are satisfied through compliance with the requirements of NSPS IIII.

(d) EU77 and EU78 shall use only No.1 or No. 2 diesel as a fuel source (Condition III.(E)(1), August 6, 2009 CP).

(e) The sulfur content of the diesel fuel shall not exceed 15 ppm (40 CFR 60.4207).

Note: Condition III.(H)(4)(e) above differs from Condition III.(E)(3)(c) of the Aug. 6, 2009 CP. The CP required that the sulfur content of diesel fuel not exceed 0.05 percent by weight. However, NSPS Subpart IIII requires that sulfur content of diesel fuel not exceed 15 ppm. The more stringent NSPS sulfur requirement is included in this OP.

(5) Recordkeeping and Reporting Requirements:

The permittee shall maintain the following records for the emergency equipment in order to demonstrate compliance with Condition III.(I)(4) [Title 129, Chapter 8, Section 015; Condition III.(E)(5), Aug. 6, 2009 CP]:

(a) Fuel receipts for the diesel fuel from the supplier for the fuel combusted in the generator and fire pump engine. Fuel receipts shall state the sulfur content in the distillate fuel.

(b) Hours of operation for the emergency generator and the emergency firewater pump engine for each calendar month and for each period of twelve (12) consecutive calendar months.

(c) Notifications and recordkeeping as required by NSPS Subpart A as found in 40 CFR 60.7.

(d) Recordkeeping as required by NSPS Subpart IIII as found in 40 CFR 60.4214.

(e) Recordkeeping as required by NESHAP Subpart ZZZZ. As per 40 CFR 60.6590(c), the recordkeeping requirements of Subpart ZZZZ are satisfied through compliance with the requirements of NSPS IIII.

## III. SPECIFIC CONDITIONS FOR AFFECTED EMISSION POINTS

(I) Specific Conditions for Haul Roads

(1) Permitted Emission Points:

All on-site haul roads with production related truck traffic shall be paved. The paved haul roads shall comply with the following conditions (Title 129, Chapters 17, 20, and 32; Condition III.(H)(1), Aug. 6, 2009 CP).

(2) Applicable NSPS and NESHAP Requirements:

No NSPS or NESHAP requirements apply to the emission points or emission units listed in Condition III.(I)(1).

(3) Emission Limitations and Testing Requirements:

(a) The haul road silt loading shall not exceed 1.5 $g/m^2$ (Title 129, Chapters 17, 20, and 32; Condition III.(H)(2)(a), Aug. 6, 2009 CP).

(b) A series of initial silt loading performance tests shall be conducted at least once per calendar quarter in order to demonstrate compliance with the limitation established in Condition III.(I)(3)(a). The silt load testing shall be in accordance with Specific Condition II.(D) [Condition III.(H)(2)(b), Aug. 6, 2009 CP].

(4) Operational and Monitoring Requirements:

(a) The owner or operator shall develop, maintain, and implement a Fugitive Dust Control Plan (FDCP) to control emissions from haul roads to comply with General Condition I.(P) and Condition III.(I)(3)(a) [Condition III.(H)(3)(a), Aug. 6, 2009 CP].

(b) For each day of operation, the owner or operator shall conduct a survey of the plant property and haul roads to determine if visible fugitive emissions are being generated and leaving plant property. Implementation of fugitive dust control shall be taken immediately upon observation of visible fugitive emissions leaving plant property or more frequently in accordance with the FDCP. Documentation of all corrective actions and daily surveys shall be maintained in a log that shall accompany the FDCP (Condition III.(H)(3)(b), Aug 6., 2009 CP).

(5) Recordkeeping and Reporting Requirements:

The permittee shall maintain the following records for haul roads in order to demonstrate compliance with Condition III.(H)(4) [Title 129, Chapter 8, Section 015; Condition III.(H)(5), Aug. 6, 2009 CP]:

(a) The FDCP shall be kept onsite and readily available to NDEQ representatives.

(b) Records documenting use of fugitive dust control measures on haul roads.

(c) Records of haul road visible emissions checks taken daily during operation and a description of corrective action taken, if needed.

(d) Records documenting when silt load testing was completed and the results of each testing.

## III. SPECIFIC CONDITIONS FOR AFFECTED EMISSION POINTS

(J) Specific Conditions for Insignificant Activities:

(1) This section is reserved for insignificant activities. No insignificant activities were declared by Nebraska Corn Processing, LLC in the Class II Operating Permit application received March 5, 2009.

(2) Emission Limitations:

If insignificant activities are declared by Nebraska Corn Processing, LLC after permit issuance, each insignificant activity shall not exceed the permitted limits identified in the following table.

| Insignificant Activities | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit |
|---|---|---|---|---|
| All units identified in III.(J)(1) | Opacity | < 20 percent | 6-minute | Title 129, Chapter 20, Section 004 |
| All combustion units identified in III.(J)(1) | PM | 0.60 lb/MMBtu | 1-hour | Title 129, Chapter 20, Section 002 |

(3) Operational and Monitoring Requirements:

There are no specific requirements for the insignificant activities identified in Condition III.(J)(1).

(4) Recordkeeping and Reporting Requirements:

A written notification in accordance with Condition II.(C) of this permit shall be made to the NDEQ if there are additions, or changes, to the list of insignificant activities in Specific Condition III.(J)(1) (insignificant activities are as defined in Operating Permit Application Forms). Notification is only required for those insignificant activities that must be included in an application.

## IV. Compliance Schedule

(A) Upon issuance of this operating permit, Nebraska Corn Processing, LLC will not be in compliance with the tons per year (tpy) VOC limit in Condition II.(G)(1)(a), the pollution control equipment requirements of Condition III.(A)(4)(a), and the pound per hour (lb/hr) VOC limit expressed in Condition III.(B)(3). These conditions are worded as follows:

II.(G)(1)(a) Pollutant emission rates from each emission point identified in the table below shall not exceed the permitted limits. Performance testing, if required, shall be conducted in accordance with Condition II.(D).

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Performance Testing Required |
|---|---|---|---|---|---|
| All | Any Individual HAP | < 10 Tons Per Year | 12 Month Rolling Total | Condition II.(F), August 6, 2009 CP; Title 129, Chapters 27 and 28 | No |
| All | Total Combined HAPs | < 25 Tons Per Year | 12 Month Rolling Total | Condition II.(F), August 6, 2009 CP; Title 129, Chapters 27 and 28 | No |
| All | VOCs | < 100 Tons Per Year | 12 Month Rolling Total | Title 129, Chapter 5, Section 001.03 | No |

III.(A)(4)(a) Emissions from the emission units identified in Condition III.(A)(1) shall be controlled by pollution control equipment as follows: EU01 through EU04 shall be controlled by CE001; EU08 through EU10 shall be controlled by CE003; EU11 through EU13 shall be controlled by CE004; EU14 through EU16 shall be controlled by CE005; EU17 through EU19 shall be controlled by CE006; EU20 shall be controlled by CE007; EU21 and EU22 shall be controlled by CE008; EU25 shall be controlled by CE010; and EU26 shall be controlled by CE011 (Title 129, Chapters 17 and 20; Condition III.(A)(3)(a), Aug. 6, 2009 CP).

III.(B)(3) Pollutant emission rates from each emission point identified in the table below shall not exceed the permitted limits. Performance testing, if required, shall be conducted in accordance with Condition II.(D).

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Performance Testing Required |
|---|---|---|---|---|---|
| EP-18 | VOC | 13.9 lb/hr[1] | 3-hour or test method average | Title 129, Chapter 17; Condition III.(B)(2), Aug.6, 2009 CP | Yes |
| EP-18 | HAP | 65% Control Efficiency for Combined HAPs | Speciation and Quantification of HAP composition at inlet and outlet | Title 129, Chapter 27; Condition III.(B)(2), Aug 6, 2009 CP | Yes |

[1] Expressed as mass of VOC

(B) In accordance with Title 129, Chapter 7, Section 006.02H, Chapter 8, Section 012.03, and Chapter 8, Section 015, the facility shall comply with the following compliance schedule in order to return to compliance with Conditions II.(G)(1)(a) and III.(B)(3):

| Milestone | Completed By |
|---|---|
| Determine Course of Action | January 7, 2011 |
| Notify NDEQ of Course of Action | January 15, 2011 |
| Equipment Procurement, Construction Completed- Begin Startup of Equipment | April 1, 2011 |
| Final Compliance Determination Date | September 28, 2011 |

(C) In accordance with Title 129, Chapter 34, Section 007, performance testing shall be conducted on any newly installed equipment within 60 days after reaching maximum capacity, but no later than 180 days after start-up of the new equipment.

(1) Performance testing of any newly installed equipment shall show that the permittee is in compliance with the tons per year (tpy) VOC limit in Condition II.(G)(1)(a) and the pound per hour (lb/hr) VOC limit in Condition III.(B)(3).

(D) In accordance with Title 129, Chapter 7, Section 006.02H, Chapter 8, Section 012.03, and Chapter 8, Section 015, the facility shall comply with Condition IV.(D)(1) and IV.(D)(2) in order to return to compliance with Condition III.(A)(4)(a):

(1) The permittee shall submit a construction permit application to the NDEQ in order to revise construction permit CP08-061, issued on August 6, 2009.

(i) The construction permit application shall contain all necessary information to update the configuration of the emission units originally identified in Condition III.(A)(4)(a) and any pollution control equipment associated with those emission units.

(ii) The construction permit application shall be submitted to NDEQ by March 1, 2011.

(2) By September 28, 2011, the permittee shall either:

(i) Be in compliance with a construction permit issued pursuant to Condition IV.(D)(1); or,

(ii) Install the necessary control equipment as identified in Condition III.(A)(4)(a).

(E) The permittee shall comply with the following major source (Class I) requirements until compliance is demonstrated with the tons per year (tpy) VOC limit Condition II.(G)(1)(a) and the pounds per hour (lb/hr) VOC limit in Condition III.(B)(3):

(1) The permittee shall comply with 40 CFR part 82, Protection of the

Stratospheric Ozone. Affected controlled substances include, but are not limited to, chlorofluorocarbons and hydrochlorofluorocarbon refrigerants, halons, carbon tetrachloride, and methyl chloroform (specific affected controlled substances are listed in 40 CFR part 82, Subpart A, Appendices A, (Class I) and B (Class II) enforceable by the USEPA only.

The following subparts and Sections of 40 CFR part 82 are conditions of this permit:

Subpart A - Production and Consumption Controls

Subpart B - Servicing of Motor Vehicle Air Conditioners

Subpart E - Labeling of Products Using Ozone-Depleting Substances: Sections 82.106 Warning statement requirements, 82.108 Placement of warning statement, 82.110 Form of label bearing warning statement, and 82.112 Removal of label bearing warning statement

Subpart F- Recycling and Emissions Reduction: Sections 82.156 Required practices, 82.158 Standards for recycling and recovery equipment, 82.161 Technician certification, and 82.166 Reporting and recordkeeping requirements

Subpart G -Significant New Alternatives Policy Program

(2) The following shall be submitted to the NDEQ as specified:

(a) The permittee shall submit a report of applicable monitoring and all instances of deviations from permit requirements every six (6) calendar months to the NDEQ. The report for the first six (6) months (January through June) is due September 30 of each year. The report for the second six (6) months (July through December) is due March 31 of the following year (Title 129, Chapter 8, Section 004.03A).

(b) The permittee shall report all deviations from permit requirements, including those attributable to start-ups, shutdowns or malfunctions, the probable cause of such deviations, and any corrective actions or preventive measures taken. The probable cause, corrective actions, or preventive measures do not have to be provided if that information has already been submitted in other reports to the DEQ, such as for 40 CFR 60.7, however reported deviations must reference these other reports. All reports of deviations must be submitted within the time frame as per Conditions II.(B)(2)(a), (b), and (c). The following schedule must be followed to report all deviations (Title 129, Chapter 8, Sections 004.03 and 004.04 and Chapter 35, Sections 004 and 005)

(i) Any deviation resulting from emergency or upset conditions shall be reported within two (2) working days of the date on which the permittee first becomes aware

of the deviation if the permittee wishes to assert the affirmative defense authorized under Chapter 11 of Title 129. The report may be submitted initially without a certification by a responsible official in accordance with Condition II.(B) above, if an appropriate certification is provided within ten (10) days thereafter, together with any corrected or supplemental information required concerning the deviation.

(ii) Any deviation that poses an imminent and substantial danger to public health, safety, or the environment shall be reported as soon as is practicable. The report may be submitted initially without a certification by a responsible official in accordance with Condition II.(B) above, if an appropriate certification is provided within ten (10) days thereafter, together with any corrected or supplemental information required concerning the deviation.

(iii) All other deviations shall be reported as per Condition IV.(D)(2)(a).

(3) The permittee shall submit fees, due July 1 of each year, based on the actual emission tonnage, up to and including 4,000 tons per year for each regulated pollutant for fee purposes, as established in the emission inventory for the previous calendar year (Title 129, Chapter 8, Section 008 and Chapter 29).

(F) In accordance with Title 129, Chapter 7, Section 006.02H, Chapter 8, Section 012.04, and Chapter 8, Section 015, the permittee shall submit semi-annual progress reports. Such progress reports shall include, and be submitted in accordance with, the following:

(1) Progress reports shall be submitted with the deviation reports required in Condition IV.(E)(2) above.

(2) Dates for achieving the activities, milestones, or compliance required in Condition IV.(B), IV.(C), and IV.(D) above, and dates when such activities, milestones, or compliance were achieved; and

(3) An explanation of why any dates in Conditions IV.(B), IV.(C), and IV.(D) above were not met, or will not be met, and any preventive or corrective measures adopted.

**Attachment A**

**VOC and HAP Emission Calculation Methodology**

## V. VOC and HAP Emission Calculation Methodology

To demonstrate compliance with Specific Condition II.(G)(1), emissions shall be calculated each calendar month using data from the following sources listed in descending order of preference. For compliance purposes, total HAP is equivalent to the sum of individual HAPs.

a. Most recent, valid performance test results performed within the past five years
b. Manufacturer's guarantees and Material Safety Data Sheet (MSDS)
c. Manufacturer/engineering estimates
d. Emission factors from AP-42 or other EPA published documents

Emission factors and pound per hour (lb/hr) emission rates presented in Attachment A shall be replaced with data obtained from the most current, approved emissions test conducted in accordance with Specific Condition II.(D).

If it is necessary to convert uncontrolled to controlled emissions, multiply the uncontrolled emissions by one minus the overall control efficiency (fraction) of the control equipment.

Additional individual HAPs not specifically addressed in this calculation method that are found to be emitted from the emission points listed below must be incorporated into the facility-wide HAP calculation.

**Fermentation and Distillation Operations**

Emissions from the fermentation and distillation scrubber shall each be calculated using Equation (1).

(1) $E_S = [\ (CEF_S) \times (OH) + (UEF_S) \times (DT)\ ] / (2{,}000 \text{ lbs/ton})$

Where
$E_S$ = Emissions from Scrubber (tons/month)
$CEF_S$ = Controlled process emission factor (lbs/hr)
OH = Scrubber operation Hours (hr/month)
UEFS = Uncontrolled process emission factor (lbs/hr)
DT = Scrubber down time (hr/month)

The permittee shall use the lb/hr emission factors from the most recent valid performance test at the facility to compute emissions ($E_s$) from the scrubber.

**Storage Tanks**

VOC emissions from storage tanks shall be calculated using the EPA's TANKS program. HAP emissions from each of the storage tanks shall be calculated using Equation (2).

(2) $E_{ST\text{-}HAP} = (E_{ST\text{-}VOC}) \times (\text{HAP Fraction})$

Where:
$E_{ST\text{-}HAP}$ = Individual HAP emissions from storage tank (tons/month)
$E_{ST\text{-}VOC}$ = VOC emissions from storage tank (tons/month) from TANKS
HAP Fraction = HAP Fraction in material stored in storage tank

| Material | Hazardous Air Pollutant | HAP Fraction |
|---|---|---|
| Anhydrous Ethanol | Acetaldehyde | 2.00E-04 |
| | Methanol | 2.00E-04 |
| Denaturant | 1,2,4-Trimethylbenzene | 2.50E-02 |
| | Benzene | 2.50E-02 |
| | Carbon Disulfide | 5.00E-05 |
| | Cumene | 1.00E-04 |
| | Cyclohexane | 5.00E-03 |
| | Ethylbenzene | 1.50E-02 |
| | n-Hexane | 1.50E-02 |
| | Pentane | 5.00E-01 |
| | Toluene | 5.00E-02 |
| | Xylenes | 5.00E-02 |

**Ethanol Loadout**

Emissions from liquid product loadout shall each be calculated using Equations (3a) through (3j):

(3a) $E_{VOC,LL} = E_{VOC,LL,T} + E_{VOC,LL,R}$

(3b) $E_{VOC,LL,T} = E_{VOC,LL,T,G} + E_{VOC,LL,T,E} + E_{VOC,LL,T,D}$

(3c) $E_{VOC,LL,T} = \{[(EF_{VOC,LL,T,G}) \times (P_{LL,T})] + [(EF_{VOC,LL,T,E}) \times (P_{LL,T})] + [(EF_{VOC,LL,T,D}) \times (P_{LL,T})]\} / (2{,}000$ lbs/ton)

(3d) $E_{VOC,LL,R} = E_{VOC,LL,R,E} + E_{VOC,LL,R,D}$

(3e) $E_{VOC,LL,R} = \{[(EF_{VOC,LL,R,E}) \times (P_{LL,R})] + [(EF_{VOC,LL,R,D}) \times (P_{LL,R})]\} / (2{,}000$ lbs/ton)

Where:

| | |
|---|---|
| $E_{VOC,LL}$ = | VOC Emissions from Liquid Loadout (tons/month) |
| $E_{VOC,LL,T}$= | VOC Emissions from Liquid Loadout into Trucks (tons/month) |
| $E_{VOC,LL,R}$= | VOC Emissions from Liquid Loadout into Railcars (tons/month) |
| $E_{VOC,LL,T,G}$= | VOC Emissions from displacing Gasoline from Trucks (tons/month) |
| $E_{VOC,LL,T,E}$= | VOC Emissions from Loading Ethanol into Trucks (tons/month) |
| $E_{VOC,LL,T,D}$= | VOC Emissions from Loading Denaturant into Trucks (tons/month) |
| $EF_{VOC,LL,T,G}$= | VOC Controlled Emission Factor for displacing gasoline from Trucks (lbs/Mgal) |
| $EF_{VOC,LL,T,E}$= | VOC Controlled Emission Factor for loading ethanol into Trucks (lbs/Mgal) |
| $EF_{VOC,LL,T,D}$= | VOC Controlled Emission Factor for loading denaturant into Trucks (lbs/Mgal) |
| $P_{LL,T}$= | Product loaded into Trucks (Mgal/month) |
| $E_{VOC,LL,R,E}$= | VOC Emissions from Loading Ethanol into Railcars (tons/month) |

$E_{VOC,LL,R,D}$= VOC Emissions from Loading Denaturant into Railcars (tons/month)
$EF_{VOC,LL,R,E}$= VOC Controlled Emission Factor for loading ethanol into Railcars (lbs/Mgal)
$EF_{VOC,LL,R,D}$= VOC Controlled Emission Factor for loading denaturant into Railcars (lbs/Mgal)
$P_{LL,R}$= Product loaded into Railcars (Mgal/month)

| Pollutant | Controlled Emission Factors (lbs/Mgal) | |
|---|---|---|
| | Truck Loadout | Rail Loadout |
| VOC | | |
| Gasoline | 0.107 | |
| Ethanol | 0.049 | 0.059 |
| Denaturant | 0.007 | 0.008 |

(3f) $E_{HAP,LL} = E_{HAP,LL,T} + E_{HAP,LL,R}$

(3g) $E_{HAP,LL,T} = E_{HAP,LL,T,G} + E_{HAP,LL,T,E} + E_{HAP,LL,T,D}$

(3h) $E_{HAP,LL,T} = (E_{VOC,LL,T,G} \times WF_{HAP,G}) + (E_{VOC,LL,T,E} \times WF_{HAP,E}) + (E_{VOC,LL,T,D} \times WF_{HAP,D})$

(3i) $E_{HAP,LL,R} = E_{HAP,LL,R,E} + E_{HAP,LL,R,D}$

(3j) $E_{HAP,LL,R} = (E_{VOC,LL,R,E} \times WF_{HAP,E}) + (E_{VOC,LL,R,D} \times WF_{HAP,D})$

Where:
$E_{HAP,LL}$= HAP emissions from liquid loadout (tons/month)
$E_{HAP,LL,T}$= HAP Emissions from Liquid Loadout into Trucks (tons/month)
$E_{HAP,LL,R}$= HAP Emissions from Liquid Loadout into Railcars (tons/month)
$E_{HAP,LL,T,G}$ = HAP Emissions from displacing Gasoline from Trucks (tons/month)
$E_{HAP,LL,T,E}$= HAP Emissions from Loading Ethanol into Trucks (tons/month)
$E_{HAP,LL,T,D}$= HAP Emissions from Loading Denaturant into Trucks (tons/month)
$WF_{HAP,G}$= Weight Fraction of HAP in Gasoline (HAP/VOC)
$WF_{HAP,E}$= Weight Fraction of HAP in Ethanol (HAP/VOC)
$WF_{HAP,D}$= Weight Fraction of HAP in Denaturant (HAP/VOC)
$E_{HAP,LL,R,E}$= HAP Emissions from Loading Ethanol into Railcars (tons/month)
$E_{HAP,LL,R,D}$= HAP Emissions from Loading Denaturant into Railcars (tons/month)

| Pollutants | Weight Fraction of HAP Emissions | | |
|---|---|---|---|
| | Gasoline | Ethanol | Denaturant |
| Individual HAPs | | | |
| Acetaldehyde | N/A | 2.00E-04 | N/A |
| Benzene | 2.50E-03 | N/A | 2.50E-03 |
| Carbon disulfide | 2.00E-05 | N/A | 2.00E-05 |
| Cumene | 1.00E-04 | N/A | 1.00E-04 |

| Pollutants | Weight Fraction of HAP Emissions | | |
|---|---|---|---|
| | Gasoline | Ethanol | Denaturant |
| Ethyl benzene | 5.00E-05 | N/A | 5.00E-05 |
| n-Hexane | 5.00E-02 | N/A | 5.00E-02 |
| Methanol | N/A | 2.00E-04 | N/A |
| Toluene | 5.00E-03 | N/A | 5.00E-03 |
| Xylene | 5.00E-04 | N/A | 5.00E-04 |
| Total HAPs | 5.82E-02 | 4.00E-04 | 5.82E-02 |

**Boilers and Loadout Flare Pilot**

Emissions from the boilers and loadout flare pilot shall each be calculated using Equation (4). The emission factors listed below are from AP-42 Chapter 1.4, Tables 1.4-3 and 1.4-4.

(4) $E_U = (EF) \times (NG_U) / (2{,}000 \text{ lbs/ton})$

Where $E_U$ = Emissions from Unit (tons/month)
EF = Emission factor (lbs/MMscf)
$NG_U$ = Natural Gas Usage of Unit (MMscf/month)

| Pollutant | Emission Factor (lb/MMBtu) |
|---|---|
| VOCs | 0.003 |
| | |
| **Individual HAPs** | **Emission Factor (lb/MMscf)** |
| Benzene | 2.10E-03 |
| Dichlorobenzene | 1.20E-03 |
| Formaldehyde | 7.50E-02 |
| Hexane | 1.80E+00 |
| Lead Compounds | 6.10E-04 |
| Naphthalene | 8.82E-05 |
| Polycyclic Organic Matter (POM) | 3.40E-03 |
| Toluene | 2.00E-04 |
| Arsenic Compounds (ASC) | 1.20E-05 |
| Beryllium Compounds (BEC) | 1.10E-03 |
| Cadmium Compounds (CDC) | 1.40E-03 |

| Individual HAPs | Emission Factor (lb/MMscf) |
|---|---|
| Chromium Compounds (CRC) | 8.40E-05 |
| Cobalt Compounds (COC) | 5.00E-04 |
| Manganese Compounds (MNC) | 3.80E-04 |
| Mercury Compounds (HGC) | 2.60E-04 |
| Nickel Compounds (NIC) | 2.10E-03 |
| Selenium Compounds (SEC) | 2.40E-05 |
| Total HAPs | 1.89 |

**Emergency Generator**

Emissions from the emergency generator shall be calculated using Equation (5). The emission factors for the generators are from AP-42 Chapter 3.4, Tables 3.4-3 and 3.4-4. Emission factor for VOCs is by manufacturer guarantee.

(5) $E_E = (EF_E) \times (HI_E) \times OT / (2{,}000 \text{ lbs/ton})$

Where
$E_E$ = Emissions from Engine (tons/month)
$EF_E$ = Emission factor for Engine (lbs/MMBtu)
$HI_E$ = Heat Input of Engine (MMBtu/hr)
OT = Operating Time of Engine (hours/month)

| Pollutant | Emission Factor (lb/hr) |
|---|---|
| VOCs | 0.83 |
| | |
| **Individual HAP** | **Emission Factor (lb/MMBtu)** |
| Acetaldehyde | 2.52E-05 |
| Acrolein | 7.88E-06 |
| Benzene | 7.76E-04 |
| Formaldehyde | 7.89E-05 |
| Naphthalene | 1.30E-04 |
| Polycyclic Organic Matter (POM) | 8.20E-05 |
| Toluene | 2.81E-04 |
| Xylene | 1.93E-04 |
| Total HAPs | 1.57E-03 |

**Emergency Firewater Pump Engine**

Emissions from the emergency firewater pump engine shall be calculated using Equation (6). The emission factors for the generators are from AP-42 Chapter 3.3, Tables 3.3-2.

(6) $E_E = (EF_E) \times (HI_E) \times OT / (2{,}000 \text{ lbs/ton})$

Where $E_E$ = Emissions from Engine (tons/month)
$EF_E$ = Emission factor for Engine (lbs/MMBtu)
$HI_E$ = Heat Input of Engine (MMBtu/hr)
OT = Operating Time of Engine (hours/month)

| Pollutant | Emission Factor (lb/hr) |
|---|---|
| VOCs | 0.73 |
| | |
| **Individual HAP** | **Emission Factor (lb/MMBtu)** |
| 1,3 - Butadiene | 3.91E-05 |
| Acetaldehyde | 7.67E-04 |
| Acrolein | 9.25E-04 |
| Benzene | 9.33E-04 |
| Formaldehyde | 1.80E-03 |
| Naphthalene | 8.48E-05 |
| Polycyclic Organic Matter (POM) | 8.32E-05 |
| Toluene | 4.09E-04 |
| Xylene | 2.85E-04 |
| Total HAPs | 4.71E-03 |

**Equipment Leaks**

VOC emissions from equipment leaks shall be calculated using Equation (7a). HAP emissions from equipment leaks shall be calculated using Equation (7b). These equations are based on compliance with the LDAR program.

(7a) $LK, _{VOC} = \{\Sigma[(N\text{-}LK) \times (EF\text{-}LK) \times (1-(CE\text{-}LK/100))]\} \times (OH\text{-}LK) \times (2.21 \text{ lbs/kg}) / (2{,}000 \text{ lbs/ton})$

Where: $LK, _{VOC}$ = VOC emissions from equipment leaks (tons/month)
$\Sigma$ = Summation over all types of components
N-LK = Number of components in each type
EF-LK= Equipment leak emission factor (kg/hr/source)
CE-LK = Control efficiency of LDAR system (%)

OH-LK = Operating hours (hrs/month) = 672, 696, 720, or 744

(7b) $LK, _{HAP} = (LK, _{VOC}) \times (PPM\text{-}LK/10^6)$

Where: $LK, _{HAP}$ = HAP emissions from equipment leaks (tons/month)
$LK, _{VOC}$ = VOC emissions from equipment leaks (tons/month)
PPM-LK = HAP content of anhydrous ethanol (ppm by weight)

**WDGS Storage**

Emissions from the WDGS storage shall be calculated using Equation (8). The emission factors below are based on testing that occurred at various existing ethanol facilities.

(8) $E_{WC} = (EF_{WC}) \times (P_{WC}) / (2{,}000 \text{ lbs/ton})$

Where: $E_{WC}$ = Emissions from WDGS storage (tons/month)
$EF_{WC}$ = Emission factor for WDGS storage (lbs/ton WDGS)
$P_{wc}$ = WDGS stored as product (tons WDGS/month)

| Pollutant | Emission Factor (lb/ton) |
|---|---|
| VOCs | 6.02E-03 |
| Individual HAPs: | |
| Acetaldehyde | 5.56E-05 |
| Acrolein | 8.33E-06 |
| Formaldehyde | 3.33E-04 |
| Methanol | 6.94E-05 |
| Total HAPs | 4.67E-04 |

# FACT SHEET

**Date:** March 24, 2011

**Facility Name:** Nebraska Corn Processing, LLC **NDEQ Facility ID#:** 84221

**Mailing Address:**
PO Box 39
Zeeland, MI 49464-0039

**Facility Location:**
107 Potter Street
SE ¼, Section 29, Township 4N, Range 25W
Cambridge, Furnas County, NE 69022-6539

## DESCRIPTION OF THE FACILITY OR ACTIVITY:

This Operating Permit, Number OP09S2-008, approves the operation of an anhydrous ethanol manufacturing plant (SIC Code 2869). The facility uses a corn dry-milling process in order to produce 60,000,000 gallons per year of anhydrous ethanol. Denaturant is added to the anhydrous ethanol in order to make the liquid unfit for human consumption. Adding denaturant allows the facility to produce approximately 61,200,000 gallons per year of denatured ethanol. Solids produced from the dry-milling process are converted to an animal feed referred to as wet distillers grain with solubles (WDGS). Approximately 582,201 tons per year of WDGS are produced as by-products at Nebraska Corn Processing, LLC (NCP).

The production process at NCP consists of the following major steps or areas:

- Grain receiving, handling, storing, and milling
- Fermentation and distillation
- Dehydration, centrifugation, and evaporation
- Ethanol and denaturant storage and loadout
- Steam generation
- WDGS storage and loadout
- Emergency power generation

## Permit History

NDEQ received the initial construction permit application for this facility on November 8, 2004 for an ethanol plant designed to produce 84,000,000 gallons per year of denatured ethanol. A construction permit was issued under the name Mid-America Agri Products to the facility on June 29, 2005.

On November 28, 2005, the NDEQ received a construction permit application to amend the original construction permit issued on June 29, 2005. The amendment was needed because Mid-America Agri Products decided to construct the ethanol plant with a configuration that differed from the facility originally proposed. The updated design allowed the plant to produce 88,200,000 gallons per year of denatured ethanol. Construction permit CP05-0054 was issued to the facility on March 3, 2006. CP05-0054 superseded the original construction permit issued on June 29, 2005.

On July 26, 2008, NDEQ was notified via an administrative amendment request that the name of the facility had changed from Mid America Agri Products to Mid America Agri Products/Horizon, LLC (MAAP/H).

On May 8, 2008, construction permit CP05-0054 was re-opened for cause by NDEQ and construction permit CP08-018i was issued to the facility to include requirements that the fermentation scrubber utilize a chemical additive (if used during testing) in order to ensure compliance with the hazardous air pollutant (HAP) limitation that keeps the source minor for HAPs.

On November 26, 2008, NDEQ received a construction permit application for a significant construction permit revision to the MAAP/H facility. Construction permit CP08-061 was issued to the facility on August 6, 2009, and allowed for the following changes:

1) Updated maximum production rates for each of the potential products:
   - Anhydrous ethanol.....60.0 MMgal/yr
   - Denatured ethanol.....61.2 MMgal/yr
   - WDGS.....582,201 tons/yr
   - Dried distillers grains with solubles (DDGS).....No Production

   *Note: Denaturant is added to anhydrous ethanol in order to produce denatured ethanol. Denatured ethanol is the end product produced at the facility. Thus, the maximum amount of ethanol produced by the facility each year is equal to 61.2 MMgal.*

2) The following was added to the permit
   - A new emergency generator (EU78/EP-38) limited to 500 hours of operation
   - A new corrosion inhibitor tank (TK-011/EP-37)
   - An allowance for up to 50 hours of scrubber downtime per year to allow for maintenance, etc.

3) The following was updated in the permit
   - Boiler limits and emissions estimates
   - Scrubber limits and emission estimates
   - Production capacity
   - Scrubber routing and venting
   - Haul road silt load factor increased from 0.4 to 1.5 $g/m^2$
   - Throughput limit removed from grain receiving by rail (was 10% of total throughput)
   - Increased permitted fire pump operation from 250 to 500 hours per year

4) Several pieces of previously permitted equipment were removed from the permit. The equipment was not constructed and will not be constructed by the facility in the future.

Due to the quantity of changes that the permittee requested, NDEQ decided to completely supersede construction permits CP05-0054 and CP08-018i. Construction permit CP08-061 includes all applicable requirements from the superseded construction permits and is the only active construction permit for this facility at this time.

On March 5, 2009, NDEQ received operating permit application# O9S2-008 from MAAP/H. This application is the basis for operating permit #OP09S2-008. This is the initial operating permit issued to the facility.

On February 24, 2010, NDEQ received notice that MAAP/H had been sold and ownership of the ethanol plant had been transferred to Nebraska Corn Processing, LLC (NCP). NCP is responsible for compliance with all provisions of this operating permit.

**Compliance History**

The following table summarizes the compliance history at NCP:

| Date | Type of Violation | Description |
|---|---|---|
| September 10, 2010 | Notice of Violation (NOV) | Failure to meet VOC limit per Condition III.(B)(2) of August 6, 2009 Construction Permit. VOC emissions during testing were in excess of 13.9 lb/hr limit. |

| Date | Type of Violation | Description |
|---|---|---|
| July 7, 2010 | Letter of Warning (LOW) | Failure to comply with Condition III.(B)(3)(a) of August 6, 2009 Construction Permit. Uncontrolled emissions were leaking from pressure relief vents on fermentation tank #1 and the beerwell. The construction permit requires all emissions from these units to be controlled by the scrubber (CE017). |
| December 2, 2008 | NOV | 1. Failure to meet permit limits for PM at Boiler B (EP-21). Testing showed PM value of 0.790 lb/hr, which exceeded the 0.743 lb/hr PM limit in Condition XIII.(H)(3)(a) of March 3, 2006 Construction Permit.<br>2. Failure to meet permit limits for $SO_2$ at Boiler B (EP-21). Testing showed $SO_2$ value of 0.118 lb/hr, which exceeded the 0.060 lb/hr limit in Condition XIII.(H)(3)(b) of March 3, 2006 Construction Permit.<br>3. Failure to meet permit limits for VOC at the $CO_2$ Scrubber (CE017). Testing showed VOC emissions of 11.4 lb/hr, which exceeded the 5.8 lb/hr limit in Condition XIII.(C)(3) of the March 3, 2006 Construction Permit |
| October 13, 2008 | NOV | The following terms of the Construction Permit issued March 3, 2006 were violated:<br>1. Failure to follow test methods found in 40 CFR 60.485 per Condition XIII.(J)(c)(i) and (ii)<br>2. Failure to maintain TDS concentration below 2,500 ppm per Condition XIII.(L)(3)<br>3. Failure to report and keep records as described in 40 CFR 60.115b per Condition XIII.(M)(1)(c)<br>4. Failure to maintain records of operations per Condition XIII.(P)(11)(a).<br>5. Failure to maintain clear and readily accessible records per Condition XIII.(P)(17) and XIII.(P)(18). |
| July 22, 2008 | LOW | Failure to comply with silt loading limit of 0.4 $g/m^2$ per Condition XIII.(K) of March 3, 2006 Construction Permit. |

| Date | Type of Violation | Description |
|---|---|---|
| May 23, 2008 | LOW | The following terms of the Construction Permit issued March 3, 2006 were violated:<br>1. Failure to document routine daily observations of baghouses per Condition XIII.(A).<br>2. Failure to document routine daily observations of the $CO_2$ scrubber per Conditions XIII.(C) and (D).<br>3. Failure to operate the $CO_2$ scrubber during all times the associated emission units are being operated. |

With the exception of the NOV received on September 10, 2010, NCP has worked to correct all of the issues identified in the table above. In order to return to compliance with the issues identified in the NOV dated September 10, 2010, NCP must follow the compliance schedule outlined in Condition IV of the operating permit.

## TYPE AND QUANTITY OF AIR CONTAMINANT EMISSIONS ANTICIPATED:

NCP generates emissions of several air pollutants, including particulate matter (PM), particulate matter with an aerodynamic diameter less than or equal to 10 micrometers ($PM_{10}$), particulate matter with an aerodynamic diameter less than or equal to 2.5 micrometers ($PM_{2.5}$), sulfur oxides ($SO_x$), nitrogen oxides ($NO_x$), carbon monoxide (CO), volatile organic compounds (VOC), and hazardous air pollutants (HAP). The primary emission sources at the facility will be from the following equipment/processes:

| Equipment/Process | Expected Pollutants |
|---|---|
| Grain Receiving, Handling, Storing, and Milling | PM, $PM_{10}$, and $PM_{2.5}$ |
| Fermentation and Distillation | VOC and HAP |
| Steam Generation | PM, $PM_{10}$, $PM_{2.5}$, $SO_x$, $NO_x$, CO, VOC, and HAP |
| Ethanol and Denaturant Loadout | VOC and HAP |
| WDGS Storage | VOC and HAP |
| Emergency Equipment | PM, $PM_{10}$, $PM_{2.5}$, $SO_x$, $NO_x$, CO, VOC, and HAP |

Various pieces of control equipment have been designed into the facility in order to reduce potential emissions. The control equipment at this facility includes baghouses on grain receiving, handling, storing, and milling; scrubbers on fermentation and distillation operations; a combustion flare on the ethanol truck/rail loadout; and all plant haul roads are paved in order to control fugitive haul road emissions.

NDEQ estimated potential emissions of criteria pollutants and HAPs by using a combination of vendor guarantees, process design data, emission factors from EPA's Compilation of Air Pollutant Emission Factors, 5th Edition, Volume 1 (AP-42), material safety data sheet (MSDS) information, and the results of testing conducted at NCP and other existing ethanol plants. Potential emission calculations are shown in the fact sheet attachment, and a brief discussion of each process and the emissions estimation approach is provided below.

### Grain Receiving, Handling, Storing, and Milling

The grain handling operations consist of the unloading of grain from trucks or railcars at a maximum design rate of 560 tons/hr, two (2) 248,160 bushel capacity storage silos, two (2) grain elevators, and associated conveyors. The annual rate of grain unloading operations is assumed to be 672,000 tons/yr, and is based upon the maximum anhydrous ethanol production rate of 60 MMgal/yr. Grain is received at the plant in 25 ton hopper bottom trucks or railcars at two dump pits. One pit is designated for grain unloaded by trucks, and the other is designated for grain unloaded by either trucks or rail. Both pits are located inside a partially enclosed building. The dump pits are fitted with conveyor belts, which feed the elevator leg and grain-to-grain storage silos. The dump pits, along with associated grain transfer points, are controlled by several baghouses. Based on the design of the grain conveying equipment, only one storage silo can be filled at any one time. Table A indicates the baghouses associated with grain receiving, handling, and storing operations and specifies the equipment that each baghouse controls.

**Table A: Grain Receiving, Handling, and Storing Baghouses**

| Control Equipment Identification | Units Controlled by Control Equipment |
|---|---|
| CE001—Fabric Filter: Truck Dump Pit Baghouse | Rail Dump Pit, Truck Dump Pit, Corn Conveyor #1, Corn Elevator #1 |
| CE003—Fabric Filter: Corn Storage Silo Baghouse #1 | Corn Conveyors #3 and #4, Corn Storage Silo #1 |
| CE004—Fabric Filter: Corn Storage Silo Baghouse #2 | Corn Conveyors #3 and #4, Corn Storage Silo #2 |
| CE005—Fabric Filter: Corn Storage Silo Baghouse #3 | Corn Conveyors #3 and #5, Corn Storage Silo #3 |
| CE006—Fabric Filter: Corn Storage Silo Baghouse #4 | Corn Conveyors #3 and #5, Corn Storage Silo #4 |

The grain milling operations consist of a grain elevator, scalper, a 5,000 bushel surge bin, two hammermills, and associated conveyors. Prior to hammermilling, the corn will be routed to the scalpers from the surge bins. The scalper removes sticks, cobs, and other unusable debris from the grain. The discharge conveyor from the scalper transfers the scalped grain into the hammermills. The hammermills grind the scalped grain to the required particle size. The ground grain is then transferred to the slurry tank, which marks the beginning of the fermentation process. The grain milling and associated transfer points are controlled by several baghouses. The solids collected in all of the baghouses (CE001-CE013) are returned to the process downstream of the hammermills. Table B indicates the baghouses associated with the grain milling operations and the equipment that each baghouse controls.

**Table B: Grain Milling Baghouses**

| Control Equipment Identification | Units Controlled by Control Equipment |
|---|---|
| CE007—Fabric Filter: Corn Elevator Baghouse | Corn Elevator #3 |
| CE008—Fabric Filter: Surge Bin Baghouse | Surge Bin, Scalper |
| CE010—Fabric Filter: Hammermill Baghouse #1 | Hammermill #1 |

| Control Equipment Identification | Units Controlled by Control Equipment |
|---|---|
| CE011—Fabric Filter: Hammermill Baghouse #2 | Hammermill #2 |

Potential to emit calculations for $PM/PM_{10}$ were conducted for the grain receiving, handling, storing, and milling operations in two ways. The emissions from existing emission points (EP-2, EP-4, EP-5, EP-8, EP-9, EP-11, and EP-12) were determined through the use of stack testing performed by Western Environmental Services and Testing, Inc. (WEST) from August 18 through August 20, 2008. Emissions for new emission points which have not been tested [EP-6 (Corn Storage Silo Baghouse #3) and EP-7 (Corn Storage Silo Baghouse #4)] were estimated by using the emission factors from EP-4 (Corn Storage Silo Baghouse #1).

$PM_{2.5}$ emissions were calculated for EP-2 through EP-9 by assuming $PM_{2.5}$ emissions are 0.034 of hourly and yearly $PM_{10}$ PTE. $PM_{2.5}$ emissions for EP-11 and EP-12 were calculated by assuming $PM_{2.5}$ emissions are 0.741 of hourly and yearly $PM_{10}$ PTE. Both ratios are from Appendix A of the South Coast Air Quality Management District, *Final - Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5 Significance Thresholds*, October 2006.

The grain receiving area is partially enclosed and the truck dump pits are aspirated to fabric filter dust collectors. The grain unloading dust collection system is assumed to have 90% capture efficiency. The remaining 10% of grain handling emissions are considered uncaptured and emitted directly to the atmosphere.

**Fermentation and Distillation**

The fermentation and distillation operations at NCP consist of a slurry tank, a yeast tank, a liquefaction tank, three fermenters, a beerwell, a three-column distillation unit, two molecular sieves, a whole stillage tank, a thin stillage tank, condensers, a process condensate tank, a syrup tank, an evaporator tank, three centrifuges, two conveyors, and wet cake storage.

Prior to fermentation, a conveyor transfers milled grain from the hammermills to a mash mingler under flow-ration control. The mash mingler mixes the grain with process water and hot water from the hot well. The meal slurry is then discharged by gravity from the mash mingler to the slurry tank. The slurry will be cooked, liquefacted with enzymes, and the resultant mash is cooled. The slurry tank provides surge capacity in the cooking system, allows for pre-liquefaction of the starch, and if necessary, controls viscosity. In addition, caustic or anhydrous ammonia is added for pH control, as required. Mash from the slurry tank is pumped by a cooker feed pump to a jet cooker, where 150 psig steam is injected under temperature control, raising the mash temperature to the sterilization temperature. Injection of steam provides sterilization of the mash and gelatinization of starch in approximately ten minutes. Mash leaves the cooker and is cooled by flashing in a liquefaction tank. The flash vapor is recovered as a source of energy for stillage evaporation. Liquefying enzyme is then added to the mash in the liquefaction tank in order to begin the hydrolysis of the previously gelatinized starch. After liquefaction, previously hydrated and actively growing yeast is added. Backset (thin stillage recycle) or sulfuric acid may be added to the mash to lower the pH. A mash cooler pump moves the mash from the base of the liquefaction tank through a set of heat exchangers called "mash coolers". Cooling tower water provides for primary cooling to ultimately reduce the mash temperature to approximately 90 degrees Fahrenheit (°F).

The cooled mash will be mixed with yeast and more enzymes in one of three fermenters. Saccharifying enzymes, nutrients, and industrial antibiotics are added to the fermenter during filling. The fermenter contents are recirculated by fermenter pumps through the fermenter coolers to remove heat generated by fermentation. The chemical process and chemical equation occurring during fermentation is shown below:

Simple Sugar + Yeast → Ethanol + Carbon Dioxide

$$C_6H_{12}O_6 + \text{Yeast} \rightarrow 2\ CH_3CH_2OH + 2\ CO_2$$

The carbon dioxide ($CO_2$) generated during fermentation is vented to the fermentation scrubber for recovery of ethanol vapors. After approximately 48 hours of fermentation, the resultant liquid (beer) contains 11% to 15% ethanol by weight. When fermentation is completed, the beer is transferred to the beerwell via the fermenter pumps. Cleaning and sterilizing the fermenters, fermenter coolers, mash coolers, and related process piping is accomplished by an automated clean-in-place (CIP) system.

The $CO_2$ scrubber (CE017) controls the emissions from the slurry tank, liquefaction tank, yeast tank, three fermenters, and the beer well. The $CO_2$ scrubber provides VOC and HAP emission control, as well as the ability to collect ethanol vapors for higher product yield. VOC and HAP emission calculations were performed by using information from testing conducted at NCP by WEST from August 18 through August 20, 2008.

The beerwell serves as a surge tank connecting the simultaneous saccharification and fermentation system with distillation. The contents of the beerwell are kept circulated by the beerwell agitator. The beer is pumped by the distillation beer feed pump through the beer preheat train to a column. The beer column's function is to separate the ethanol from the residual grain solids. The remaining grain solids, known as stillage, are sent to the whole stillage tank to be further processed for use as cattle feed. Hot vapor from the beer column is used to preheat the beer in the beer preheat train. Sulfuric acid may be added between the fermentation and distillation processes for pH adjustments. Stillage from the whole stillage tank is pumped to the stillage centrifuges. The stillage centrifuge splits the feed into two flows: the wet cake and the centrate. The wet cake, or WDGS, consists of approximately 33 to 35% solids and 65 to 67% water. The centrifuge is positioned to discharge the cake onto a conveyor that transfers the wet cake to the wet cake storage area. The centrate, called thin stillage, consists of approximately 8.0% total solids. The majority of these solids are dissolved solids. The thin stillage is stored in the thin stillage tank located adjacent to the centrifuge units. A thin stillage tank pump re-circulates the contents in the centrate surge tank to ensure a well mixed solution. Centrate is pumped from the thin stillage tank to an evaporator. The multiple-effect evaporator system removes water from the thin stillage on a continuous, steady-state basis, concentrating the total solids fraction from 8% to approximately 34% solids in the concentrated dissolved solids syrup (CDS). CDS is added to the wet cake product.

The beer distills in a three-column distillation process. The resultant product is 95% ethanol and 5% water (190 proof) and whole stillage consisting of solids and water. Hydrous ethanol vapor from distillation is drawn and superheated in the molecular sieve using steam. The superheated ethanol vapor flows to the molecular sieve units in a process known as dehydration. The dehydration process is used to increase the ethanol concentration from 92% to 99.3%. The vapor passes up through one bed of molecular sieve beads, which is under pressure control. Incoming water is adsorbed on the molecular sieve material. The molecular sieve units are cycled so that one is regenerating under vacuum while the other is adsorbing water under pressure from the hydrous ethanol vapor steam. The regenerating stream is sent back to distillation for processing. Using molecular sieves, the remaining 5% water will be removed from the product resulting in 100% ethanol (200 proof). The anhydrous ethanol product flows through the molecular sieve cooler to the two product shift tanks, which is where final processing of the ethanol occurs.

The permit allows for a maximum of 50 hours per year of scrubber down time for maintenance purposes. This will ensure that if the $CO_2$ scrubber is down for maintenance purposes, the facility will still be able to operate, provided that the 50 hours of downtime is not exceeded.

The emissions from the fermentation process are critical in meeting the minor source single Hazardous Air Pollutant (HAP) limitation. The emissions from the fermentation process can account for more than

90 percent of the single HAP emissions at an ethanol plant. As such, the fermentation process is classified as a significant emissions unit in regard to this limitation.

The NDEQ has allowed NCP to rely on parametric monitoring (monitoring of the scrubber operational parameters) to demonstrate compliance with the HAP limitations. When parametric monitoring is used to demonstrate compliance, the permit must require periodic testing to verify the operational parameters accurately demonstrate compliance. As explained below, the NDEQ has determined the periodic testing frequency for the fermentation scrubber will be based on previous testing results at NCP for the HAP emitted in the largest quantity, generally acetaldehyde. The frequencies are as follows:

- If the previous results show that the largest single HAP emissions are consistently between eight (8) and 10 tons per year (tpy), the frequency will be quarterly.
- If the results show that the largest single HAP emissions are consistently between five (5) and eight (8) tpy, the frequency will be semiannual.
- If the results show that the largest single HAP emissions are consistently between five (5) tpy and two and one half (2.5) tpy, the frequency will be annual.
- If the results show that the largest single HAP emissions are consistently below two and one half (2.5) tpy, the frequency will be twice per permit term.

To allow for improvements in emissions control by NCP, the permit allows them to move to a lower frequency by demonstrating their largest single HAP emissions are within one of the lower ranges. On March 31$^{st}$ of each year NCP will compare their rolling 12-month total to the four tiers described above and adjust their testing frequency accordingly. Conversely, NCP will be required to move into a higher frequency if the March 31$^{st}$ evaluation shows the acetaldehyde emissions are within a higher range.

It should be noted that NCP is not necessarily required to test at the above frequencies. The permit includes a condition that allows sources to use a Continuous Emissions Monitor (CEM) or Predictive Emissions Monitor (PEM) to verify compliance. As discussed below, depending on the testing frequency NCP falls into, a CEM or PEM may be a more economical method of demonstrating compliance. With this permit action, we are giving NCP the option of demonstrating compliance through testing or the use of a CEM or PEM.

**Monitoring and Testing Justification**

When evaluating the testing frequencies for the scrubber, the following factors were considered:

- The relevant time period of the limitation;
- The likelihood of violating the applicable requirement;
- Whether add-on controls are necessary for the unit to meet the emission limit;
- The variability of emissions from the unit over time;
- The type of monitoring, process, maintenance, or control equipment data already available for the emission unit;
- The technical and economic considerations associated with the range of possible monitoring methods; and
- The kind of monitoring found on similar emission units.

**Relevant time period** – The NDEQ realizes that the above testing frequencies do not meet the relevant time period criteria. The relevant time period for a rolling 12-month total is one month. However, the NDEQ believes that requiring monthly testing would place an excessive cost burden on NCP (approximately $480,000 per year over the five year permit term).

The NDEQ can establish an alternative frequency provided the data are representative of the relevant time period. While the parametric monitoring being required may not yield consistent testing results (see "The variability of emissions from the unit over time" section below), the NDEQ believes that the combination of parametric monitoring and verification testing will provide sufficient data to determine compliance during the relevant time period.

**The likelihood of violating the applicable requirement** – Testing data for a fermentation scrubber at a batch ethanol plant have shown that meeting the minor source limitations may be challenging. At one point, seven of 13 ethanol plants tested had at least one test where they were emitting at a rate that would make them a major source. In addition, two sources have operated at a level where their actual emissions were above the major source thresholds.

Given the compliance history of the ethanol industry as a whole, the NDEQ believes that there is a greater likelihood that NCP may also experience compliance issues. Therefore, the monitoring and testing frequencies that are established in this operating permit are appropriate.

**Whether add-on controls are necessary for the unit to meet the emission limit** – Ethanol plants use wet scrubbers to control fermentation emissions. In addition, NCP must use chemical addition as an additional control mechanism. However, as pointed out in the compliance discussion above, the ability of the wet scrubber to consistently control HAP emissions is suspect.

One issue impacting the ability of the wet scrubber to consistently control HAP emissions is the variability of the emissions (see Figure 1 below) during the fermentation cycle (The fermentation cycle is defined as the time between when one fermentation tank is emptied until the next fermentation tank is emptied – generally from 12-20 hours). This variability causes problems in two areas: testing to demonstrate compliance; and, establishing operational parameters for the scrubber.

To address the testing issue, the NDEQ has allowed testing to be conducted over the entire cycle using the Fourier Transform Infrared Spectroscopy (FTIR) method, not just worst case (three one-hour tests at the highest emissions rate). Considering that the limitation is a rolling 12-month total, this approach provides an emission rate that is more representative of the "average" over the entire fermentation cycle and therefore the relevant period; rather than results that are representative of "worst case" conditions.

To address the operational parameter issue, the NDEQ has, in most cases, required that sources use constant operational parameters to demonstrate compliance. This means that adequate control should be provided at times when the emission rate is high. However, it also means that the emissions are being over-controlled when the emission rate is low. There are limited cases where the NDEQ has allowed variable parameters. In these cases, the source must demonstrate compliance under each operational scenario.

Given the above, this permit is requiring NCP to maintain the following operational parameters at the levels that were established during the most recent valid performance test that demonstrated compliance:

- Water flow rate;
- Chemical flow rate; and,
- Chemical concentration.

**The variability of emissions from the unit over time** – Over the years, the data from the testing of fermentation scrubbers has shown that there is variability from one fermentation cycle to another (see Figure 2 below). As shown in Figure 2, testing has shown that, while using the same operational parameters, the results can be different, sometimes by more than an order of magnitude. Because of this, compliance with the single HAP limit is suspect.

This variability is a concern when the testing results show the source is operating close to the single HAP limit. With this in mind, the NDEQ has developed the above testing frequency requiring more frequent testing the closer the results are to the limitation. As discussed above, the tiered frequency approach allows NCP to demonstrate that they have developed operational parameters that assure consistent testing results. When such demonstration has been made, NCP is allowed to test less frequently. However, if NCP fails to demonstrate their operational parameters produce consistent testing results, they will be required to perform verification testing at the appropriate frequency.

Given the variability of the emissions from the fermentation process and NCP past performance, the NDEQ has determined the initial testing frequency will be on an annual basis.

**The type of monitoring, process, maintenance, or control equipment data already available for the emission unit** – As discussed above, there is an abundance of data available on the operational parameters for, and emissions from, fermentation scrubbers. However, this data has not demonstrated consistent testing results. While this data can be used to establish operational parameters for use between tests, testing is still necessary to demonstrate compliance with the minor source HAP limitations.

Given the above, this permit requires NCP to develop operational parameters as discussed above, to maintain those operational parameters between tests, and to test at the above frequency.

**The technical and economic considerations associated with the range of possible monitoring methods** – In addition to parametric monitoring with verification testing, the NDEQ considered requiring the use of a Continuous Emissions Monitoring (CEM) device. A CEM in this application is technically feasible. The technology utilized in the CEM reviewed by the NDEQ for this application is proven in the area of organic HAP emissions testing and in demonstrating continuous compliance in the petroleum refinery industry. This CEM uses Fourier Transform Infrared Spectroscopy (FTIR) technology which is an approved and reliable testing method for organic HAP emissions. In addition, the use of a CEM would be more economical and provide NCP with more flexibility than parametric monitoring with verification testing.

As discussed above, testing has shown that there is variability in the emission rate during a fermentation cycle. Under the parametric monitoring approach, sources must use constant operational parameters to demonstrate compliance. This means that adequate control is being provided at times when the emission rate is high. However, it can also mean that the emissions are being over-controlled when the emission rate is low. This can result in excess water being used and, since chemical is being added, excess chemical added at low emissions rates. If a CEM were used to monitor compliance, NCP would also be able to monitor the need for, and regulate the flow of, their chemical addition. By relying on the CEMS, they would be able to continuously demonstrate compliance with their permit and realize cost savings on the chemical by only adding it when needed and at the rate necessary to comply.

Regardless of the testing frequency NCP falls under, it appears as though a CEM is the least cost option for the facility. In addition to saving costs on chemical addition, if NCP is required to test on a quarterly basis they would realize a cost savings on verification testing of approximately $600,000[1] over the term of the permit. With semi-annual verification testing NCP would realize a cost savings of approximately $300,000 over the permit term. Under the annual testing category, the cost of testing would equal $200,000. This is equal to the cost of the CEM over the term of the operating permit. However, even under this scenario, a CEM presents cost savings to NCP through potential reductions in water usage and chemical addition when emission rates are low.

Given the above, the permit has been written so the costs of compliance can be minimized. In addition to the tiered approach (where the testing frequency can be reduced based on the level of control), the permit includes an option to install a CEM or PEM in lieu of the testing. Based on conservative cost estimates to install and operate a CEM, the cost over the term of the first operating permit would be approximately $200,000. The costs over subsequent permits would be substantially less due to the one-time capital cost of the CEM incurred during the first permit term. In subsequent permits, the cost for the permit term will be approximately $40,000, making future costs savings significantly greater than those expressed above ($740,000 and $440,000 respectively). Finally, as discussed above, a CEM would provide NCP with additional operational flexibility, reduce the cost of chemical addition, and eliminate the costs associated with operational parameter monitoring for the scrubbers in question. In summary, the NDEQ is not dictating how NCP demonstrates compliance and therefore the cost of compliance. Instead, the NDEQ

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[1] Average annual cost of a CEM is $40,000, average annual cost of quarterly testing is $160,000, and average annual cost of semi-annual testing is $80,000. Assumptions: Cost of CEM = $150,000; Cost of annual CEM Relative Accuracy Test Audit (RATA) = $10,000; and, cost of one performance test = $40,000. NOTE: a RATA is less expensive than a performance test due to the length of time at the source (four hours vs. the fermentation cycle, approx. 18 hours) and the nature of the test (verifying accuracy of the instrumentation vs. compliance with permit).

has provided two options for NCP to demonstrate compliance. Upon issuance of this permit, NCP has the responsibility to demonstrate compliance. The option they choose to do this is a business decision on their part.

**Figure 1 – Variation Through a Typical Fermentation Cycle**

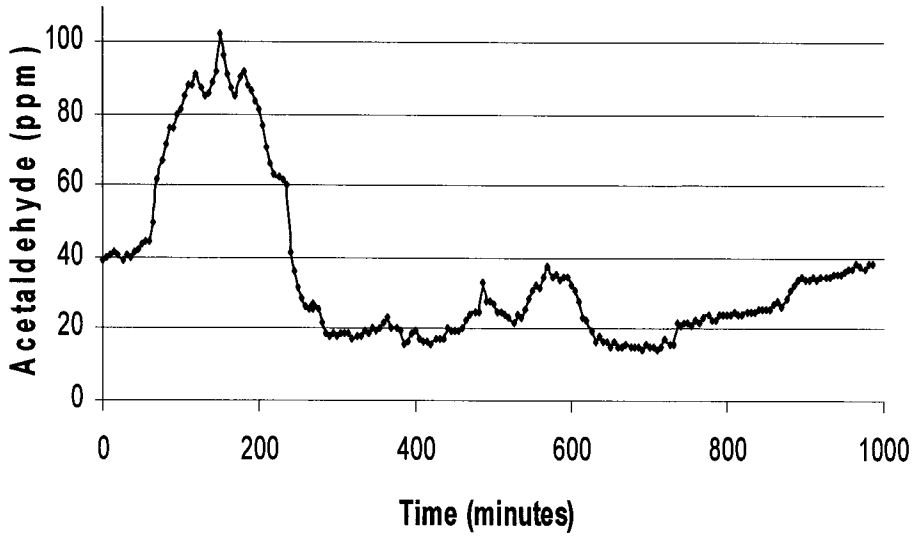



**Figure 2- Variability on a Day to Day Basis**

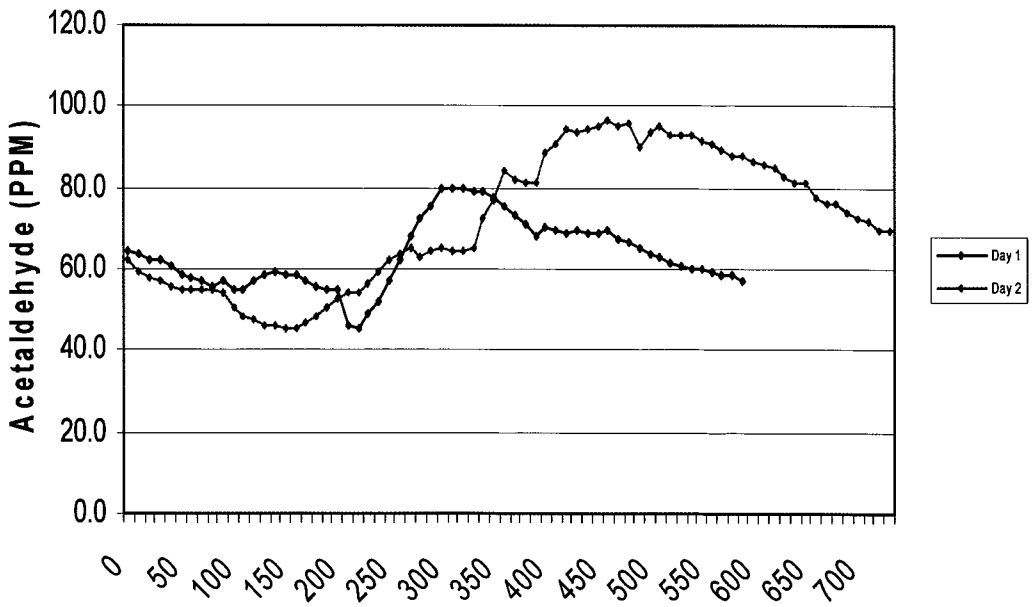
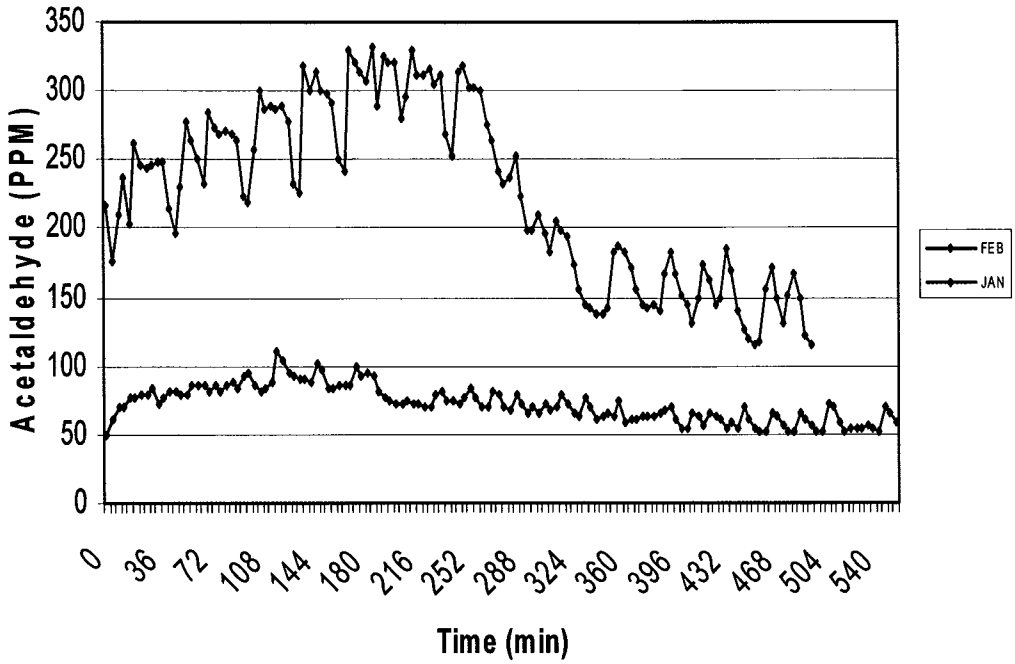


**Figure 3 – Variability on a Month to Month Basis**




**Boilers**

Steam is required to power the ethanol production process. NCP produces steam with two (2) natural gas fired boilers: Boiler 1 (EU73/EP-20, Boiler B) and Boiler 2 (EU74/EP-21, Boiler A). Both boilers have a maximum capacity of 92.056 MMBtu/hr each.

Boiler construction included Low-NOx burners. The boilers are limited to the use of natural gas only, and the facility must comply with all applicable requirements of NSPS Subpart Dc. Emission calculations for the boilers were performed by using emission factors from AP-42, Section 1.4, Tables 1.4-3 and 1.4-4 (7/98), and stack test data from August 18 through August 20, 2008, conducted by WEST.

Emissions of $PM_{2.5}$ from the boilers are calculated by assuming $PM_{2.5}$ emissions are 1.0 of hourly and yearly $PM_{10}$ PTE. This ratio is from Appendix A of the South Coast Air Quality Management District, *Final - Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5 Significance Thresholds*, October 2006.

**Storage Tanks**

NCP has six (6) production storage tanks located at the facility. These production tanks hold raw material (denaturant, corrosion inhibitor) and final products (various grades of ethanol and denatured alcohol). Table C shows the storage tanks located at the facility. Tanks TK001 through TK005 are each equipped with an internal floating roof. TK011 is a horizontal tank.

**Table C: Storage Tanks**

| Tank ID# | Tank Capacity | Tank Contents | Annual Throughput (gallons/year) |
|---|---|---|---|
| TK001 | 541,456 gallons | Denatured Ethanol (50% of 61.2 MMgal) | 30,600,000 |
| TK002 | 541,456 gallons | Denatured Ethanol (50% of 61.2 MMgal) | 30,600,000 |
| TK003 | 155,820 gallons | Anhydrous Ethanol (50% of 60 MMgal) | 30,000,000 |
| TK004 | 155,820 gallons | Anhydrous Ethanol (50% of 60 MMgal) | 30,000,000 |
| TK005 | 91,406 gallons | Denaturant (2% of 60 MMgal) | 1,200,000 |
| TK011 | 2,000 gallons | Corrosion Inhibitor (0.0099% of 63 MMgal) | 5,670 |

Other storage tanks are located at NCP, including an additional small storage tank containing diesel fuel for the emergency equipment. These other storage tanks do not store material that can emit a VOC or HAP, except for the diesel fuel tank. Due to the low vapor pressure of diesel fuel, the diesel storage tank would need to have a throughput of over 400,000 gallons per year in order to exceed 1 ton per year of VOC emissions. Since the diesel fuel is used on a limited basis in the emergency equipment only, the emissions from the diesel storage tank are considered negligible and have not been included in the analysis.

The VOC emissions from each tank in Table D were calculated using TANKS 4.09d, using maximum throughput for each tank. The HAP emissions from anhydrous ethanol are based on the composition of the anhydrous ethanol. The HAP emissions from the denaturant are from the Material Safety Data Sheet (MSDS) submitted by the facility for natural gasoline.

**Ethanol and Denaturant Loadout**

Prior to shipping the anhydrous ethanol out of the facility, the ethanol is combined with 5% natural gasoline (denaturant). The gasoline is added to the final product in order to make the ethanol unfit for human consumption. The final product is sold as near 200-proof denatured ethanol.

Liquid product loading consists of submerged loading of denatured fuel ethanol into tanker trucks and railcars. The emissions from the truck and railcar loadout are collected by a vapor recovery system and then routed to an ethanol loadout flare. The loadout flare emissions are also considered in the PTE calculation.

Emissions of VOC and HAP from ethanol product loadout were calculated using the methodology developed by the NDEQ. The methodology includes the following assumptions:

- The tanker trucks previously contained conventional unleaded gasoline (RVP 13) and the gasoline vapors are displaced as the denatured ethanol is loaded. This is a worst-case assumption. Emissions will be less if the tanker trucks previously contained denatured ethanol.
- Emissions from displacement of gasoline previously contained in the tanker trucks are estimated based on the difference between the saturation factors (S) for normal dedicated and clean cargo provided in AP-42, Section 5.2 (1/95).

- The railcars previously contained denatured ethanol. The denatured ethanol vapors are displaced as the denatured ethanol is again loaded into the railcar. The displaced vapors are assumed to be in the same proportion as the composition of the denatured ethanol. The Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) requires a minimum addition of 2% denaturant in order for fuel-grade ethanol to be exempt from ATF regulations. While NCP adds approximately 5% denaturant to the denatured ethanol produced, a composition of 98% anhydrous ethanol and 2% denaturant actually yields worst case emissions from liquid loadout. Since there is no permit restriction on the amount of denaturant to be added to the denatured ethanol, NDEQ assumed the worst-case denatured ethanol composition of 98% anhydrous ethanol and 2% denaturant when calculating PTE figures from liquid loading at NCP.
- VOC emission factor equation is from AP-42, Section 5.2.2 (January 1995) – Loading Losses.
- HAP emissions are based on the HAP content of gasoline, anhydrous ethanol, and denaturant (RVP 13).
- The vapor control system has an overall efficiency of 88.2% (90% capture, 98% destruction)
- The emissions also consider combustion products ($NO_x$ and CO) released at the flare.
- The vapor pressure, molar mass, and temperature for denatured ethanol are based on TANKS 4.09 output data.

**Equipment Leaks**

Equipment leaks are leaks from valves and pumps in light service, gas valves, compressor seals, pressure relief valves, sampling connections, open-ended lines, and flanges. NCP must follow a leak detection and repair (LDAR) program in accordance with NSPS Subpart VV [40 CFR 60.480 through 60.489]. Emissions are calculated from *Protocol for Leak Emisison Estimates*, EPA-453/R-95-017, November, 1995. Emissions include fugitive VOC and HAP emissions.

The equipment leaks are assumed to be anhydrous ethanol process lines for determining HAP emissions. The individual HAP mass fractions of the VOC from the equipment leaks are derived from the HAP weight fractions of gasoline and ethanol.

**Cooling Tower**

Cooling towers function by passing water droplets/spray through moving air streams in order to evaporate the droplets. Heat from the air stream is transferred to the water, which in turn evaporates and removes heat from the system. Cooling towers are a particulate matter emission source. Solids that are dissolved in the water are lost through drift (very small water droplets, as opposed to evaporated water), and subsequently become fine particulate matter as the water droplet evaporates and leaves the dissolved solids suspended in the air. $PM/PM_{10}$ emissions from the cooling tower are calculated with a mass balance approach as presented in AP-42, Section 13.4: *Wet Cooling Towers* (1/95). Information required to calculate $PM/PM_{10}$ emissions with this method includes data on water circulation rate, TDS concentration, and cooling tower drift losses. This method assumes that the TDS present in water evaporated at the cooling tower produces $PM/PM_{10}$ emissions.

$PM_{2.5}$ emissions from the cooling tower are calculated by assuming $PM_{2.5}$ emissions are 0.600 of hourly and yearly $PM_{10}$ PTE. This ratio is from Appendix A of the South Coast Air Quality Management District, *Final - Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5 Significance Thresholds*, October 2006.

NCP has one (1) cooling tower, with a circulation rate of 25,000 gallons per minute. The total dissolved solids (TDS) concentration in the cooling water is limited to 2,500 ppm for any single sampling event.

**Emergency Equipment**

The emergency equipment found at NCP consists of one (1) 290 hp diesel-powered emergency fire pump engine and one (1) 2,220 hp diesel-powered emergency generator. Each engine is permitted to operate a

total of 500 hours per year. Because the emergency equipment is powered by diesel fuel, a diesel storage tank has been installed at the facility. Due to the small tank size, low volume throughput, and low vapor pressure of diesel fuel, though, the VOC emissions associated with the diesel fuel storage tank are considered negligible.

The manufacturer of the emergency generator provided two sets of emission factors to NDEQ. One form provided, entitled "EPA Tier 1 Exhaust Emission Compliance Statement" (Form 1) shows that the emergency generator meets EPA Tier 1 emissions factors. The EPA Tier 1 emissions standards are the same as the New Source Performance Standards (NSPS) Subpart IIII emission limitations. The second form provided, entitled "Exhaust Emission Data Sheet" (Form 2), provides sets of emission factors for various load ratings. The emission factors used to calculate the PTE from the emergency generator are from the full standby load as presented in Form 2. Full standby load represents emission rates when the equipment is running at 100% capacity.

**Haul Roads**

Haul road emissions consist of truck traffic on the paved roads as part of the receiving of raw materials (denaturant, grain) or shipping of final products (denatured ethanol, WDGS). Fugitive dust emissions from traffic on these roads have been calculated by using the NDEQ Haul Road calculation spreadsheet based on AP-42 emission factors and typical characteristics for paved roads.

**WDGS Storage and Loadout**

Wet cake (WDGS) is stored in an open storage area due to its 65% moisture content. Since the wet cake is transferred offsite quickly (most generally in 1 or 2 days), it does not have time to dry completely in any type of extreme weather. Therefore, wet cake storage and handling produces negligible $PM_{10}$ emissions. However, VOC and HAP emissions are emitted from wet cake.

The WDGS system consists of two conveyors and storage provisions. The emissions from the two conveyors (EU79 and EU80) are controlled by the $CO_2$ scrubber (CE017).

Potential VOC and HAP emissions resulting from wet cake storage were calculated by using stack test information that has occurred at similar existing ethanol plants. The information was submitted by NCP.

**Emissions Summary**

The following table summarizes the potential and actual emissions from the operations at NCP:

| Regulated Pollutant | Potential Emissions as Limited by Permit (tons/year) | Actual Emissions* (tons/year) |
|---|---|---|
| Particulate Matter (PM) | 26.43 | Not Reported |
| Particulate Matter less than or equal to 10 microns ($PM_{10}$) | 22.24 | 8.71 |
| Particulate Matter less than or equal to 2.5 microns ($PM_{2.5}$) | 12.94 | 8.71** |
| Sulfur Dioxide ($SO_2$) | 2.12 | 0.40 |
| Oxides of Nitrogen ($NO_x$) | 38.99 | 8.45 |
| Carbon Monoxide (CO) | 35.90 | 0.75 |
| Volatile Organic Compounds (VOCs) | 99.97 | 81.14 |
| Hazardous Air Pollutants (HAPs): | | |
| Acetaldehyde | 2.06 | 1.37 |
| n-Hexane | 1.90 | 1.10 |
| Acrolein | 1.23 | 0.24 |
| All Other HAPs | 1.68 | 0.57 |
| Total HAPs | 6.87 | 3.28 |

*Actual emissions are from 2008 as submitted in OP Application# 09S2-008.

**Actual emissions of $PM_{2.5}$ are assumed to be equal to $PM_{10}$ emissions.

## APPLICABLE REQUIREMENTS AND VARIANCES OR ALTERNATIVES TO REQUIRED STANDARDS:

### Title 129, Chapter 5 – Operating Permit Program

As described in Title 129, Chapter 5, emission limits for a facility requesting a Class II operating permit must be less than major emission thresholds (100 tons/yr of each listed pollutant, 10 tons/yr of any single HAP, and 25 tons/yr of all listed HAPs). If a facility has the potential to exceed any of these thresholds, it is classified as a Class I source, unless the facility agrees to limit the potential emissions below the threshold values. NCP obtained a construction permit on August 6, 2009 that limits the PTE of all pollutants below the Class I thresholds, and is therefore not considered a major (Class I) source. This operating permit limits the potential emissions of any single HAP to less than 10.0 tons/yr, the potential emissions of all listed HAPs to less than 25.0 tons/yr, and the potential emissions of VOCs to less than 100 tons/yr. Therefore, the facility is not a major stationary source.

On July 1, 2011 greenhouse gases (GHGs) will become a regulated air pollutant under 40 CFR Part 70 and Title 129, Chapter 1. Because GHGs is not a regulated air pollutant at this time, neither the source nor the NDEQ are obligated to provide emissions estimates on this pollutant. Although GHGs is not a regulated air pollutant at this time, NCP will become a major source on July 1, 2011 (as the program currently stands) and be obligated to submit a Class I operating permit application by July 1, 2012. In the event the proposed EPA exemption, or deferral, on biogenic emissions from the GHGs program becomes final, NCP may be eligible for synthetic minor limitations on the other sources of GHGs. Such a limitation would exempt this facility from the Class I requirements.

### Title 129, Chapter 18 - New Source Performance Standards (NSPS)

Subpart A—General Provisions: NSPS Subpart A, adopted by reference in Title 129, Chapter 18, Section 001.01, applies to those units covered by the specific NSPS as discussed below. The permittee is required to submit notification of the date construction commenced postmarked no later than 30 days after such date (40 CFR 60.7(a)(1)), notification of the anticipated date of initial startup of the equipment

postmarked not more than 60 days nor less than 30 days prior to such date (40 CFR 60.7(a)(2)), and notification of the actual date of initial start-up of the equipment postmarked within 15 days after such date (40 CFR 60.7(a)(3)).

Subpart DD—Standards of Performance for Grain Elevators: This subpart, adopted by reference in Title 129, Chapter 18, Section 001.19, applies to each truck unloading and/or loading station, barge and ship unloading and/or loading station, railcar unloading and/or loading station, grain dryers, and grain handling operations that are located at any grain terminal or storage elevator that commenced construction, modification, or reconstruction after August 3, 1978. NCP is not subject to this subpart, as the facility does not meet the definition of a grain terminal elevator or grain storage elevator as defined in §60.301(c) and §60.301(f), respectively. Under this subpart, a grain terminal elevator is defined as an elevator with permanent storage capacity greater than 2.5 MM bushels of grain, whereas a grain storage elevator is defined as an elevator located at a grain mill that has storage capacity greater than 1 MM bushels of grain. The grain storage capacity at NCP is 992,640 bushels. Therefore, the facility is not subject to Subpart DD.

Subpart Dc—Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units: This subpart, adopted by reference in Title 129, Chapter 18, Section 001.52, is for steam generating units with a design rate between 10 MMBtu/hr and 100 MMBtu/hr, installed after June 9, 1989. Both boilers at NCP are subject to this subpart because each unit has a heat input rating of 92.056 MMBtu/hr and were installed after the effective date of June 9, 1989.

The applicable requirements of NSPS Subpart Dc include, but are not limited to, the following:

Type of Equipment: Two (2) boilers with Low $NO_x$ burners, each with a rated capacity of 92.1 MMBtu/hr. These units burn only natural gas.

| REQUIREMENT | CITATION |
|---|---|
| Applicability | § 60.40c(a) through § 60.40c(d) |
| Definitions | § 60.41c |
| Reporting and Recordkeeping | § 60.48b(a), (g)(1), (g)(2), (g)(3), (i), (j) |

No requirements pertaining to Particulate Matter (PM) or Sulfur Oxides ($SO_x$) from NSPS Subpart Dc apply to the two boilers at NCP. This is because the boilers have a permit limitation that requires only natural gas be used as a fuel source. If this fuel restriction is relaxed in the future, the boilers at NCP will become subject to further requirements under Subpart Dc.

Subpart Kb—Standards of Performance for Volatile Organic Liquid Storage Vessels: This subpart, adopted by reference in Title 129, Chapter 18, Section 001.62, applies to storage vessels with a capacity greater than or equal to 75 cubic meters ($m^3$) that is used to store volatile organic liquids (VOL) for which construction, reconstruction, or modification is commenced after July 23, 1984. Tanks TK001 through TK005 are subject to this subpart because the tanks exceed 75 $m^3$ in storage capacity.

The applicable requirements of NSPS Subpart Kb include, but are not limited to, the following:

Type of Equipment: Two (2) denatured ethanol storage tanks, two (2) anhydrous ethanol storage tanks, and one (1) denaturant storage tank. All tanks have storage capacities greater than 75 $m^3$ and contain internal floating roofs with liquid mounted seals.

| REQUIREMENT | CITATION |
|---|---|
| Applicability | § 60.110b(a) |
| Definitions | § 60.111b |
| Standard for Volatile Organic Compounds | § 60.112b(a)(1) |
| Testing and Procedures | § 60.113b(a) |
| Reporting and Recordkeeping | § 60.115b(a) |
| Monitoring of Operations | § 60.116b(a), (b), (c), (d), (e) |
| Delegation of Authority | § 60.117b |

Subpart NNN—Standards of Performance for Volatile Organic Compound (VOC) emissions from Synthetic Organic Chemicals Manufacturing Industry (SOCMI) Distillation Operations: This subpart, adopted by reference in Title 129, Chapter 18, Section 001.61, does not apply to the distillation operation at NCP, per EPA's January 24, 2000, letter from Richard Tripp, EPA Region VII to Randy Griffin, Nebraska Air Quality Compliance Supervisor, concerning applicability of 40 CFR 69 to biomass ethanol production. The letter stated that Subpart NNN does not apply to ethanol derived from biomass. Subpart NNN applies to synthetic (chemical reaction of petroleum refining products) processes to produce organic chemicals (including ethanol).

Subpart RRR—Standards of Performance for Volatile Organic Compound (VOC) Emissions from Synthetic Organic Chemicals Manufacturing Industry (SOCMI) Reactor Processes: This subpart, adopted by reference in Title 129, Chapter 18, Section 001.70, does not apply to the fermentation tanks at NCP, per EPA's January 24, 2000, letter from Richard Tripp, EPA Region VII to Randy Griffin, Nebraska Air Quality Compliance Supervisor, concerning applicability of 40 CFR 60 to biomass ethanol production. The letter stated that Subpart RRR does not apply to ethanol derived from biomass. Subpart RRR applies to synthetic (chemical reaction of petroleum refining products) processes to produce organic chemicals (including ethanol).

Subpart VV—Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for which Construction, Reconstruction, or Modification Commenced After January 5, 1981, and on or Before November 7, 2006: This subpart, adopted by reference in Title 129, Chapter 18, Section 001.14, applies to the VOC equipment leaks associated with the plant (a Synthetic Organic Chemical Manufacturing Industry). This subpart is associated with Subparts NNN & RRR, but NNN & RRR are based on how the chemical is produced (biomass versus synthetic), while VV is based on the type of chemicals produced. Since new organic chemicals are synthesized (process doesn't matter), then all of the associated equipment leaks are subject to this subpart. Associated equipment includes light liquid valves, light liquid pumps, gas valves, control valves, flanges, transmitters, and manholes.

The requirements of NSPS Subpart VV in Title 129, Chapter 18, are those that were published in the Federal Register on July 1, 2006. NSPS Subpart VV was then amended on November 16, 2007. The amendments have not been adopted into Title 129, Chapter 18. Therefore, NCP must comply with the requirements of both versions of the rule. The requirements from July 1, 2006 are enforceable by NDEQ and USEPA, whereas the requirements from the amendments on November 16, 2007 are enforceable by USEPA only.

The requirements of Subpart VV on July 1, 2006, include, but are not limited to, the following:

| REQUIREMENT | CITATION |
|---|---|
| Definitions | § 60.481 |
| Standards: General | § 60.482-1(e), (f), (g) |
| Standards: Pumps in Light Liquid Service | § 60.482-2(a)(1), (a)(2), (b)(2), (c)(2), (d)(4), (d)(5), (d)(6), |
| Standards: Sampling Connection Systems | § 60.482-5(a), (b) |
| Standards: Valves in Gas/Vapor Service and in Light Liquid Service | § 60.482-7(a), (c) |
| Standards: Pumps and Valves in Heavy Liquid Service, Pressure Relief Devices in Light Liquid or Heavy Liquid Service, and Connectors | § 60.482-8(a)(2), (d) |
| Standards: Delay of Repair | § 60.482-9(a), (f) |
| Alternative Standards for Valves—Allowable Percentage of Valves Leaking | § 60.483-1(d) |
| Alternative Standards for Valves—Skip Period Leak Detection and Repair | § 60.483-2(b)(5) |
| Test Methods and Procedures | § 60.485(g)(4), (g)(5), (h) |
| Recordkeeping | § 60.486(e)(6) |
| Reporting | § 60.487(c)(2) |

The following requirements have been added or changed as a result of NSPS Subpart VV amendments at the Federal level on November 16, 2007. These requirements are only enforceable by USEPA until the amendments are adopted into Title 129:

| REQUIREMENT | CITATION |
|---|---|
| Definitions | § 60.481 |
| Standards: General | § 60.482-1(e), (f), (g) |
| Standards: Pumps in Light Liquid Service | § 60.482-2(a)(1), (a)(2), (b)(2), (c)(2), (d)(4), (d)(5), (d)(6), |
| Standards: Sampling Connection Systems | § 60.482-5(a), (b) |
| Standards: Valves in Gas/Vapor Service and in Light Liquid Service | § 60.482-7(a), (c) |
| Standards: Pumps and Valves in Heavy Liquid Service, Pressure Relief Devices in Light Liquid or Heavy Liquid Service, and Connectors | § 60.482-8(a)(2), (d) |
| Standards: Delay of Repair | § 60.482-9(a), (f) |
| Alternative Standards for Valves—Allowable Percentage of Valves Leaking | § 60.483-1(d) |
| Alternative Standards for Valves—Skip Period Leak Detection and Repair | § 60.483-2(b)(5) |
| Test Methods and Procedures | § 60.485(g)(4), (g)(5), (h) |
| Recordkeeping | § 60.486(e)(6) |
| Reporting | § 60.487(c)(2) |

Subpart VVa—Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry for Which Construction, Reconstruction, or Modification Commenced after November 7, 2006: This subpart, not yet adopted into Title 129, Chapter 18, applies to the VOC equipment leaks associated at a Synthetic Organic Chemical Manufacturing facility that was constructed,

reconstructed, or modified after November 7, 2006. This new subpart includes all the requirements of 40 CFR Part 60, Subpart VV, as amended, along with new provisions. Differences between Subparts VVa and VV include, but are not limited to, lower leak definitions for pumps and valves, requiring monitoring of connectors, and additional recordkeeping requirements and quality assurance measures. If NCP would physically or operationally modify or reconstruct its process line in the future, this subpart may become applicable.

Subpart IIII—Standards of Performance for Stationary Compression Ignition Internal Combustion Engines: This subpart, adopted by reference in Title 129, Chapter 18, Section 001.76, applies to owners and operators of stationary compression ignition (CI) internal combustion engines (ICE) that are certified National Fire Protection Association (NFPA) fire pump engines manufactured after July 1, 2006. This subpart also applies to CI ICE manufactured after April 1, 2006 that are not certified as fire pump engines. Construction, reconstruction, or modifications must also have taken place after July 11, 2005 for this subpart to be applicable to either type of engine.

This subpart limits emissions of CI ICE based on engine size (hp, cylinder displacement), type of use (emergency or non-emergency), and model year. The emergency generator (EU78) and the emergency diesel fire pump (EU77) at NCP are both subject to this subpart.

The requirements of NSPS Subpart IIII include, but are not limited, to the following:

Type of Equipment: Compression Ignition (Diesel) Emergency Fire Pump Engine, 290 HP, displacement less than 30 liters, no diesel particulate filter, installed in 2007.

| REQUIREMENT | CITATION |
|---|---|
| Applicability | § 60.4200(a)(2)(ii) |
| Emission Standards for Emergency Engines | § 60.4205(c), including Table 4 of this subpart |
| Length of Time Emission Standards Must be Met | § 60.4206 |
| Fuel Requirements | § 60.4207(a), (b), (c) |
| Monitoring Requirements | § 60.4209(a) |
| Compliance Requirements | § 60.4211(a), (b), (e) |
| Test Methods and Procedures | § 60.4212 |
| Notification, Reporting, and Recordkeeping | § 60.4214(b) |
| General Provisions | § 60.4218, including Table 8 |
| Definitions | § 60.4219 |

Type of Equipment: Compression Ignition (Diesel) Emergency Generator, 2,220 HP, displacement less than 10 liters, no diesel particulate filter, installed in 2007.

| REQUIREMENT | CITATION |
|---|---|
| Applicability | § 60.4200(a)(2)(i) |
| Emission Standards for Emergency Engines | § 60.4205(a), including Table 1 of this subpart |
| Length of Time Emission Standards Must be Met | § 60.4206 |
| Fuel Requirements | § 60.4207(a), (b), (c) |
| Monitoring Requirements | § 60.4209(a) |
| Compliance Requirements | § 60.4211(a), (b), (e) |
| Test Methods and Procedures | § 60.4212 |
| Notification, Reporting, and Recordkeeping | § 60.4214(b) |
| General Provisions | § 60.4218, including Table 8 |
| Definitions | § 60.4219 |

**Title 129, Chapter 19 - Prevention of Significant Deterioration (PSD)**

NCP is considered a minor source with regard to the PSD program because the potential emissions of each New Source Review (NSR) regulated pollutant are below the major source threshold of 250 tons/year for the entire facility. At this time, ethanol plants do not fall into one of the 28 source categories that are subject to a 100 tons/year threshold, as listed in Chapter 2, Section 008.01, for each NSR regulated pollutant. In addition, there are no "nested" sources within the ethanol plant that may otherwise be subject to a 100 tons/year major source threshold.

New rules in Title 129 pertaining to ethanol plant PSD applicability became effective February 6, 2008. The change increased the threshold at which NCP would be considered "major PSD" from 100 tons/yr to 250 tons/yr. However, this does not mean that the plant can now emit up to 250 tons/year without approval. The source must still comply with the terms and conditions of all valid air quality permits, unless the permits are revised or removed through a future permitting action. At this time, NCP has active permit requirements that limit the facility to below PSD major thresholds and is therefore considered a PSD minor source.

Although this permit limits the emissions of VOCs to below the PSD thresholds, the limit was taken so that the source can obtain a Class II Operating Permit as per Chapter 5 of Title 129 and not to avoid PSD. The source may decide to eliminate/relax the emissions limit and obtain a Class I permit in the future by following the appropriate permitting procedures. Such relaxation will not trigger 40 CFR Part 52.21 (r)(4) since, as discussed above, the limit was taken for Operating Permit purposes only and not for PSD purposes.

**Title 129, Chapter 20 - Particulate Limitations**

*Title 129, Chapter 20, Section 001 – Process Weight Rate*

Each of the permitted PM emission rate limitations ensure that NCP will not exceed process weight rate limitations. The following formulas were used to determine compliance:

For process weight rates up to 60,000 lbs/hr, $E=4.10p^{0.67}$, and for process weight rates in excess of 60,000 lbs/hr, $E=55.0p^{0.11}-40$, where E=rate of emissions in lbs/hr and p=process weight rate in tons/hr.

The facility is expected to be in compliance with the process weight rate limitations. The process weight rate limitations are calculated in the fact sheet attachment spreadsheets.

*Title 129, Chapter 20, Section 002 – Particulate Emissions from Combustion Sources*

This permittee is expected to be in compliance with the PM limits from this regulation because the fuels combusted at this facility are natural gas, diesel fuel, and methane. The allowable emission rates per Title 129, Chapter 20, Section 002 are calculated in the Fact Sheet Attachment.

*Title 129, Chapter 20, Section 004 – Opacity*

All of the equipment at the facility is subject to the opacity standard (20 percent opacity limit) specified in Title 129, Chapter 20, Section 004. It is unlikely the fuel burning equipment would exceed the opacity standard due to the use of natural gas and distillate fuel oil (diesel) as fuel. These fuels are considered "clean" fuels with regard to visible emissions. In addition, control equipment used throughout the facility will help the source comply with the opacity standard. Therefore, the permittee is expected to be in compliance with this regulation.

**Title 129, Chapter 24 - Sulfur Compound Emissions**

According to Title 129, Chapter 24, no fossil fuel burning equipment at a source may emit sulfur oxides greater than two and one half (2.5) pounds per million BTU input. Recent interpretation of this regulation by NDEQ legal staff states that "...it [Chapter 24] imposes a sulfur emissions standard on sources that existed prior to February 26, 1974, and none other." In other words, Title 129, Chapter 24 only applies to fossil fuel burning equipment that was in existence prior to February 26, 1974, the original effective date of the rule. No fossil fuel burning equipment at NCP was in existence prior to this date. Therefore, Title 129, Chapter 24 does not apply to any emission units at the facility.

**Title 129, Chapter 27 – Hazardous Air Pollutants, Maximum Achievable Control Technology (MACT)**

*Title 129, Chapter 27, Section 002—Best Available Control Technology*

The following BACT requirements, as established in the August 6, 2009 Construction Permit, apply to NCP and have been installed or implemented:

| Process | BACT Equipment/Activities |
|---|---|
| Fermentation and Distillation | CE017: $CO_2$ Scrubber |
| Ethanol and Denaturant Loadout | Submerged Filling<br>CE020: Ethanol Loadout Flare |
| Storage Tanks | Tanks are equipped with Internal Floating Roofs |

*Title 129, Chapter 27, Section 003—Maximum Achievable Control Technology*

This facility is not subject to Maximum Achievable Control Technology (MACT) because the controlled emissions are less than 10 tons/year of any individual HAP and less than 25 tons/year of combined HAPs. Condition II.(E)(2) of the permit limits the facility-wide HAP emissions below MACT threshold levels. If the facility-wide HAP emissions exceed the MACT threshold, then a MACT analysis will need to be conducted on a facility-wide basis to determine if changes in the control equipment will be necessary.

**Title 129, Chapter 28 - National Emission Standards for Hazardous Air Pollutants (NESHAP, MACT)**

NCP is considered an area source of HAPs because the PTE for any single HAP and total HAPs are below 10 and 25 tons per year, respectively. Applicable and potentially applicable NESHAP regulations are discussed below:

Subpart F—National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry: This subpart, adopted by reference in Title 129, Chapter 28, Section 001.20, applies to manufacturing facilities which produce a hazardous air pollutant as the primary chemical [§63.100(b)(1)] and use the chemical as a reactant or manufacture the chemical as a product or co-product [§63.100(b)(2)], and are located at a plant site that is a major source of HAPs ( ≥10 tons/yr of

individual HAP or ≥ 25 tons/yr of combined HAPs). NCP produces ethanol, which contains acetaldehyde and methanol, as well as the HAPs in the denaturant. NCP is not subject to this subpart because the primary product is ethanol (which is not on the HAP list included in the subpart) and the facility is limited to less than 10 tons/year of individual HAP and less than 25 tons/year of combined HAPs.

Subpart G—National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater: This subpart, adopted by reference in Title 129, Chapter 28, Section 001.21, applies to the same manufacturing facilities as Subpart F, but applies only to the process vents, storage vessels, transfer racks, and wastewater streams. Since NCP is not subject to Subpart F, it is not subject to Subpart G.

Subpart H—National Emission Standards for Organic Hazardous Air Pollutants from the Synthetic Organic Chemical Manufacturing Industry for Equipment Leaks: This subpart, adopted by reference in Title 129, Chapter 28, Section 001.22, applies to the same manufacturing facilities as Subpart F, but only for the following equipment: pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, instrumentation systems, and control devices. It also applies to closed vent systems that are intended to operate in organic hazardous air pollutant service 300 hours or more during the calendar year. Since NCP is not subject to Subpart F, it is not subject to Subpart H.

Subpart Q—National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers: This subpart, adopted by reference in Title 129, Chapter 28, Section 001.04, applies to industrial process cooling towers that are operated with chromium-based water treatment chemicals and are located at major facilities for HAPs. NCP is not subject to this subpart because the facility is an area source of HAPs. Also, no chromium-based water treatment chemicals are used in the cooling tower.

Subpart EEEE—National Emission Standards for Hazardous Air Pollutants for Organic Liquids Distribution (Non-Gasoline): This subpart, adopted by reference in Title 129, Chapter 28, Section 001.83, applies to major HAP facilities that have organic liquids distribution. The organic liquids distribution operation must have 7.29 million gallons per year or more either into or out of the operation to be subject to this subpart. Organic liquids are all crude oils (other than black oil) and those liquids or liquid mixtures, excluding gasoline, that contain a total of 5 percent by weight or more of the organic HAP listed in the subpart (including acetaldehyde, methanol, benzene, carbon disulfide, cumene, ethyl benzene, hexane, toluene, and xylenes). Fuels used on-site (i.e. fuels used for fleet refueling) are exempt from this subpart. NCP is not subject to this subpart because the facility is an area source of HAPs. However, if facility-wide HAP emissions ever exceed the major source threshold at the facility, an analysis will need to be conducted on the organic liquid distribution operations to determine if this subpart is applicable.

Subpart ZZZZ—Stationary Reciprocating Internal Combustion Engines (RICE) [40 CFR 63.6580, promulgated June 15, 2004 (amended August 20, 2010)]: This subpart, adopted by reference in Title 129, Chapter 28, Section 001.88, currently applies to stationary RICE at a major or area source of HAP emissions, except if the stationary RICE is being tested at a stationary RICE test cell/stand. Both the emergency fire pump engine and the emergency generator at NCP are subject to this subpart because the engines are stationary compression ignition (CI) internal combustion engines (ICE) located at an area source of HAPs. As specified in §63.6590(c), the RICE comply with subpart ZZZZ by meeting the emission requirements set forth in 40 CFR 60, Subpart IIII. If testing is required in 40 CFR 60, Subpart IIII, the owner or operator must submit a Notification of Intent to test 60 days before the test and a Notification of Compliance Status with testing results within 60 days of completing the test.

Subpart DDDDD—Industrial, Commercial, and Institutional Boilers and Process Heaters: This subpart, finalized on February 21, 2011 but not yet published in the Federal Register or in Title 129, applies to boilers and process heaters that are located at major HAP sources. The natural gas-fired boilers located at NCP are not subject to this subpart because NCP has taken permit limits to avoid being a major HAP source.

Subpart JJJJJJ—National Emission Standards for Hazardous Air Pollutants for Area Sources: Industrial, Commercial, and Institutional Boilers: This subpart, finalized on February 21, 2011 but not yet published in the Federal Register or in Title 129, applies to boilers at area sources of HAPs. According to the NESHAP JJJJJJ Fact Sheet published by USEPA, boilers that burn only gaseous fuels or solid waste are not subject to the rule. The boilers at NCP are restricted to burning natural gas only. Therefore, it appears that the boilers at NCP are not subject to this NESHAP. However, it is up to the permittee to evaluate the applicability of this rule to the boilers once the Subpart is official and published in the Federal Register.

Subpart VVVVVV—National Emission Standards for Hazardous Air Pollutants for Chemical Manufacturing Area Source Categories: This subpart, published in the Federal Register on October 29, 2009 and not yet adopted into Title 129, applies to chemical manufacturing operations at an area source of HAPs that process, use, produce, or generate one or more of the following HAPs: 1,3-butadiene, 1,3-dichloropropene, acetaldehyde, chloroform, ethylene dichloride, hexachlorobenzene, methylene chloride, quinoline, arsenic compounds, cadmium compounds, chromium compounds, lead compounds, manganese compounds, and/or nickel compounds. NCP is an area source of HAPs and is considered a chemical manufacturing facility that will process, use, produce, or generate one of the listed HAPs. USEPA is currently reviewing information to determine whether ethanol facilities are subject to this rule. NDEQ will distribute more information once it becomes available concerning this rule.

**Operating Parameters of Control Equipment**

The monitoring requirements for the control equipment are to ensure the equipment is operated in the same manner as during the stack testing. The monitored operating parameters for each piece of control equipment are not limited to the parameters listed in the permit (i.e. pressure differential, temperature). The operating parameters are those that the facility normally monitors to ensure that the control equipment is operating properly.

In the case of fermentation scrubber C40, NDEQ has defined four (4) operating parameters. These parameters are the chemical addition rate, the type of chemical used, the chemical concentration, and the liquid flow rate. While there may be several other operating parameters associated with the scrubber [perhaps as many as twenty (20)], the four (4) parameters currently listed for the scrubber are considered most important. A change in any one listed scrubber operating parameter would require a new performance test to be conducted by the facility.

**Maintenance of equipment**

The maintenance requirements for both the emissions unit and the control equipment are to ensure the equipment is operated in the same condition as during the stack testing. This is being required because proper maintenance of the equipment is critical in assuring compliance with the permit.

At a minimum, all equipment at the facility is to be maintained as specified in the manufacturer's documentation. The source may develop site specific maintenance manuals provided they are equivalent to one produced by the manufacturer of the equipment. The maintenance procedures should include procedures developed over time that the facility uses for prevention of poor performance requiring corrective action (atypical operating parameters, leaks, noise, etc). For example, during scrubber shutdowns, the internal conditions (confined entry area) should be checked for things such as:

- Solids build-up in the demister, packing, and/or tray orifices
- Sagging scrubber trays
- Plugged nozzles
- Excessive corrosion in downcomers, trays or other areas
- Broken downcomers

**Permit conditions specific to the proposed permit are discussed as follows:**

II.(A) This condition contains general recordkeeping and reporting requirements that apply to all permitted emission units, control equipment, and monitoring devices. These requirements establish several things, including a date for when records must be completed, the length of time records must be maintained, and the identification of specific types of records that must be maintained by the source. Records are required to be maintained to ensure compliance with all applicable requirements. Also, all operation and maintenance manuals are to be kept for the life of the source. If there are any inconsistencies between this condition and applicable NSPS or NESHAP requirements, the recordkeeping in Condition II.(A) takes precedence unless it is less stringent (Title 129, Chapter 8, Section 015.02). Specific recordkeeping requirements for permitted emission units can be found in the respective section covering the unit.

II.(B) This condition specifies general reporting requirements. The reports required by this condition include the annual compliance certification report, the annual emissions inventory report, and excess emissions reports, as required. Should there be inconsistencies between Condition II.(B) and applicable NSPS or NESHAP requirements, the reporting in Condition II.(B) takes precedence unless it is less stringent (Title 129, Chapter 1, Section 131; Chapter 7, Section 008; and Chapter 8 Sections 012.01 and 015). Unit specific reporting requirements are provided in Condition III of the permit.

II.(C) This condition provides the procedure the permittee must follow in order to make changes at the facility that do not require a CP or a permit revision (Title 129, Chapter 15, Section 007).

II.(D) This condition includes the requirements associated with testing, as required in the permit. All performance tests required throughout this permit are required to be conducted in accordance with these conditions. The permittee is required to provide the NDEQ at least thirty (30) days written (i.e. hard copy, not electronic or verbal) notice prior to testing. The notification should include the emissions testing protocol. This is to ensure that the NDEQ has the opportunity to witness the emissions testing and/or approve the testing plan proposed. The owner or operator must also submit the final test results within forty-five (45) days after the test has occurred. EPA's stack testing guidance indicates that full capacity is operation at 90 percent of maximum rated capacity or greater (Title 129, Chapter 8, Section 012.01 and Chapter 34, Section 001). In regards to testing for haul roads, the fact sheet associated with the CP issued to NCP on Aug. 6, 2009 indicated that four quarterly silt load tests should be conducted at the facility to demonstrate compliance with the silt load limit. The fact sheet then stated that, to date, three (3) quarterly tests had been conducted at NCP. The fact sheet concluded by saying one (1) additional silt load test is required to demonstrate compliance with haul road testing requirements. Therefore, the OP only requires one haul road performance test.

II.(E) This condition requires all permitted emission units, control equipment, and monitoring equipment to be properly installed, operated, and maintained. (Title 129, Chapter 8, Section 004.01C; Chapter 11, Section 001; Chapter 34, Section 006 and Chapter 35 Section 006.02 and 006.05).

II.(F) This condition requires NCP to comply, in a timely matter, with requirements that become effective during the permit term (Title 129, Chapter 7, Section 006.02H, and Chapter 8, Section 012.03 and 015).

II.(G)(1)(a) This condition identifies the source-wide emission limitations at NCP. In order to comply with Condition II.(F) of the August 6, 2009 CP and to remain a minor source for HAPs, there are two source-wide HAP limits that apply to NCP. No individual HAP is allowed to exceed 10 tons per year, and all combined HAPs are not allowed to exceed 25 tons per year. (Condition II.(F), August 6, 2009 CP; Title 129, Chapters 27 and 28). Also, a facility wide VOC limit of less than 100 tons per year is in place to ensure the source stays a Class II-Synthetic Minor source. Testing for this limit is required and must be conducted in accordance with the compliance schedule found in Condition IV (Title 129, Chapter 5, Section 001.03). While the PTE of VOCs at the facility is below 100 tpy (99.97 tpy), the NDEQ has determined this limit to be necessary due to the fact that the PTE is so close to the major source threshold. Given that there is some uncertainty surrounding the methodology and emission factors used for calculating PTE of VOCs, it is possible that the source could have VOC emissions that exceed 100 tpy. For this reason, the VOC limit has been placed in the permit for NCP (Title 129, Chapter 5, Section 001.03).

Compliance with the emission limits in this condition must be demonstrated by performing emissions calculations every month using the calculation methodology presented in Attachment A to calculate the single and total HAPs emissions, as well as emissions of VOCs. Since testing has been required under the construction permit and by this operating permit, the source must use the emission factor, in pounds per hour, derived through testing when performing the calculations. In addition, the source must use data from the most recent valid emission test conducted in accordance with Condition II.(D). Once the monthly emissions are calculated, the source is required to add the current monthly total and subtract the total from 13 months ago to determine their rolling twelve (12) month total emissions (Construction Permit Issued March 6, 2008; Title 129, Chapter 5, Section 001.03 and Chapter 8, Section 015). The source must also use uncontrolled emission factors in emissions calculations when the scrubber operating parameters are not maintained at the levels as required in Condition III.(B)(4)(b)(vi) (Condition II.(F), August 6, 2009 CP; Title 129, Chapter 6, Section 001.03 and Chapter 8, Section 015).

Also, this condition requires NCP to use uncontrolled VOC and HAP emission factors when calculating emissions during periods of scrubber downtime or times when scrubber operating parameters deviate from parameters recorded during the most recent valid performance test for the scrubber.

II.(G)(2)(a) The permittee is required to monitor daily production/throughput rates in order to demonstrate compliance with the requirements in Condition II.(D)(3)(d). This requirement applies to emission units that have had a performance test (Title 129, Chapter 34, Section 006).

II.(G)(2)(b) The permittee is required to sufficiently restrict public access to the source at the ambient air boundary used in the air dispersion modeling analysis for NAAQS compliance demonstration (Condition II.(E)(1), August 6, 2009 CP).

II.(G)(3)(a) The permittee is required to keep a site survey or similar documentation that verifies the stack heights at the facility (Condition II.(E)(1), August 6, 2009 CP). This documentation is to be readily available to NDEQ representatives.

II.(G)(3)(b) The permittee is required to keep a site survey, or similar documentation, containing the location of the plant boundary vertices. This documentation is to be readily available to NDEQ representatives (Condition II.(E)(2), August 6, 2009 CP).

II.(G)(3)(c) The permittee is required to keep records on-site that document monthly and rolling 12 month totals of HAPs and VOCs. These records are used to demonstrate compliance with the tons per year limits in II.(G)(1)(a) [Title 129, Chapter 8, Section 015].

II.(G)(3)(d) To demonstrate compliance with Condition II.(G)(2)(a), NCP must keep records of daily production/throughput rates for all units that have had a performance test. These records include daily production/throughput rates and production/throughput rates on a 30 day rolling average basis (Title 129, Chapter 34, Section 006; Title 129, Chapter 8, Section 015).

II.(G)(3)(e) To demonstrate compliance with Condition II.(D)(3)(d), for emissions units that have had a performance test, NCP must notify the NDEQ of any ten (10) percent increase in daily production/throughput rate over the rate recorded during the most recent valid performance test. NDEQ must also be notified of each cumulative five (5) percent increase in daily production/throughput rate, based on a 30 day rolling average, over the rate recorded during the most recent valid performance test. Emission units that have been tested and use a CEMS device to demonstrate compliance are exempt from these reporting requirements.

II.(G)(3)(f) This condition clarifies which production/throughput rates must be recorded by specifying that the source track the rate used to document "maximum" capacity in their most recent performance test and as submitted to the NDEQ in their stack test report. While a source is required to test at "maximum" capacity, there are times when they cannot reach this rate at the time of a performance test. In addition, a source can make efficiency changes that increase the "maximum" capacity of an emissions unit and/or a process. These conditions, II.(G)(2)(a), II.(G)(3)(d), and II.(G)(3)(e), are included in the operating permit to assure performance testing has been conducted at a level that is representative of the source maximum capacity.

III.(A) Grain Receiving, Handling, Storage, and Hammermilling

(1) This condition permits NCP to operate the emission points and associated emission units listed in the table of the operating permit. All emissions associated with grain receiving, storage, handling, and hammermilling operations are to be controlled by baghouses.

(2) This condition identifies NSPS and NESHAP requirements applicable to the grain receiving, storage, handling, and hammermilling operations at NCP. As stated in the permit, no NSPS or NESHAP requirements have been identified as applicable to these operations at the facility.

(3) This condition identifies the emission limitations that are applicable to the grain receiving, storage, handling, and hammermilling operations at NCP. Specific PM and $PM_{10}$ limitations have been implemented to ensure that the provisions of Title 129, Chapter 20 are not violated and to keep source-wide $PM/PM_{10}$ emissions below the former PSD threshold of 100 tons/year. Limitations also ensure that the permittee does not exceed Class I thresholds for purposes of the operating permit program. A limitation on opacity has also been included to ensure compliance with Title 129, Chapter 20.

Performance testing is not required for Emission Points EP-2, EP-4, EP-5, EP-8, EP-9, EP-11, and EP-12. Initial performance testing was conducted on these emission points in August, 2008. This testing showed that NCP was in compliance with the permitted emission limits for these emission points. Therefore, the testing and monitoring requirements for these emission points are satisfied through compliance with Condition III.(A)(4).

Performance testing is required for Emission Points EP-6 and EP-7. These emission points were not tested during the initial performance test conducted in August, 2008. Therefore, testing is necessary to demonstrate compliance with the permitted $PM/PM_{10}$ limit for these emission points. Testing is to be conducted within sixty (60) days of permit issuance. This is the timeframe prescribed in Title 129, Chapter 34, Section 007.

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Performance Testing Required |
|---|---|---|---|---|---|
| EP-2 | $PM/PM_{10}$ | 0.74 lb/hr[1] | 3-hr or test method average | Title 129, Chapter 17; Condition III.(A)(2), Aug. 6, 2009 CP | No |
| EP-4, EP5 | $PM/PM_{10}$ | 0.06 lb/hr[1] (each) | 3-hr or test method average | Title 129, Chapter 17; Condition III.(A)(2), Aug. 6, 2009 CP | No |
| EP-6, EP-7 | $PM/PM_{10}$ | 0.06 lb/hr (each) | 3-hr or test method average | Title 129, Chapter 17; Condition III.(A)(2), Aug. 6, 2009 CP | Yes |
| EP-8 | $PM/PM_{10}$ | 0.03 lb/hr[1] | 3-hr or test method average | Title 129, Chapter 17; Condition III.(A)(2), Aug 6, 2009 CP | No |
| EP-9 | $PM/PM_{10}$ | 0.02 lb/hr[1] | 3-hr or test method average | Title 129, Chapter 17; Condition III.(A)(2), Aug. 6, 2009 CP | No |
| EP-11, EP-12 | $PM/PM_{10}$ | 0.19 lb/hr[1] (each) | 3-hr or test method average | Title 129, Chapter 17; Condition III.(A)(2), Aug. 6, 2009 CP | No |
| EP-2, EP-4, EP-5, EP-6, EP-7, EP-8, EP-9, EP-11, EP-12 | Opacity | < 20%[1] (each) | 6 minutes | Title 129, Chapter 20, Section 004 | No |

[1] Testing and monitoring requirements are satisfied through compliance with Condition III.(A)(4).

(4)(a) $PM/PM_{10}$ emissions generated by the grain receiving, storage, handling, and hammermilling processes are required to be controlled by baghouses (Title 129, Chapters 17 and 20; Condition III.(A)(3)(a), August 6, 2009 CP).

(4)(b) In order to control particulate emissions, each baghouse must be properly operated whenever the associated emission units are in operation. Each baghouse is required to be properly installed, operated, and maintained. The manufacturer's operation manual, or its equivalent, must be kept on site and readily available to NDEQ representatives. One indication of baghouse malfunction is an atypical pressure drop across the baghouse. Therefore, each baghouse is required to be equipped with an operational pressure differential indicator. Baghouse bags/cartridges are to be inspected and replaced according to the operations manual or more frequently based upon pressure differential readings or other indications of bag failure. The facility must conduct daily observations, during the daylight hours of baghouse operation, to ensure that there are not visible emissions from the stack, leaks, noise from the unit, or atypical pressure differential readings. By requiring daily observations, baghouse malfunctions will be detected quickly and should be corrected. The facility is

required to keep an on-site inventory of spare bags of each type used. If a baghouse is not operating properly (i.e. has a blown bag), it is expected that there will be excess emissions emitted from the unit. Keeping spare bags and installing the bags when necessary will minimize the duration of excess emissions events. Finally, any waste material from the baghouses must be collected, transported, and stored in a way that ensures compliance with Condition I.(P) [Title 129, Chapter 8, Section 015; Title 129, Chapters 17 and 20; Condition III.(A)(3)(b), Aug.6, 2009 CP].

(4)(c) The grain receiving operations are required to be conducted within a partially enclosed building for purposes of capturing the emissions generated via the unloading process. The facility must also use choke feed practices during the receipt of grain (Title 129, Chapters 17 and 20; Condition III.(A)(3)(c), Aug. 6, 2009 CP).

(5) This condition requires specific records to be kept by the permittee. These records include documenting routine observations and operating parameters (i.e. pressure differential), filter bag replacement records, indicators that corrective action is needed, daily observations, and any corrective actions taken. Additional recordkeeping requirements in accordance with Specific Condition II.(A) are also required to be maintained (Title 129, Chapter 8, Section 015; Condition III.(A)(5), Aug. 6, 2009 CP).

III.(B) Fermentation and Distillation

(1) This condition permits NCP to operate the emission points and associated emission units listed in the table of the operating permit. All emissions associated with fermentation and distillation operations are to be controlled by a $CO_2$ scrubber with chemical injection (CE017).

(2) This condition identifies NSPS and NESHAP requirements applicable to the fermentation and distillation operations at NCP. As stated in the permit, no NSPS or NESHAP requirements have been identified as applicable to these operations at the facility.

(3) This condition identifies the emission limitations that are applicable to the fermentation and distillation operations at the source. VOC and HAP emission limitations have been established to ensure the facility demonstrates compliance with Title 129, Chapter 27 (for HAP). VOC emission limitations have been established in order to protect construction permit requirements and ensure that the facility does not exceed major thresholds (Class I) for purposes of the operating permit program.

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Performance Testing Required |
|---|---|---|---|---|---|
| EP-18 | VOC | 13.9 lb/hr[1] | 3-hour or test method average | Title 129, Chapter 17; Condition III.(B)(2), Aug.6, 2009 CP | Yes |
| EP-18 | HAP | 65% Control Efficiency for Combined HAPs | Speciation and Quantification of HAP composition at inlet and outlet | Title 129, Chapter 27; Condition III.(B)(2), Aug 6, 2009 CP | Yes |

[1] Expressed as weight of VOC

(4)(a) VOC and HAP emissions generated by the fermentation and distillation process are required to be controlled by a $CO_2$ scrubber with chemical injection (CE017) whenever the associated emission units are in operation (Title 129, Chapters 17 and 27; Condition III.(B)(3)(a), Aug. 6, 2009 CP).

(4)(b) In order to control emissions, the scrubber must be properly operated whenever the associated emission units are in operation, except for up to 50 hours of scrubber downtime during each calendar year. Scrubber downtime occurs when the associated emission units are in operation (scrubber inlet pressure greater than zero) and the scrubber flow rate is below the facility's normal operating range. The scrubber is required to be properly installed, operated, and maintained. The manufacturer's operation manual, or its equivalent, must be kept on site and readily available to NDEQ representatives. The permittee is also required to install devices that are capable of monitoring the operating parameters of the scrubber. The scrubbing liquid flow rate, chemical addition flow rate, and pressure differential are to be monitored on a continuous basis. The facility must also have the capability to measure the scrubbing liquid temperature by direct measurement (Title 129, Chapter 8, Section 015; Title 129, Chapters 17 and 27; Condition III.(B)(3)(b), Aug. 6, 2009 CP).

Note: Condition III.(B)(4)(b)(iii)(4) differs from Condition III.(B)(3)(b)(ii) of the Aug. 6, 2009 CP. These differences must be noted due to the provisions of Title 129, Chapter 8, Section 002.01. The CP condition required that the scrubber be equipped with a device capable of continuously monitoring scrubbing liquid temperature. However, since NCP uses groundwater wells with nearly constant water temperature to supply water to the scrubber, NDEQ has determined that it is more appropriate that the facility be able to measure water temperature at a particular instant in time, as opposed to measuring temperature continuously while the scrubber is in operation. Therefore, NCP is only required to be able to measure liquid temperature with a direct measurement method.

NCP must monitor and record the total monthly amount of chemical injected into scrubber CE017. Also, chemical drawn-down checks must be performed upon request from NDEQ personnel. These monitoring requirements, in conjunction with the recordkeeping requirements of III.(B)(5), provide NDEQ staff a way to verify whether the monitoring devices on the scrubber are properly calibrated (Title 129, Chapter 8, Section 015; Title 129, Chapters 17 and 27; Condition III.(B)(3)(b), Aug. 6, 2009 CP).

The permittee is required to maintain all operating parameters of the scrubber at the levels of the most recent valid performance test conducted at the facility. Scrubber operating parameters do not need to be adhered to if the facility uses a CEMs device to demonstrate compliance with permitted emission limits.

Note: Condition III.(B)(4)(b)(vi) of the OP differs from Condition III.(B)(3)(b)(iii) of the August 6, 2009 CP. These differences must be noted due to the provisions of Title 129, Chapter 8, Section 002.01. The original CP required the facility to submit operating parameters to NDEQ with submittal of the operating permit application. Given the requirements of Condition III.(B)(4)(b)(vi), though, NDEQ has determined that there is no need for the facility to submit normal operating parameters at this time. Therefore, these requirements from the CP have not been incorporated into the OP.

The facility must also conduct daily observations, during the daylight hours of scrubber operation, to ensure that there are not visible emissions from the stack, leaks, noise from the unit, or atypical parameter readings (Title 129, Chapter 8, Section 015; Title 129, Chapters 17 and 27; Condition III.(B)(3)(b), Aug. 6, 2009 CP).

Finally, flow meters for recording scrubbing liquid and chemical addition flow rates must be maintained and calibrated according to manufacturer's instructions (Title 129, Chapter 8, Section 015; Title 129, Chapters 17 and 27; Condition III.(B)(3)(b), Aug. 6, 2009 CP).

(4)(c) Condition III.(B)(4)(c) establishes testing requirements applicable to the scrubber (CE017). The testing frequency for the scrubber is determined by the facility-wide rolling 12 month total emissions of the single largest HAP at the facility, which must be submitted to NDEQ by April 30 of each year. The testing frequency is determined on March 31 of each year, and is based on the following Tiers:

| Tier | Rolling 12-Month Total Emissions of Largest Single HAP | Testing Frequency |
|---|---|---|
| 1 | <2.5 tons per year | Twice per permit term |
| 2 | ≥2.5 tons per year and <5 tons per year | Annual |
| 3 | ≥5 tons per year and < 8 tons per year | Semi-Annual |
| 4 | ≥ 8 tons per year | Quarterly |

The most recent performance test at the facility (June 30, 2010) showed the single largest HAP to be Acetaldehyde, which was emitted at a rate of 0.86 lb/hr. Using this number to calculate PTE, annual emissions of the single greatest HAP are approximately 3.77 tons per year. Therefore, at the time of permit issuance, NCP is required to conduct performance testing in accordance with Tier 2. However, the testing frequency may be adjusted, if applicable, on March 31 of each year. If, on March 31 of each year, emissions of the single largest HAP are less than 2.5 tpy, testing must be conducted twice during the permit term. For emissions greater than or equal to 5 tpy and less than 8 tpy, the facility will be required to conduct annual testing. If emission totals fall between 5 and 8 tpy, testing will be conducted on a semi-annual basis. If emissions are greater than or equal to 8 tpy, the facility will be required to conduct testing for the scrubber on a quarterly basis. In all instances, it is required that the facility conduct at least one (1) test during the third quarter (July through September) of each year for which testing is required. Additionally, only one valid performance test may be conducted at each operating range when conducting performance tests on scrubber CE017 [Title 129, Chapter 8, Section 015.03 and Chapter 34].

(4)(d) This condition establishes requirements that must be followed if NCP chooses to install a CEMS or PEMS system on the fermentation scrubber. If a qualifying CEMS or PEMS is used, the monitoring and testing requirements of Conditions III.(B)(4)(b)(iii) through III.(B)(4)(b)(viii) and Condition III.(B)(4)(c) are no longer in effect (Title 129, Chapter 8, Section 015). A CEMS or PEMS device provides adequate monitoring to ensure continuous compliance with applicable requirements, so these conditions would no longer be necessary in situations where a CEMS or PEMS is used.

If NCP chooses to install a CEMS or PEMS, they must notify the NDEQ at least sixty (60) days prior to installation of the system. NCP must comply with

Performance Specifications and other regulations, as appropriate, once the CEMS or PEMS device is installed and operational.

Note: Condition III.(B)(4)(d) above differs from Condition III.(B)(3)(b)(iii) of the August 6, 2009 CP. These differences must be noted due to the provisions of Title 129, Chapter 8, Section 002.01. The original CP condition stated that alternate scrubber operating parameters could be used if test results or operation of a CEMs device demonstrated that the facility was achieving better emissions control. However, NDEQ has determined that there is no need to adhere to scrubber operating parameters when a CEMs device is used to demonstrate compliance.

(5) This condition requires specific records to be kept by the permittee. These records include the continuous pressure differential readings taken from scrubber CE017; readings taken during the continuous monitoring of operating parameters, including readings of scrubbing liquid flow rate and chemical addition flow rate; monthly records that document the amount of the chemical injected into the scrubber; monthly purchase records that document the date and amount of chemical purchased for the scrubber; records that document the operating parameters developed during the most recent valid performance test conducted at the facility; records documenting the date, time, observations, and corrective actions taken for each day the associated scrubber is in operation; records documenting when routine maintenance and preventive actions were performed with a description of the maintenance and/or preventive action performed; records documenting the reasons the scrubber was not operating, the number of hours that the scrubber was down, and each piece of equipment routed to the scrubber that is still in operation during scrubber down time; records of facility-wide rolling 12 month total emissions of the single largest HAP; and finally, if a CEMS or PEMS device is installed by the facility, all recorded data must be documented and kept on-site. Maintaining all of these records helps the facility demonstrate compliance with the requirements of Condition III.(B)(4) [Title 129, Chapter 8, Section 015.02; Condition III.(B)(5) of August 6, 2009 CP].

III.(C) Boilers

(1) This condition permits NCP to operate the emission points and associated emission units listed in the table of the operating permit. All boilers are equipped with low $NO_x$ burners.

(2) This condition identifies NSPS and NESHAP requirements applicable to Boiler operations at the facility. NSPS Subparts A and Dc (Title 129, Chapter 18, Sections 001.01 and 001.52) apply to both boiler units at NCP (Condition III.(C)(4), August 6, 2009 CP).

(3) This condition identifies the emission limitations that are applicable to the boiler operations at NCP. Specific limitations have been implemented to ensure that the provisions of Title 129, Chapter 20 are not violated and to keep source-wide emissions of criteria pollutants below the former PSD threshold of 100 tons/year. The limitations also ensure that the facility does not exceed major thresholds (Class I) for purposes of the operating permit program.

Performance testing is not required for Emission Points EP-20 or EP-21. Initial performance testing was conducted on these emission points in August, 2008. This testing showed that NCP was in compliance with the permitted emission limits for these emission points. Therefore, the testing and monitoring requirements for these emission points are satisfied through compliance with Condition III.(A)(4).

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Performance Testing Required |
|---|---|---|---|---|---|
| EP-20, EP-21 | $PM/PM_{10}$ | 0.90 lb/hr[1] | 3 hour or test method average | Title 129, Chapter 17; Condition III.(C)(2), Aug. 6, 2009 CP | No |
| | $SO_2$ | 0.20 lb/hr[1] | 3-hour or test method average | Title 129, Chapter 17; Condition III.(C)(2), Aug 6, 2009 CP | No |
| | $NO_x$ | 2.970 lb/hr[1] | 3-hour or test method average | Title 129, Chapter 17; Condition III.(C)(2), Aug. 6, 2009 CP | No |
| | CO | 3.663 lb/hr[1] | 3-hour or test method average | Title 129, Chapter 17; Condition III.(C)(2), Aug. 6, 2009 CP | No |
| | VOC | 0.297 lb/hr[1] | 3-hour or test method average | Title 129, Chapter 17; Condition III.(C)(2), Aug. 6, 2009 CP | No |
| | PM | 55.23 lb/hr[1] | Hourly | Title 129, Chapter 20, Section 002 | No |
| | Opacity | < 20% [1] | 6 minutes | Title 129, Chapter 20, Section 004 | No |

[1] Testing and monitoring requirements are satisfied through compliance with Condition III.(C)(4).

(4)(a) Each boiler is permitted to use only natural gas as a fuel source (Condition III.(C)(1), August 6, 2009 CP).

(4)(b) Each boiler is required to be properly installed, operated, and maintained. The manufacturer's operation manual, or its equivalent, must be kept on site and readily available to NDEQ representatives (Title 129, Chapter 8, Section 015).

(4)(c) This condition requires NCP to comply with the operational and monitoring requirements specified in NSPS Subpart Dc (Condition III.(C)(3), Aug. 6, 2009 CP).

(5) This condition requires specific records to be kept by the permittee. These records include documenting when routine maintenance and/or preventative maintenance are conducted with a description of the action performed. NCP must also keep all records and perform all notifications as required by NSPS Subparts A and Dc (Title 129, Chapter 8, Section 015; Condition III.(C)(5), Aug. 6, 2009 CP).

III.(D) Tanks

(1) This condition states that NCP is permitted to operate the storage and process tanks, at the capacity and for the products specified, as listed in the table in the operating permit.

(2) This condition identifies NSPS and NESHAP requirements applicable to the tanks at NCP. NSPS Subparts A and Kb (Title 129, Chapter 18, Sections 001.01 and 001.62) apply to Tanks TK001 through TK005 (Condition III.(G)(4), August 6, 2009 CP).

(3) Emission limitations and testing requirements are as established by 40 CFR 60 Subpart Kb (Condition III.(G)(2), Aug. 6, 2009 CP).

(4) This condition requires NCP to comply with the operational and monitoring requirements for tanks TK001 through TK005 as specified in NSPS Subpart Kb, including the use of internal floating roofs (Condition III.(G)(3), Aug. 6, 2009 CP)

(5) This condition requires NCP to complete notifications, reporting, and recordkeeping as required by NSPS Subparts A and Kb (Condition III.(G)(5), Aug. 6, 2009 CP).

III.(E) Ethanol Loadout

(1) This condition permits NCP to operate the emission points and associated emission units listed in the table in the operating permit. VOC and HAP emissions from truck and rail loadout are required to be captured and controlled by a closed vapor recovery system with an enclosed flare.

(2) This condition identifies NSPS and NESHAP requirements applicable to the ethanol loadout operations at NCP. As stated in the permit, no NSPS or NESHAP requirements have been identified as applicable to these operations at the facility.

(3) This condition identifies the emission limitations that are applicable to the ethanol loadout operations at NCP. Specific limitations have been implemented to ensure that the provisions of Title 129, Chapter 20 are not violated.

Performance testing is not required for EP-23. Potential to emit (PTE) calculations for EP# S50 show that maximum emissions of PM are expected to be below the permitted limits as specified in Title 129, Chapters 20. Therefore, NDEQ can expect NCP to be in compliance with these limits.

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Performance Testing Required (Yes/No) |
|---|---|---|---|---|---|
| EP-23 | PM | 1.2 lb/hr[1] | Hourly | Title 129, Chapter 20, Section 002 | No |
| | Opacity | < 20 percent[2] | 6 minutes | Title 129, Chapter 20, Section 004 | No |

[1] Emission factors for PM are below the permitted limit from Chapter 20 (See Fact Sheet Attachment). Therefore, no monitoring or testing is required for this emission point.
[2] Compliance with Condition III.(E)(4) satisfies the testing and monitoring requirements for opacity.

(4)(a) Submerged loading is required when transferring liquid to tanker railcar and/or tanker trucks to limit the amount of VOCs and HAPs emitted during the transfer process (Title 129, Chapters 17 and 27; Condition III.(D)(3)(a), Aug. 6, 2009 CP).

(4)(b) VOC and HAP emissions from the truck and rail ethanol loadout operations are required to be captured and controlled by a vapor recovery system with enclosed flare. This system is to be operational at all times ethanol loading is occurring at the source [Title 129, Chapters 17 and 27; Condition III.(D)(3)(b), Aug. 6, 2009 CP].

(4)(c) The closed vapor recovery system and enclosed flare is required to be properly designed, installed, operated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection, and maintenance of the vapor recovery system and flare shall be kept on site and readily available to NDEQ representatives. Also, when ethanol loadout is occurring, a flame

shall be present at the flare. The facility must install an appropriate safety device or flame monitoring system to ensure that truck and rail loadout cannot occur without the presence of a flame. The safety device or flame monitoring system shall be properly installed, operated, calibrated, and maintained. The manufacturer's operation and maintenance manual, or its equivalent, detailing proper operation, inspection, and maintenance of the flare monitoring device/system shall be kept on site and readily available to NDEQ representatives (Title 129, Chapters 17 and 27; Condition III.(D)(3)(c), Aug. 6, 2009 CP).

(5) This condition specifies the recordkeeping requirements applicable to the ethanol loadout operations at the facility. NCP is required to keep records documenting when routine maintenance and preventive actions were performed on the vapor recovery system and flare with a description of the maintenance and/or preventative action performed [Condition III.(D)(5), Aug. 6, 2009 CP].

III.(F) Equipment Leaks

(1) Each valve, pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, flange, or other connector in VOC service and any device or system required by NSPS Subpart VV located throughout the ethanol plant is considered a permitted emission point.

(2) This condition identifies NSPS and NESHAP requirements applicable to Equipment Leaks at the facility. NSPS Subparts A and VV (Title 129, Chapter 18, Sections 001.01 and 001.14) apply to all components listed in the operating permit (Condition III.(I)(4), August 6, 2009 CP).

(3) The emission limitations and testing requirements for equipment leaks at NCP are specified by NSPS Subpart VV (Condition III.(I)(2), August 6, 2009 CP).

(4) The operational and monitoring requirements for equipment leaks at NCP are specified by NSPS Subpart VV (Condition III.(I)(3), August 6, 2009 CP).

(5) This condition specifies recordkeeping requirements that apply to equipment leaks at NCP. The records that must be maintained include notifications, recordkeeping, and reporting as required by NSPS Subparts A and VV. The permittee must also maintain records that include the date that leak detection testing occurred; which valves, pumps, seals, open-ended lines, flanges, connectors, etc. were tested; and who conducted the testing. This condition also requires the permittee to submit a semi-annual leak detection and repair report every six (6) calendar months to the NDEQ. The reports shall be submitted within 45 days following June 30 and December 31 of each year. Each report must be certified by a responsible official and include the date and time testing occurred, who conducted the testing, and additional information required to be reported to the NDEQ in accordance with Subpart VV (Condition III.(I)(5), Aug. 6, 2009 CP).

III.(G) Cooling Tower

(1) This condition permits NCP to operate the emission points and associated emission units listed in the table found in the operating permit.

(2) This condition identifies NSPS and NESHAP requirements applicable to the cooling tower located at the source. As stated in the permit, no NSPS or NESHAP requirements have been identified as applicable to the cooling tower operations.

(3)(a) This condition identifies emissions limitations applicable to the cooling tower at NCP. A PM limit has been instituted to ensure compliance with Title 129, Chapter 20.

Testing and monitoring requirements are not specified for the cooling tower. Drift loss and TDS limitations are written into the operating permit. When using these limitations, PTE calculations for PM from the cooling tower are well below the permitted limit. Therefore, compliance with Condition III.(J)(4) gives NDEQ reasonable assurance that NCP is complying with the permitted PM limit.

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Performance Testing Required (Yes/No) |
|---|---|---|---|---|---|
| EP-25 | PM | 103.86 lb/hr[1] | Hourly | Title 129, Chapter 20, Section 001 | No |

[1] Testing and monitoring requirements satisfied through compliance with Condition III.(G)(4).

Note: Condition III.(G)(3)(a) differs from Condition III.(F)(2)(a) of the August 6, 2009 CP. The original CP condition stipulated that the cooling tower was not subject to any emission limitations. However, NDEQ has determined that the cooling tower is subject to a PM limitation under Title 129, Chapter 8, Section 001. Therefore, a PM limitation has been added to this operating permit.

(3)(b) This condition specifies that a representative TDS sample shall be collected and tested from each cooling tower a minimum of once per calendar month. The test method used to determine TDS concentration shall be in accordance with an EPA approved method and be documented (Condition III.(F)(2)(b), Aug. 6, 2009 CP).

(4)(a) A limitation on the drift loss percentage from the cooling tower has been established based on the manufacturer's drift loss guarantee. If the cooling tower is properly maintained and operated, it is expected that the permittee would be in compliance with the drift loss percent limitation (Title 129, Chapters 17 and 20; Condition III.(F)(3)(a), Aug. 6, 2009 CP).

(4)(b) The total dissolved solids (TDS) concentration in the cooling tower water has been limited to 2,500 ppm (rolling annual average) to ensure $PM/PM_{10}$ emissions from the cooling tower are consistent with the emission calculations performed (Title 129, Chapters 17 and 20; Condition III.(F)(3)(b), Aug. 6, 2009 CP).

(5) This condition specifies the recordkeeping requirements applicable to the cooling tower at the facility. Records to be maintained by the permittee include the TDS concentration from testing results and records documenting when routine maintenance and preventative actions were performed with a description of the activity performed (Condition III.(F)(5), Aug. 6, 2009 CP).

III.(H) Emergency Equipment

(1) This condition permits NCP to operate the emission points and associated emission units listed in the table found in the operating permit.

(2) This condition identifies NSPS and NESHAP requirements applicable to the emergency equipment located at the source. NSPS Subparts A and IIII (Title 129, Chapter 18, Sections 001.01 and 001.76) apply to both the Emergency Fire Pump

Engine and the emergency generator (Condition III.(I)(4), August 6, 2009 CP). NESHAP Subpart ZZZZ is also applicable to the emergency equipment. However, the applicable requirements of NESHAP Subpart ZZZZ are met through compliance with the applicable requirements of NSPS Subpart IIII [§63.6590b(3)] (Condition III.(I)(4), August 6, 2009 CP).

(3) This condition identifies the emission limitations that are applicable to the emergency equipment at NCP. NMHC + $NO_x$, CO, PM, and hydrocarbon limitations have been incorporated to ensure that the permittee complies with NSPS Subpart IIII. Also, PM and Opacity limitations have been implemented to ensure that the permittee maintains compliance with Title 129, Chapter 20. A $SO_x$ limitation has been put in place to ensure that the permittee maintains compliance with Title 129, Chapter 24.

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Performance Testing Required (Yes/No) |
|---|---|---|---|---|---|
| EP-24 | NMHC + $NO_x$[1] | 7.8 g/hp-hr | Test Method Average | 40 CFR 60.4205(c): Table 4 to Subpart IIII | No |
| EP-24 | CO[1] | 2.6 g/hp-hr | Test Method Average | 40 CFR 60.4205(c): Table 4 to Subpart IIII | No |
| EP-24 | PM[1] | 0.40 g/hp-hr | Test Method Average | 40 CFR 60.4205(c): Table 4 to Subpart IIII | No |
| EP-38 | Hydrocarbons[1] | 1.0 g/hp-hr | Test Method Average | 40 CFR 60.4205(a): Table 1 to Subpart IIII | No |
| EP-38 | $NO_x$[1] | 6.9 g/hp-hr | Test Method Average | 40 CFR 60.4205(a): Table 1 to Subpart IIII | No |
| EP-38 | CO[1] | 8.5 g/hp-hr | Test Method Average | 40 CFR 60.4205(a): Table 1 to Subpart IIII | No |
| EP-38 | PM[1] | 0.40 g/hp-hr | Test Method Average | 40 CFR 60.4205(a): Table 1 to Subpart IIII | No |
| EP-24 | PM[1] | 1.21 lb/hr | Hourly | Title 129, Chapter 20, Section 002 | No |
| EP-38 | PM[1] | 8.39 lb/hr | Hourly | Title 129, Chapter 20, Section 002 | No |

| Emission Point ID# | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit | Performance Testing Required (Yes/No) |
|---|---|---|---|---|---|
| EP-24, EP-38 | Opacity[1] | < 20 percent (each) | 6 minutes | Title 129, Chapter 20, Section 004 | No |

[1] Testing and monitoring requirements satisfied through compliance with Condition III.(H)(4).

(4)(a) The emergency fire pump engine and the emergency generator are each limited to operating 500 hours per any period of twelve (12) consecutive calendar months in order to limit facility-wide potential emissions below the former 100 tpy major source PSD threshold. This limitation also helps to ensure that NCP does not exceed major source thresholds (Class I) for purposes of the operating permit program (Title 129, Chapter 17; Condition III.(E)(3)(a), Aug. 6, 2009 CP).

(4)(b) This condition stipulates that the emergency equipment at NCP must comply with the operational and monitoring requirements and limitations as specified in NSPS Subpart IIII (Condition III.(E)(3)(b), Aug. 6, 2009 CP).

(4)(c) This condition stipulates that the emergency equipment at NCP must comply with the operational and monitoring requirements and imitations as specified in NESHAP Subpart ZZZZ (Condition III.(E)(3)(b), Aug. 6, 2009 CP). As specified in 40 CFR 60.6590(c), the operational and monitoring requirements of NESHAP ZZZZ are satisfied through compliance with the requirements of NSPS Subpart IIII.

(4)(d) This condition requires NCP to use only No.1 or No. 2 diesel as a fuel source for the emergency equipment at the facility.

(4)(e) This condition stipulates that the sulfur content of the diesel fuel used in the emergency equipment must not exceed 15 ppm [NSPS Subpart IIII (40 CFR 60.4207)]. This is approximately equal to 0.0015 percent by weight.

Note: Condition III.(H)(4)(e) differs from Condition III.(E)(3)(c) of the Aug. 6, 2009 CP. The CP required that the sulfur content of diesel fuel not exceed 0.05 percent by weight. However, NSPS Subpart IIII requires that sulfur content of diesel fuel not exceed 15 ppm. The more stringent NSPS sulfur requirement is included in this OP.

(5) This condition specifies the recordkeeping requirements applicable to the emergency equipment at NCP. Records to be maintained by the permittee include fuel receipts that show diesel fuel with a maximum sulfur content of 15 ppm is the only fuel being combusted in the engines and records showing that each engine has not exceeded the 500 hours/yr operational limit. The permittee is also required to maintain appropriate records and make appropriate notifications in accordance with the NSPS Subparts A and IIII requirements. Finally, the permittee is required to keep records in accordance with NESHAP Subpart ZZZZ (Title 129, Chapter 8, Section 015; Condition III.(E)(5), Aug. 6, 2009 CP). However, per 40 CFR 63.6590(c), the recordkeeping requirements of Subpart ZZZZ are satisfied through compliance with NSPS Subpart IIII.

III.(I) Haul Roads

(1) This condition specifies that all on-site haul roads with production related truck traffic are to be paved (Title 129, Chapters 17, 20, and 32; Condition III.(H)(1), Aug. 6, 2009 CP).

(2) This condition identifies NSPS and NESHAP requirements applicable to the haul roads located at NCP. As stated in the permit, no NSPS or NESHAP requirements have been identified as applicable to the haul roads.

(3) This condition requires the permittee to comply with a 1.5 $g/m^2$ silt load limitation (Title 129, Chapters 17, 20, and 32; Condition III.(H)(2)(a), Aug. 6, 2009 CP). Also, silt loading performance tests are to be conducted to ensure that the silt load limitation is not exceeded. This testing shall be in accordance with Condition II.(C) [Condition III.(H)(2)(b), Aug. 6, 2009 CP].

(4)(a) The facility is required to develop a fugitive dust control plan (FDCP) to control emissions from haul roads. The FDCP shall outline the control methods, frequencies, and triggers for when implementation of fugitive dust controls will be utilized based on daily surveys and silt load testing. If silt testing results indicate that the permitted silt load cannot be consistently achieved with the current FDCP, the FDCP must be revised in order to decrease emissions from the haul road and bring the facility into compliance with the permitted silt load limit (Condition III.(H)(3)(a), Aug. 6, 2009 CP).

(4)(b) This condition requires that the owner or operator conduct a survey of the plant property and haul roads to determine if visible fugitive emissions are being generated and leaving plant property. Implementation of fugitive dust control shall be taken upon observation of visible fugitive emissions leaving plant property or more frequently in accordance with the FDCP. Documentation of all corrective actions and daily surveys must be maintained in a log that shall accompany the FDCP (Condition III.(H)(3)(b), Aug 6., 2009 CP).

(5) This condition requires NCP to keep its FDCP on site and readily available to NDEQ representatives. This condition also requires certain records to be maintained by the permittee. These records include documents that show the use of fugitive dust control measures, documents that show haul road visible emission checks are conducted daily during plant operation and a description of any corrective action taken, documents that show when silt load testing occurred, and documents that provide the results of each silt load test (Condition III.(I)(5), Aug. 6, 2009 CP).

III.(J) Insignificant Activities

(1) This condition identifies insignificant activities. NCP did not declare any insignificant activities in the Class II Operating Permit application received by NDEQ on March 5, 2009.

(2) Insignificant activities can be declared at a later date by using the procedure in Condition III.(J)(4). If insignificant activities are declared, each activity must not exceed the permitted limits in the table below:

| Insignificant Activities | Pollutant | Permitted Limit | Averaging Period | Basis for Permit Limit |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| All combustion units identified in III.(J)(1) | Opacity | < 20 percent | 6-minute | Title 129, Chapter 20, Section 004 |
| All combustion units identified in III.(J)(1) | PM | 0.60 lb/MMBtu | 1-hour | Title 129, Chapter 20, Section 002 |

(3) There are no operational or monitoring requirements for insignificant activities.

(4) If additions or changes are made to the list of insignificant activities at NCP, a written notification in accordance with Condition II.(B)(4) of the permit needs to be submitted to NDEQ. Notification is only required for insignificant activities that must be included in an application.

IV. Compliance Schedule

(A) At the time of permit issuance, NCP is not in compliance with three conditions of this operating permit. These conditions are the tons per year VOC limit in II.(G)(1)(a), the pollution control equipment requirements of Condition III.(A)(4)(a), and the pound per hour (lb/hr) VOC limit found in Condition III.(B)(3). Testing conducted at NCP on June 30 and July 1, 2010 showed VOC emissions from the Fermentation and Distillation $CO_2$ scrubber (EP-18) to be 22.7 lbs/hr. This exceeds the 13.9 lbs/hr limit specified in Condition III.(B)(3). In addition, when using the 22.7 lbs/hr emission factor to calculate VOC emissions on a tons per year (tpy) basis, the facility exceeds 100 tpy in VOC emissions. This is a violation of Condition II.(G)(1)(a), which imposes a 100 tpy limit on VOCs in order to keep NCP as a Class II-Synthetic Minor source.

(B) This condition requires NCP to adhere to the following compliance schedule (Title 129, Chapter 7, Section 006.02H, Chapter 8, Section 012.03, and Chapter 8, Section 015):

| Milestone | Completed By |
|---|---|
| Determine Course of Action | January 7, 2011 |
| Notify NDEQ of Course of Action | January 15, 2011 |
| Equipment Procurement, Construction Completed- Begin Startup of Equipment | April 1, 2011 |
| Final Compliance Determination Date | September 28, 2011 |

The compliance schedule includes specific dates and tasks that must be completed in order to bring NCP back into compliance with Conditions II.(G)(1)(a) and III.(B)(3).

(C) This condition requires NCP to conduct performance testing on any newly installed equipment used to bring the facility into compliance with applicable regulations. At this time, NCP has not determined what equipment will be used to reduce VOC emissions from the $CO_2$ scrubber. The compliance schedule, however, dictates that NDEQ will be notified of the course of action by January 15, 2011, and it is expected that startup of any new equipment will begin by April 1, 2011. Any new equipment must be tested within 60 days of reaching maximum capacity, but no later than 180 days of start-up of the new equipment (Title 129, Chapter 34, Section 007). The performance test conducted must show that NCP is in compliance with Conditions II.(G)(1)(a) and III.(B)(3) of this operating permit.

(D) In order to return to compliance with Condition III.(A)(4)(a), the NCP must submit a construction permit application to the NDEQ in order to revise construction permit CP08-061, issued on August 6, 2009. The construction permit application must contain all information that is needed to update the configuration of all emission units originally identified in Condition III.(A)(4)(a) and any control equipment that is associated with those emission units. This construction permit must be submitted to NDEQ by March 1, 2011. Then, by September 28, 2011, NCP must either be in compliance with a construction permit that is issued pursuant to Condition IV.(D)(1) or install all necessary control equipment as originally identified in Condition III.(A)(4)(a) [Title 129, Chapter 7, Section 006.02H, Chapter 8, Section 012.03, and Chapter 8, Section 015]

(E) Based on the performance testing conducted on June 30 and July 1 at NCP, the lb/hr rate of VOC emissions from the scrubber pushes the facility PTE of VOCs above 100 tpy. Therefore, until VOC emissions from the scrubber are reduced, the facility is operating as a Class I source. Thus, this condition requires NCP to comply with several major source (Class I) requirements until compliance is demonstrated with Condition II.(G)(1)(a) and the lb/hr VOC limit in Condition III.(B)(3). These requirements include demonstrating compliance with 40 CFR Part 82, Protection of the Stratospheric Ozone; submitting semi-annual deviation reports; and paying fees.

(F) This condition requires NCP to submit semi-annual progress reports of activities conducted under the compliance plan. These progress reports must be submitted with the deviations report as required in Condition IV.(D)(2) [Title 129, Chapter 7, Section 006.02H, Chapter 8, Section 012.04, and Chapter 8, Section 015].

The following terms and conditions from the construction permit issued August 6, 2009 were not incorporated into this Class II Operating Permit:

| Specific Condition | Reason Not Included In Operating Permit |
|---|---|
| II.(E) | Specific stack heights and fenceline coordinates are not included in the operating permit because these are considered one time CP requirements. However, this operating permit does require site surveys, or similar documentation, to outline as-built stack heights and locations of facility boundary vertices. |

## STATUTORY OR REGULATORY PROVISIONS ON WHICH PERMIT REQUIREMENTS ARE BASED:

Applicable regulations: Title 129 - Nebraska Air Quality Regulations as amended January 9, 2011.

## PROCEDURES FOR FINAL DETERMINATION WITH RESPECT TO THE PROPOSED OPERATING PERMIT:

The public notice, as required under NAQR Chapter 14, shall be published on Thursday, January 27, 2011, in the Cambridge Clarion newspaper. Persons or groups shall have 30 days from that issuance of public notice, February 26, 2011, to provide the NDEQ with any written comments concerning the proposed permit action and/or to request a public hearing, in accordance with NAQR Chapter 14. If a public hearing is granted by the Director, there will be a notice of that meeting published at least 30 days prior to the hearing. Persons having comments or requesting a public hearing may contact:

W. Clark Smith-Permitting Section Supervisor
Air Quality Division
Nebraska Department of Environmental Quality
PO Box 98922
Lincoln, Nebraska 68509-8922

If no public hearing is requested, the permit may be granted at the close of the 30-day comment period. If a public hearing is requested, the Director of the NDEQ may choose to extend the date on which the permit is to be granted until after that public hearing has been held. During the 30-day comment period, persons requiring further information should contact:

Robert Sheeder-Programs Specialist
Air Quality Division-Permitting Section
Nebraska Department of Environmental Quality
PO Box 98922
Lincoln, Nebraska 68509-8922

**Telephone inquiries may be made at:**

(402) 471-2189

**TDD users please call 711 and ask the relay operator to call us at (402) 471-2186.**

Compliance with this permit shall not be a defense to any enforcement action for violation of an ambient air quality standard.

**Fact Sheet Attachment**
**Potential to Emit Summary for Criteria Pollutants**

| Stack ID | Control Equipment ID | Emission Unit ID | Emission Sources Associated with Ethanol Operations | Criteria Pollutants (Allowable Emissions) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | PM (ton/yr) | $PM_{10}$ (ton/yr) | $PM_{2.5}$ (ton/yr) | $SO_x$ (ton/yr) | $NO_x$ (ton/yr) | CO (ton/yr) | VOC (ton/yr) |
| EP-2 | CE001 | - | Corn Truck Dump Pit Baghouse #1 | 3.24 | 3.24 | 0.11 | - | - | - | - |
| EP-4 | CE003 | - | Corn Storage Silo Baghouse #1 | 0.26 | 0.26 | 0.01 | - | - | - | - |
| EP-5 | CE004 | - | Corn Storage Silo Baghouse #2 | 0.26 | 0.26 | 0.01 | - | - | - | - |
| EP-6 | CE005 | - | Corn Storage Silo Baghouse #3 | 0.26 | 0.26 | 0.01 | - | - | - | - |
| EP-7 | CE006 | - | Corn Storage Silo Baghouse #4 | 0.26 | 0.26 | 0.01 | - | - | - | - |
| EP-8 | CE007 | EU-20 | Corn Elevator Baghouse | 0.13 | 0.13 | 0.004 | - | - | - | - |
| EP-9 | CE008 | - | Surge Bin Baghouse | 0.09 | 0.09 | 0.003 | - | - | - | - |
| EP-11 | CE010 | EU-25 | Hammermilling Baghouse #1 | 0.83 | 0.83 | 0.62 | - | - | - | - |
| EP-12 | CE011 | EU-26 | Hammermilling Baghouse #2 | 0.83 | 0.83 | 0.62 | - | - | - | - |
| EP-18 | CE017 | - | Fermentation and Distillation Scrubber | - | - | - | - | - | - | 60.88 |
| EP-39 | - | FS008 | Uncaptured Fermentation and Distillation Emissions | - | - | - | - | - | - | 20.60 |
| EP-20 | CE025 | EU-73 | Boiler #1 | 7.88 | 7.88 | 6.92 | 1.75 | 26.02 | 32.09 | 2.60 |
| EP-21 | CE025 | EU-74 | Boiler #2 | | | | | | | |
| EP-23 | - | EU-76 | Ethanol Loadout (Uncaptured Component) | - | - | - | - | - | - | 4.96 |
| EP-23 | CE020 | EU-76 | Ethanol Loadout (Flare) | 9.79E-04 | 9.79E-04 | 9.79E-04 | 7.73E-05 | 0.33 | 1.74 | 0.24 |
| EP-24 | | EU-77 | Emergency Fire Pump | 0.16 | 0.16 | 0.16 | 0.15 | 2.24 | 0.48 | 0.18 |
| EP-38 | | EU-78 | Emergency Generator | 0.13 | 0.13 | 0.13 | 0.22 | 10.40 | 1.59 | 0.21 |
| | | FS001 | Haul Roads | 4.05 | 0.78 | 0.19 | - | - | - | - |
| | | FS002 | Uncaptured Grain Emissions | 1.18 | 0.26 | 0.04 | - | - | - | - |
| | | FS005 | Equipment Leaks | - | - | - | - | - | - | 5.70 |
| EP-25 | | FS006 | Cooling Tower | 6.85 | 6.85 | 4.11 | - | - | - | - |
| EP-26 | | FS007 | Wet Cake Storage | - | - | - | - | - | - | 1.78 |
| EP-27 | | TK001 | Denatured Ethanol Storage Tank | - | - | - | - | - | - | 0.22 |
| EP-28 | | TK002 | Denatured Ethanol Storage Tank | - | - | - | - | - | - | 0.22 |
| EP-29 | | TK003 | 200 Proof Storage Tank | - | - | - | - | - | - | 0.20 |
| EP-30 | | TK004 | 200 Proof Storage Tank | - | - | - | - | - | - | 0.20 |
| EP-31 | | TK005 | Denaturant Storage Tank | - | - | - | - | - | - | 0.79 |
| EP-37 | | TK011 | Corrosion Inhibitor Tank | - | - | - | - | - | - | 1.18 |
| **Emission Totals** | | | | **26.43** | **22.24** | **12.94** | **2.12** | **38.99** | **35.90** | **99.97** |
| **Emission Totals (Excluding Fugitive Emissions)** | | | | **22.38** | **21.46** | **12.75** | **2.12** | **38.99** | **35.90** | **92.48** |

## Fact Sheet Attachment
## Potential to Emit Summary for HAP

| Pollutant | Emission Source | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Distillation and Fermentation | Boilers | Liquid Loading (Fugitives) | Liquid Loading (Flare) | Emergency Fire Pump | Emergency Generator | Equipment Leaks | Wet Cake | Tanks | **Entire Facility** |
| | (ton/yr) | (ton/yr) | (ton/yr) | (ton/yr) | ton/yr | (ton/yr) | (ton/yr) | (ton/yr) | (ton/yr) | **(ton/yr)** |
| 1,2,4-Trimethylbenzene | - | - | - | - | - | - | - | - | 1.99E-02 | **1.99E-02** |
| 1,3-Butadine | - | - | - | - | 1.98E-05 | - | - | - | - | **1.98E-05** |
| Acetaldehyde | 2.04 | - | 3.61E-04 | - | 3.89E-04 | 9.79E-05 | 1.14E-03 | 1.75E-02 | - | **2.06** |
| Acrolein | 1.19 | 1.66E-03 | - | - | 4.69E-04 | 3.06E-05 | - | 2.89E-02 | - | **1.23** |
| Benzene | - | - | 8.65E-03 | 2.71E-07 | 4.73E-04 | 3.01E-03 | 1.43E-02 | - | 2.12E-02 | **4.76E-02** |
| Carbon Disulfide | - | - | 6.92E-05 | - | - | - | 1.14E-04 | - | 3.97E-05 | **2.23E-04** |
| Cumene | - | - | 3.46E-04 | - | - | - | 5.70E-03 | - | 1.91E-05 | **6.07E-03** |
| Cyclohexane | - | - | - | - | - | - | - | - | 4.75E-03 | **4.75E-03** |
| Dichlorobenzene | - | 9.49E-04 | - | 9.66E-06 | - | - | - | - | - | **9.58E-04** |
| Ethyl Benzene | - | - | 1.73E-04 | - | - | - | 2.85E-04 | - | 1.22E-02 | **1.27E-02** |
| Formaldehyde | 0.36 | 5.93E-02 | - | - | 9.14E-04 | 3.07E-04 | - | 9.70E-02 | - | **0.52** |
| Methanol | 0.93 | - | 3.61E-04 | - | - | - | 1.14E-03 | 2.02E-02 | 4.50E-05 | **0.95** |
| n-Hexane | - | 1.42 | 0.17 | 2.32E-04 | - | - | 0.29 | - | 1.73E-02 | **1.90** |
| Napthalene | - | 4.82E-04 | - | 7.86E-08 | 4.30E-05 | 5.05E-04 | - | - | - | **1.03E-03** |
| Polycyclic Aromatic Hydrocarbons (PAH) | - | - | - | - | 4.22E-05 | 3.19E-04 | - | - | - | **3.61E-04** |
| Polycyclic Organic Matter (POM) | - | 6.97E-05 | - | 1.14E-08 | - | - | - | - | - | **6.97E-05** |
| Toluene | - | 2.69E-03 | 1.73E-02 | 4.38E-07 | 2.08E-04 | 1.09E-03 | 2.85E-02 | - | 4.08E-02 | **9.06E-02** |
| Xylenes | - | - | 1.73E-03 | - | 1.45E-04 | 7.50E-04 | 2.85E-03 | - | 4.04E-02 | **4.58E-02** |
| Arsenic Compounds | - | 1.58E-04 | - | 2.58E-08 | - | - | - | - | - | **1.58E-04** |
| Berylium Compounds | - | 9.49E-06 | - | 1.55E-09 | - | - | - | - | - | **9.49E-06** |
| Cadmium Compounds | - | 8.70E-04 | - | 1.42E-07 | - | - | - | - | - | **8.70E-04** |
| Chromium Compounds | - | 1.11E-03 | - | 1.80E-07 | - | - | - | - | - | **1.11E-03** |
| Cobalt Compounds | - | 6.64E-05 | - | 1.08E-08 | - | - | - | - | - | **6.64E-05** |
| Lead Compounds | - | 3.95E-04 | - | 6.44E-08 | - | - | - | - | - | **3.95E-04** |
| Manganese Compounds | - | 3.00E-04 | - | 4.90E-08 | - | - | - | - | - | **3.00E-04** |
| Mercury Compounds | - | 2.06E-04 | - | 3.35E-08 | - | - | - | - | - | **2.06E-04** |
| Nickel Compounds | - | 1.66E-03 | - | 2.71E-07 | - | - | - | - | - | **1.66E-03** |
| Selenium Compounds | - | 1.90E-05 | - | 3.09E-09 | - | - | - | - | - | **1.90E-05** |
| **Total (ton/yr)** | **4.523** | **1.493** | **0.202** | **2.431E-04** | **0.003** | **0.006** | **0.339** | **0.164** | **0.157** | **6.867** |

## Fact Sheet Attachment

## Grain Receiving, Handling, Storage, and Hammermilling: EP 2, EP 4, EP 5, EP 6, EP 7, EP 8, EP 9, EP 11, EP-12

**Assumptions**

- Grain handling emissions are based on air flow rate through the aspiration equipment and an estimates outlet PM concentration after control in a baghouse.
- All grain is corn which has the highest Dustiness Ratio for the AP-42 emission factors.
- One Bushel of Corn produces 2.5 gallons of Ethanol

**Process Data**

| | | | | | |
|---|---|---|---|---|---|
| Maximum Capacity (anhydrous Ethanol Produced) | 60,000,000 | gallons per yr | | | |
| Grain Required for Ethanol Production | 2.5 | gallons of Ethanol per bushel of corn | | | |
| Ethanol Grain Density: | 56 | lbs/bushel | | | |
| Total Grain Receiving Throughput: | 672,000 | ton/yr | = | 76.7 | ton/hr |
| | 672,000 | ton/yr | = | 24,000,000 | bu/yr |

| Emission Point ID | Emission Source | [A] Flow Rate | [B] Emission Factor | Controlled $PM/PM_{10}$ Emissions | Allowable $PM/PM_{10}$ Emissions[2] | | Allowable $PM_{2.5}$ Emissions[3] | |
|---|---|---|---|---|---|---|---|---|
| | | (dscf/min) | (grains/dscf) | [C] = [A] x [B] x 60 / 7000 (lbs/hr) | [D] (lbs/hr) | [E] = [D] x 8760 / 2000 (ton/yr) | [F] (lbs/hr) | [E] = [G] x 8760 / 2000 (ton/yr) |
| EP-2[1] | Corn Truck Dump Pit Baghouse #1 (CE001) | 8,450 | 0.00119 | 0.09 | 0.74 | 3.24 | 0.025 | 0.11 |
| EP-4[1] | Corn Storage Silo Baghouse #1 (CE003) | 718 | 0.00240 | 0.01 | 0.06 | 0.26 | 0.002 | 0.01 |
| EP-5[1] | Corn Storage Silo Baghouse #2 (CE004) | 744 | 0.00114 | 0.01 | 0.06 | 0.26 | 0.002 | 0.01 |
| EP-6 | Corn Storage Silo Baghouse #3 (CE005) | 718 | 0.00240 | 0.01 | 0.06 | 0.26 | 0.002 | 0.01 |
| EP-7 | Corn Storage Silo Baghouse #4 (CE006) | 718 | 0.00240 | 0.01 | 0.06 | 0.26 | 0.002 | 0.01 |
| EP-8[1] | Corn Elevator Baghouse (CE007) | 612 | 0.00250 | 0.01 | 0.03 | 0.13 | 0.001 | 0.00 |
| EP-9[1] | Surge Bin Baghouse #1 (CE008) | 463 | 0.00134 | 0.01 | 0.02 | 0.09 | 0.001 | 0.00 |
| EP-11[1] | Hammermill Baghouse #1 (CE010) | 3,290 | 0.00200 | 0.06 | 0.19 | 0.83 | 0.14 | 0.62 |
| EP-12[1] | Hammermill Baghouse #2 (CE011) | 2,450 | 0.00300 | 0.06 | 0.19 | 0.83 | 0.14 | 0.62 |

Conversion Factor: 7000 grains per pound

[1]Emissions based on 8/18/2008-8/20/2008 stack testing

[2]Based on baghouse permit limits

[3]PM2.5 emissions from EP-2 through EP-9 assumed to be 0.034 of hourly and annual PM10 PTE. PM2.5 emissions from EP-11 and EP-12 assumed to be 0.741 of hourly and annual PM10 PTE, per South Coast Air Quality Management District, Final - Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5

## Fact Sheet Attachment
## Uncaptured Emission From Grain Handling: FS002

**Ethanol Facility: PM Uncaptured Emissions from Grain Handling, Storage, Cleaning, and Milling**

| Emission Unit ID | Emission Source (Maximum Capacity) | [A] Maximum Short-Term Throughput Capacity | [B] Maximum Annual Throughput | [C] PM Emission Factor[2] | Uncontrolled PM Emissions | | [F] Capture Efficiency | Controlled PM Emissions | |
|---|---|---|---|---|---|---|---|---|---|
| | | (ton/hr) | (ton/yr) | (lbs/ton) | [D] = [A] x [C] (lbs/hr) | [E] = [B] x [C] / 2000 (ton/yr) | | [G] = [D] x (1-[F]) (lbs/hr) | [H] = [E] x (1-[F]) (ton/yr) |
| FS002 | Uncaptured Emissions From Grain Handling | 76.7 | 672,000 | 0.035 | 2.68 | 11.76 | 90% | 0.27 | 1.18 |

[2]Emission factors for grain taken from AP-42 Section 9.9.1-1 (03/2003)

**Ethanol Facility: $PM_{10}$ Uncaptured Emissions from Grain Handling, Storage, Cleaning, and Milling**

| Emission Unit ID | Emission Source (Maximum Capacity) | [A] Maximum Short-Term Throughput Capacity | [B] Maximum Annual Throughput | [C] $PM_{10}$ Emission Factor[3] | Uncontrolled $PM_{10}$ Emissions | | [F] Capture Efficiency | Controlled $PM_{10}$ Emissions | |
|---|---|---|---|---|---|---|---|---|---|
| | | (ton/hr) | (ton/yr) | (lbs/ton) | [D] = [A] x [C] (lbs/hr) | [E] = [B] x [C] / 2000 (ton/yr) | | [G] = [D] x (1-[F]) (lbs/hr) | [H] = [E] x (1-[F]) (ton/yr) |
| FS002 | Uncaptured Emissions From Grain Handling | 76.7 | 672,000 | 0.0078 | 0.60 | 2.62 | 90% | 0.06 | 0.26 |

[3]Emission factors for grain taken from AP-42 Section 9.9.1-1 (03/2003)

**Ethanol Facility: $PM_{2.5}$ Uncaptured Emissions from Grain Handling, Storage, Cleaning, and Milling**

| Emission Unit ID | Emission Source (Maximum Capacity) | [A] Maximum Short-Term Throughput Capacity | [B] Maximum Annual Throughput | [C] $PM_{2.5}$ Emission Factor[3] | Uncontrolled $PM_{2.5}$ Emissions | | [F] Capture Efficiency | Controlled $PM_{2.5}$ Emissions | |
|---|---|---|---|---|---|---|---|---|---|
| | | (ton/hr) | (ton/yr) | (lbs/ton) | [D] = [A] x [C] (lbs/hr) | [E] = [B] x [C] / 2000 (ton/yr) | | [G] = [D] x (1-[F]) (lbs/hr) | [H] = [E] x (1-[F]) (ton/yr) |
| FS002 | Uncaptured Emissions From Grain Handling | 76.7 | 672,000 | 0.0013 | 0.10 | 0.44 | 90% | 0.01 | 0.04 |

[3]Emission factors for grain taken from AP-42 Section 9.9.1-1 (03/2003)

## Fact Sheet Attachment

### Fermentation and Distillation Scrubber: EP-18

### Uncaptured Fermentation and Distillation Emissions: EP-39

Emission Units Routed to the Fermentation and Distillation Scrubber

| Emission Unit ID | Emission Source | Emission Unit ID | Emission Source |
|---|---|---|---|
| EU-29 | Slurry Tank | EU-47 | Centrifuge #3 |
| EU-30 | Liquefaction Tank | EU-48 | Centrifuge #4 |
| EU-31 | Yeast Tank | EU-52 | Molecular Sieve #1 |
| EU-33 | Process Condensate Tank | EU-53 | Molecular Sieve #2 |
| EU-34 | Beer Column | EU-56 | 200 Proof Condenser |
| EU-36 | Stripper | EU-57 | 200 Proof Condenser |
| EU-38 | Rectifier | EU-58 | Fermenter #1 |
| EU-40 | Evaporator | EU-59 | Fermenter #2 |
| EU-42 | Whole Stillage Tank | EU-60 | Fermenter #3 |
| EU-43 | Thin Stillage Tank | EU-64 | Beer Well |
| EU-44 | Syrup Tank | EU-79 | Stillage Conveyor #1 |
| EU-45 | Centrifuge #1 | EU-80 | Stillage Conveyor #2 |
| EU-46 | Centrifuge #2 | | |

**Volatile Organic Compound Emissions**

| [A] Total Potential VOC Emissions[1] | | [B] VOC Control Efficiency (Scrubber)[1] | [C] Hours of Uncontrolled Operation[2] | [D] = [A] x [C] / 2000 Uncontrolled Emissions | [E] = 8760 - [C] Hours of Controlled Operation | [F] = [A] x (1-[B]) Controlled PTE | [G] Allowable PTE | [H] = [G] x 8760 / 2000 Allowable VOC Emissions (EP-18) | [D] Fugitive VOC Emissions (EP-39) |
|---|---|---|---|---|---|---|---|---|---|
| (lbs/hr) | (ton/yr) | | (hr/yr) | (ton/yr) | (hr/yr) | (lbs/hr) | (lbs/hr) | (ton/yr) | (ton/yr) |
| 824.00 | 3609.12 | 98.6% | 50 | 20.60 | 8710 | 11.54 | 13.90 | 60.88 | 20.60 |

[1]Based on 8/18/2008-8/20/2008 stack testing

[2]Source accounting for 50 hours of scrubber downtime per year

**Hazardous Air Pollutant Emissions**

| Hazardous Air Pollutant | [A] Uncontrolled HAP Emissions from Facility (lbs/hr)[3] | | [B] Controlled PTE[3] | [C] = 1 - ([B] / [A]) HAP Control Efficiency ($CO_2$ Scrubber) | [D] Hours of Uncontrolled Operation | [E] = [A] x [D] / 2000 Uncontrolled Emissions (EP-39) | [F] = 8760 - [D] Hours of Controlled Operation | [G] = [F] x [B] / 2000 Controlled HAP PTE (EP-18) | [H] = [E] + [G] Total HAP Emissions |
|---|---|---|---|---|---|---|---|---|---|
| | (lbs/hr) | (ton/yr) | (lbs/hr) | | (hr/yr) | (ton/yr) | (hr/yr) | (ton/yr) | (ton/yr) |
| Acetaldehyde | 6.140 | 26.89 | 0.43 | 92.9% | 50 | 0.15 | 8710 | 1.89 | 2.04 |
| Methanol | 25.544 | 111.88 | 0.07 | 99.7% | | 0.64 | | 0.29 | 0.93 |
| Formaldehyde | 1.444 | 6.32 | 0.08 | 94.8% | | 0.04 | | 0.33 | 0.36 |
| Acrolein | 7.555 | 33.09 | 0.23 | 96.9% | | 0.19 | | 1.01 | 1.19 |
| **Total HAP** | | | **0.81** | | | **1.02** | | **3.51** | **4.52** |

[3]Based on 8/18/2008-8/20/2008 stack testing

## Fact Sheet Attachment
## Boilers: EP-20, EP-21

**Potential to Emit from Combusting Natural Gas by External Combustion**

| | |
|---|---|
| [A] Total Heat Input Capacity | 184.11 MMBtu/hr |
| 1 MMscf = 1020 MMBtu | |
| Potential Natural Gas Throughput | 0.18 MMscf/hr |
| [B] Potential Natural Gas Throughput | 1,581.20 MMscf/yr |

[C] = [D] / [A] when emission factor has units of (lbs/MMBtu)
[D] = [C] x [B] when emission factor has units of (lbs/MMscf)

| Pollutant | [C] Emission Factor (per boiler) | [D] PTE (total) | [E] = [D] x 8760 / 2000 PTE (total) | [F] Allowable PTE (total) | [G] = [F] x 8760 / 2000 Allowable PTE (total) |
|---|---|---|---|---|---|
| | (lbs/MMBtu)[1] | (lbs/hr) | (ton/yr) | (lbs/hr) | (ton/yr) |
| Particulate Matter | 8.58E-03 | 1.58 | 6.92 | 1.80 | 7.88 |
| Particulate Matter ≤ 10 μm | 8.58E-03 | 1.58 | 6.92 | 1.80 | 7.88 |
| Particulate Matter ≤ 2.5 μm[2] | - | 1.58 | 6.92 | 1.58 | 6.92 |
| Sulfur Oxides | 1.28E-03 | 0.24 | 1.03 | 0.40 | 1.75 |
| Nitrogen Oxides | 2.40E-02 | 4.42 | 19.35 | 5.94 | 26.02 |
| Carbon Monoxide | 7.71E-04 | 0.14 | 0.62 | 7.33 | 32.09 |
| Volatile Organic Compounds | 2.06E-04 | 0.04 | 0.17 | 0.59 | 2.60 |
| **Hazardous Air Pollutants** | **(lbs/MMscf)[3]** | | | | |
| Benzene | 2.10E-03 | 3.79E-04 | 1.66E-03 | 3.79E-04 | 1.66E-03 |
| Dichlorobenzene | 1.20E-03 | 2.17E-04 | 9.49E-04 | 2.17E-04 | 9.49E-04 |
| Formaldehyde | 7.50E-02 | 1.35E-02 | 5.93E-02 | 1.35E-02 | 5.93E-02 |
| Hexane | 1.80E+00 | 3.25E-01 | 1.42E+00 | 3.25E-01 | 1.42E+00 |
| Naphthalene | 6.10E-04 | 1.10E-04 | 4.82E-04 | 1.10E-04 | 4.82E-04 |
| Polycyclic Organic Matter | 8.82E-05 | 1.59E-05 | 6.97E-05 | 1.59E-05 | 6.97E-05 |
| Toluene | 3.40E-03 | 6.14E-04 | 2.69E-03 | 6.14E-04 | 2.69E-03 |
| Arsenic Compounds | 2.00E-04 | 3.61E-05 | 1.58E-04 | 3.61E-05 | 1.58E-04 |
| Beryllium Compounds | 1.20E-05 | 2.17E-06 | 9.49E-06 | 2.17E-06 | 9.49E-06 |
| Cadmium Compounds | 1.10E-03 | 1.99E-04 | 8.70E-04 | 1.99E-04 | 8.70E-04 |
| Chromium Compounds | 1.40E-03 | 2.53E-04 | 1.11E-03 | 2.53E-04 | 1.11E-03 |
| Cobalt Compounds | 8.40E-05 | 1.52E-05 | 6.64E-05 | 1.52E-05 | 6.64E-05 |
| Lead Compounds | 5.00E-04 | 9.03E-05 | 3.95E-04 | 9.03E-05 | 3.95E-04 |
| Manganese Compounds | 3.80E-04 | 6.86E-05 | 3.00E-04 | 6.86E-05 | 3.00E-04 |
| Mercury Compounds | 2.60E-04 | 4.69E-05 | 2.06E-04 | 4.69E-05 | 2.06E-04 |
| Nickel Compounds | 2.10E-03 | 3.79E-04 | 1.66E-03 | 3.79E-04 | 1.66E-03 |
| Selenium Compounds | 2.40E-05 | 4.33E-06 | 1.90E-05 | 4.33E-06 | 1.90E-05 |
| Total HAPs | - | 0.341 | 1.493 | 0.341 | 1.493 |

[1]Criteria pollutant emissions were provided in lbs/hr from 8/25/2008-8/26/2008 stack testing and divided by heat input

[2]PM2.5 emissions assumed to be 1.0 of hourly and annual PM10 PTE, per South Coast Air Quality Management District, Final - Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5

[3]Emission Factors from AP-42 Tables 1.4-3, and 1.4-4 (7/98)

## Fact Sheet Attachment
## Ethanol Loadout: EP-23

| | | |
|---|---|---|
| Anhydrous ethanol loading rate: | 60 | MMgal/yr |
| Denaturant loading rate: | 1.2 | MMgal/yr |
| Denatured ethanol loading rate: | 61.2 | MMgal/yr |
| Truck loadout throughput limitation: | 0 | MMgal/yr denatured ethanol |
| Straight denaturant loadout: | 0 | MMgal/yr denaturant |

Truck loadout is assumed to be non-dedicated trucks, which previous load was unleaded gasoline.
The gasoline vapors are assumed to be displaced by the ethanol, for worst-case assumption.
Rail loadout is assumed to be in dedicated railcars, which previous load was denatured ethanol.
VOC emission factor equation from AP-42, Section 5.2.2 - Loading Losses (1/1995)
HAP emission factors are a percentage of the VOC emission factor.

$$EF = 12.46 \times \frac{S \times P \times M}{T} \times (1 - \text{eff}) \times X$$

where:

| | | | | |
|---|---|---|---|---|
| $S_{\text{normal dedicated, submerged loading}}$ | = | 0.6 | Saturation factor | AP-42 Table 5.2-1 |
| $S_{\text{clean cargo, submerged loading}}$ | = | 0.5 | Saturation factor | AP-42 Table 5.2-1 |

| VOC Emission Factor Variables | | | |
|---|---|---|---|
| Physical Data | Materials | | |
| | Gasoline | Ethanol | Denaturant |
| Molecular weight (M, lbs/lbs-mole) | 62 | 46 | 62 |
| Temperature (T, deg R)[a] | 510 | 525 | 525 |
| Vapor pressure (P, psia)[b] | 5.96 | 0.77 | 7.57 |
| Liquid molecular weight (ML) | 92 | 46 | 92 |
| Density (D, lbs/gal) | 5.6 | 6.6 | 5.6 |
| Liquid Mole Fraction (X)[C] | NA | 0.99 | 0.01 |

[a] $T_{\text{gasoline}}$ is annual average ambient temperature from Tank 4.0 for North Platte, NE.
Denatured ethanol is loaded out at elevated temperature.

[b] Assume worst-case based on RVP 13 gasoline.

[c] Liquid Mole Fraction (X) was calculated as follows, where V = loading rate:

$$X = \frac{\left(\frac{D * V}{ML}\right)}{\left(\frac{D_{\text{ethanol}} * V_{\text{ethanol}}}{ML_{\text{ethanol}}}\right) + \left(\frac{D_{\text{denaturant}} * V_{\text{denaturant}}}{ML_{\text{denaturant}}}\right)}$$

| VOC Emission Factors for Denatured Ethanol Loadout | | | | |
|---|---|---|---|---|
| | Uncontrolled truck loadout ($lbs/10^3 gal$) | Controlled Truck Loadout ($lbs/10^3 gal$) | Uncontrolled Rail Loadout ($lbs/10^3 gal$) | Controlled Rail Loadout ($lbs/10^3 gal$) |
| $EF_{\text{gasoline}}$ | 0.903 | 0.107 | | |
| $EF_{\text{ethanol}}$ | 0.416 | 0.049 | 0.499 | 0.059 |
| $EF_{\text{denaturant}}$ | 0.056 | 0.007 | 0.067 | 0.008 |

$EF_{\text{gasoline}}$ emission factors assumes $S = S_{\text{normal}} - S_{\text{clean cargo}}$ and do not use the Liquid Mole Fraction (X) in the equations.

| VOC Emission Factors for Straight Denaturant Loadout | | | | |
|---|---|---|---|---|
| | Uncontrolled truck loadout (lbs/Mgal) | Controlled Truck Loadout (lbs/Mgal) | Uncontrolled Rail Loadout (lbs/Mgal) | Controlled Rail Loadout (lbs/Mgal) |
| Denaturant | 6.683 | 0.789 | 6.683 | 0.789 |

Straight denaturant loadout emission factors based on dedicated tanks (trucks or railcars).

## Fact Sheet Attachment
## Ethanol Loadout: EP-23

VOC emissions = (VOC EF) x (MMgal/yr) x (1000 x $10^3$gal/MMgal) / (2000 lbs/ton)

| VOC Emissions for Liquid Loadout | | | | |
|---|---|---|---|---|
| | Gasoline (ton/yr) | Ethanol (ton/yr) | Denaturant (ton/yr) | Total (ton/yr) |
| 100 % Denatured ethanol: | | | | |
| Truck loadout | 3.260 | 1.503 | 0.201 | 4.963 |
| Rail loadout | | 1.803 | 0.241 | 2.044 |
| Limited % Denatured ethanol: | | | | |
| Truck loadout | 0.000 | 0.000 | 0.000 | 0.000 |
| Rail loadout | | 0.000 | 0.000 | 0.000 |
| Max. emissions - Denatured ethanol: | | | | 4.963 |
| Straight Denaturant sales: | | | | |
| Truck loadout | | | 0.000 | 0.000 |
| Rail loadout | | | 0.000 | 0.000 |
| Total VOC Loadout emissions: | | | | 4.963 |

| Control equipment: vapor recovery system with flare. | | |
|---|---|---|
| | Truck loadout | Rail loadout |
| Capture efficiency: | 90.0% | 90.0% |
| Control efficiency: | 98.0% | 98.0% |
| Overall control efficiency: | 88.2% | 88.2% |

$E_{VOC,\ uncontrolled\ trucks} = E_{gasoline} + E_{ethanol} + E_{denaturant}$

$E_{VOC,\ uncontrolled\ railcars} = E_{ethanol} + E_{denaturant}$

$E_{VOC,uncontrolled\ trucks}$ = total uncontrolled emissions of VOC from loading of ethanol into trucks previously carrying gasoline

$E_{VOC,uncontrolled\ railcars}$ = total uncontrolled emissions of VOC from loading of ethanol into railcars previously carrying gasoline

$E_{gasoline}$ = emissions of gasoline vapor remaining from the previous load that will be expelled during loading of denatured ethanol

$E_{ethanol}$ = emissions of ethanol vapor that will be generated and expelled during loading of denatured ethanol (ethanol portion only)

$E_{denaturant}$ = emissions of the denaturant vapor that will be generated and expelled during loading of denatured ethanol (denaturant portion only)

$E_{VOC,\ controlled} = E_{VOC,\ uncontrolled}$ x (1- overall control efficiency)

| HAP Weight Fraction | | | |
|---|---|---|---|
| Individual HAP | Emission Factor (Weight Fraction of VOC Emissions) | | |
| | Gasoline | Ethanol | Denaturant |
| Acetaldehyde | | 2.00E-04 | |
| Benzene | 2.50E-03 | | 2.50E-03 |
| Carbon disulfide | 2.00E-05 | | 2.00E-05 |
| Cumene | 1.00E-04 | | 1.00E-04 |
| Ethyl benzene | 5.00E-05 | | 5.00E-05 |
| n-Hexane | 5.00E-02 | | 5.00E-02 |
| Methanol | | 2.00E-04 | |
| Toluene | 5.00E-03 | | 5.00E-03 |
| Xylene | 5.00E-04 | | 5.00E-04 |
| Total HAPs | 5.82E-02 | 4.00E-04 | 5.82E-02 |

## Fact Sheet Attachment
## Ethanol Loadout: EP-23

HAP emissions = (VOC EF) x (MMgal/yr) x (1000 $10^3$gal/MMgal) x (HAP weight fraction) / (2000 lbs/ton)

| HAP Emissions from 100% Denatured Ethanol | | | | | |
|---|---|---|---|---|---|
| Pollutant | Gasoline | Ethanol | | Denaturant | |
| | Truck Loadout | Truck Loadout | Rail Loadout | Truck Loadout | Rail Loadout |
| | (ton/yr) | (ton/yr) | (ton/yr) | (ton/yr) | (ton/yr) |
| Acetaldehyde | 0.00E+00 | 3.01E-04 | 3.61E-04 | 0.00E+00 | 0.00E+00 |
| Benzene | 8.15E-03 | 0.00E+00 | 0.00E+00 | 5.03E-04 | 6.03E-04 |
| Carbon disulfide | 6.52E-05 | 0.00E+00 | 0.00E+00 | 4.02E-06 | 4.83E-06 |
| Cumene | 3.26E-04 | 0.00E+00 | 0.00E+00 | 2.01E-05 | 2.41E-05 |
| Ethyl benzene | 1.63E-04 | 0.00E+00 | 0.00E+00 | 1.01E-05 | 1.21E-05 |
| n-Hexane | 1.63E-01 | 0.00E+00 | 0.00E+00 | 1.01E-02 | 1.21E-02 |
| Methanol | 0.00E+00 | 3.01E-04 | 3.61E-04 | 0.00E+00 | 0.00E+00 |
| Toluene | 1.63E-02 | 0.00E+00 | 0.00E+00 | 1.01E-03 | 1.21E-03 |
| Xylene | 1.63E-03 | 0.00E+00 | 0.00E+00 | 1.01E-04 | 1.21E-04 |
| Total HAPs | 1.90E-01 | 6.01E-04 | 7.21E-04 | 1.17E-02 | 1.40E-02 |

| HAP Emissions from Limited Denatured Ethanol | | | | | |
|---|---|---|---|---|---|
| Pollutant | Gasoline | Ethanol | | Denaturant | |
| | Truck Loadout | Truck Loadout | Rail Loadout | Truck Loadout | Rail Loadout |
| | (ton/yr) | (ton/yr) | (ton/yr) | (ton/yr) | (ton/yr) |
| Acetaldehyde | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Benzene | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Carbon disulfide | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Cumene | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Ethyl benzene | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| n-Hexane | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Methanol | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Toluene | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Xylene | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| Total HAPs | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

| HAP Emissions from Straight Denaturant Loadout Emissions | | |
|---|---|---|
| Pollutant | Denaturant | |
| | Truck Loadout | Rail Loadout |
| | (ton/yr) | (ton/yr) |
| Acetaldehyde | 0.000 | 0.000 |
| Benzene | 0.000 | 0.000 |
| Carbon disulfide | 0.000 | 0.000 |
| Cumene | 0.000 | 0.000 |
| Ethyl benzene | 0.000 | 0.000 |
| n-Hexane | 0.000 | 0.000 |
| Methanol | 0.000 | 0.000 |
| Toluene | 0.000 | 0.000 |
| Xylene | 0.000 | 0.000 |
| Total HAPs | 0.000 | 0.000 |

## Fact Sheet Attachment
## Ethanol Loadout: EP-23

Worst-case emissions are the highest emissions from denatured ethanol loadout and straight denaturant loadout. Denatured ethanol emissions are the highest of the following categories: (1) 100% truck loadout, (2) 100% rail loadout, or (3) limited truck loadout + rail loadout. Straight denaturant emissions are the highest of the following categories: (1) 100% truck loadout, or (2) 100% rail loadout.

| Worst-Case HAP Emissions | |
|---|---|
| Pollutant | Highest PTE (ton/yr) |
| Acetaldehyde | 0.0004 |
| Benzene | 0.0087 |
| Carbon disulfide | 0.0001 |
| Cumene | 0.0003 |
| Ethyl benzene | 0.0002 |
| n-Hexane | 0.1730 |
| Methanol | 0.0004 |
| Toluene | 0.0173 |
| Xylene | 0.0017 |
| Total HAPs | 0.2019 |

| Total Emissions from Liquid Loading Rack | |
|---|---|
| Pollutant | PTE (ton/yr) |
| Volatile Organic Compounds | 4.963 |
| **Hazardous Air Pollutants** | |
| Acetaldehyde | 3.61E-04 |
| Benzene | 8.65E-03 |
| Carbon disulfide | 6.92E-05 |
| Cumene | 3.46E-04 |
| Ethyl benzene | 1.73E-04 |
| n-Hexane | 1.73E-01 |
| Methanol | 3.61E-04 |
| Toluene | 1.73E-02 |
| Xylene | 1.73E-03 |
| Total Hazardous Air Pollutants | 2.02E-01 |

## Fact Sheet Attachment

## Ethanol Loadout: EP-23 (Loadout Flare Emissions, CE020)

**Loadout Flare**

| | | | |
|---|---|---|---|
| [A] Design rate of flare: | 2 | MMBtu/hr | |
| Heating value: | 850 | Btu/scf | (methane/VOC combustion) |
| [B] Operating hrs: | 4,678 | hrs/yr | |

| Flaring Emission Summary | | | |
|---|---|---|---|
| Pollutant | [C] Emission Factor[1] (lbs/MMBtu) | [D] = [A] x [C] Hourly Emissions (lbs/hr) | [E] = [D] x [B] / 2000 Annual Emissions (ton/yr) |
| Nitrogen Oxides | 0.068 | 0.136 | 0.318 |
| Carbon Monoxide | 0.37 | 0.740 | 1.731 |
| Volitile Organic Compounds | 0.0518 | 0.104 | 0.242 |

[1] Emission Factors are from AP-42, Chapter 13.5, Table 13.5-1 and 13.5-2

## Fact Sheet Attachment
## Ethanol Loadout: EP-23 (Loadout Flare Emissions, CE020)

**Pilot Light**

| | | |
|---|---|---|
| [F] Design rate of pilot: | 0.03 MMBtu/hr | |
| [G] Heating value: | 1,020 Btu/scf | (natural gas combustion) |
| [H] Operating hrs: | 8,760 hrs/yr | |
| [I] Gas Throughput | 2.94E-05 MMscf/hr | [I] = [G] / [F] |

The emission factors are from AP-42, Chapter 1.4 (7/1998).

| Pilot Light Emission Summary | | | |
|---|---|---|---|
| Pollutant | [J] Emission Factor (lbs/MMscf) | [K] = [I] x [J] Hourly Emissions (lbs/hr) | [L] = [K] x [H] / 2000 Annual Emissions (ton/yr) |
| Particulate Matter | 7.6 | 2.24E-04 | 0.0010 |
| Particulate Matter ≤ 10 μm | 7.6 | 2.24E-04 | 0.0010 |
| Particulate Matter ≤ 2.5 μm[2] | - | 2.24E-04 | 0.0010 |
| Sulfur Oxides | 0.6 | 1.76E-05 | 0.0001 |
| Nitrogen Oxides | 100 | 2.94E-03 | 0.0129 |
| Carbon Monoxide | 84 | 2.47E-03 | 0.0108 |
| Volatile Organic Compounds | 5.5 | 1.62E-04 | 0.0007 |
| **Hazardous Air Pollutants** | | | |
| Benzene | 2.10E-03 | 6.18E-08 | 2.71E-07 |
| Dichlorobenzene | 1.20E-03 | 3.53E-08 | 1.55E-07 |
| Formaldehyde | 7.50E-02 | 2.21E-06 | 9.66E-06 |
| Hexane | 1.80E+00 | 5.29E-05 | 2.32E-04 |
| Naphthalene | 6.10E-04 | 1.79E-08 | 7.86E-08 |
| Polycyclic Organic Matter | 8.82E-05 | 2.59E-09 | 1.14E-08 |
| Toluene | 3.40E-03 | 1.00E-07 | 4.38E-07 |
| Arsenic Compounds | 2.00E-04 | 5.88E-09 | 2.58E-08 |
| Beryllium Compounds | 1.20E-05 | 3.53E-10 | 1.55E-09 |
| Cadmium Compounds | 1.10E-03 | 3.24E-08 | 1.42E-07 |
| Chromium Compounds | 1.40E-03 | 4.12E-08 | 1.80E-07 |
| Cobalt Compounds | 8.40E-05 | 2.47E-09 | 1.08E-08 |
| Lead Compounds | 5.00E-04 | 1.47E-08 | 6.44E-08 |
| Manganese Compounds | 3.80E-04 | 1.12E-08 | 4.90E-08 |
| Mercury Compounds | 2.60E-04 | 7.65E-09 | 3.35E-08 |
| Nickel Compounds | 2.10E-03 | 6.18E-08 | 2.71E-07 |
| Selenium Compounds | 2.40E-05 | 7.06E-10 | 3.09E-09 |
| Total Hazardous Air Pollutants | | 5.55E-05 | 2.43E-04 |

[2]PM2.5 emissions assumed to be 1.0 of hourly and annual PM10 PTE, per South Coast Air Quality Management District, Final - Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5

## Fact Sheet Attachment

## Ethanol Loadout: EP-23 (Loadout Flare Emissions, CE020)

| Total Emissions from Liquid Loading Flare | |
|---|---|
| Pollutant | PTE (ton/yr) |
| Particulate Matter | 9.79E-04 |
| Particulate Matter ≤ 10 μm | 9.79E-04 |
| Particulate Matter ≤ 2.5 μm | 9.79E-04 |
| Sulfur Oxides | 7.73E-05 |
| Nitrogen Oxides | 0.331 |
| Carbon Monoxide | 1.742 |
| Volatile Organic Compounds | 0.243 |
| **Hazardous Air Pollutants** | |
| Benzene | 2.71E-07 |
| Dichlorobenzene | 1.55E-07 |
| Formaldehyde | 9.66E-06 |
| n-Hexane | 2.32E-04 |
| Naphthalene | 7.86E-08 |
| Polycyclic Organic Matter | 1.14E-08 |
| Toluene | 4.38E-07 |
| Arsenic Compounds | 2.58E-08 |
| Beryllium Compounds | 1.55E-09 |
| Cadmium Compounds | 1.42E-07 |
| Chromium Compounds | 1.80E-07 |
| Cobalt Compounds | 1.08E-08 |
| Lead Compounds | 6.44E-08 |
| Manganese Compounds | 4.90E-08 |
| Mercury Compounds | 3.35E-08 |
| Nickel Compounds | 2.71E-07 |
| Selenium Compounds | 3.09E-09 |
| Total Hazardous Air Pollutants | 2.43E-04 |

## Fact Sheet Attachment
## Emergency Fire Pump: EP-24

| | | |
|---|---|---|
| Total Power Output | 290.0 | HP |
| [A]Total Heat Input Capacity | 2.03 | MMBtu/hr |
| Total Power Output | 216.42 | kW |
| [B] Operational Rate | 500 | hr/yr |
| Sulfur Limit | 0.05 | wt % sulfur |

| Pollutant | [C] Emission Factor[1] (lbs/MMBtu) | [D] = [A] x [C] PTE (lbs/hr) | [E] = [D] x 8760 / 2000 PTE (ton/yr) | [F] = [D] x [B] / 2000 Limited PTE (ton/yr) |
|---|---|---|---|---|
| Particulate Matter | 0.31 | 0.63 | 2.76 | 0.16 |
| Particulate Matter ≤ 10 μm | 0.31 | 0.63 | 2.76 | 0.16 |
| Particulate Matter ≤ 2.5 μm[2] | - | 0.62 | 2.73 | 0.16 |
| Sulfur Oxides | 0.29 | 0.59 | 2.58 | 0.15 |
| Nitrogen Oxides | 4.41 | 8.95 | 39.21 | 2.24 |
| Carbon Monoxide | 0.95 | 1.93 | 8.45 | 0.48 |
| Volatile Organic Compounds | 0.36 | 0.73 | 3.20 | 0.18 |
| **Hazardous Air Pollutants** | | | | |
| 1,3-Butadiene | 3.91E-05 | 7.94E-05 | 3.48E-04 | 1.98E-05 |
| Acetaldehyde | 7.67E-04 | 1.56E-03 | 6.82E-03 | 3.89E-04 |
| Acrolein | 9.25E-04 | 1.88E-03 | 8.22E-03 | 4.69E-04 |
| Benzene | 9.33E-04 | 1.89E-03 | 8.30E-03 | 4.73E-04 |
| Formaldehyde | 1.80E-03 | 3.65E-03 | 1.60E-02 | 9.14E-04 |
| Naphthalene | 8.48E-05 | 1.72E-04 | 7.54E-04 | 4.30E-05 |
| Toluene | 4.09E-04 | 8.30E-04 | 3.64E-03 | 2.08E-04 |
| Xylene | 2.85E-04 | 5.79E-04 | 2.53E-03 | 1.45E-04 |
| Polycyclic Aromatic Hydrocarbons | 8.32E-05 | 1.69E-04 | 7.40E-04 | 4.22E-05 |
| Total Hazardous Air Pollutants | - | 0.0108 | 0.0474 | 0.0027 |

[1]Emission Factors are from AP 42 Tables 3.3-1, and 3.3-2 (10/96)

To get MMBtu/hr --> If given HP, HP*.007; If given kW, kW*.0034

To get HP --> If given MMBtu, MMBtu/.007; If given kW; kW*1.34

To get kW --> If given MMBtu, MMBtu/.0034; if given HP, HP/1.34

[2]PM2.5 emissions assumed to be 0.991 of hourly and annual PM10 PTE, per South Coast Air Quality Management District, Final - Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5

## Fact Sheet Attachment
## Emergency Generator: EP-38

| | |
|---|---|
| [A] Maximum Rated Capacity (hp)[1] | 2,220 |
| [B] Rated Capacity (MMBtu/hr) | 15.54 |
| [C] Operational Rate (hr/yr) | 500 |
| [D] Diesel Heat Content (MMBtu/gal) [ | 0.137 |
| Sulfur Content of Fuel (%) | 0.05 |

[B] = [A] x $10^6$ / 7000
[F] = [A] x [E] when [E] is given in lbs/hp-hr
[F] = [A] x [E] / 453.6 when [E] is given in lbs/hp-hr
[F] = [B] x [E] when [E] is given in lbs/MMBtu

| Pollutant | [E] Emission Factor | Units | Emission Factor Source | [F] PTE (lbs/hr) | [G] = [F] x 8760 / 2000 PTE (ton/yr) | [H] = [F] x [C] / 2000 Limited PTE (ton/yr) |
|---|---|---|---|---|---|---|
| Particulate Matter | 0.11 | g/hp-hr | Vendor | 0.54 | 2.36 | 0.13 |
| Particulate Matter ≤ 10 µm | 0.11 | g/hp-hr | Vendor | 0.54 | 2.36 | 0.13 |
| Particulate Matter ≤ 2.5 µm[2] | - | - | - | 0.53 | 2.34 | 0.13 |
| Sulfur Oxides[3] | 4.05E-04 | lbs/hp-hr | Table 3.4-1 | 0.90 | 3.93 | 0.22 |
| Nitrogen Oxides | 8.50 | g/hp-hr | Vendor | 41.60 | 182.21 | 10.40 |
| Carbon Monoxide | 1.30 | g/hp-hr | Vendor | 6.36 | 27.87 | 1.59 |
| Volatile Organic Compounds | 0.17 | g/hp-hr | Vendor | 0.83 | 3.64 | 0.21 |
| **Hazardous Air Pollutants** | | | | | | |
| Acetaldehyde | 2.52E-05 | lbs/MMBtu | Table 3.4-3 | 3.92E-04 | 1.72E-03 | 9.79E-05 |
| Acrolein | 7.88E-06 | lbs/MMBtu | Table 3.4-3 | 1.22E-04 | 5.36E-04 | 3.06E-05 |
| Benzene | 7.76E-04 | lbs/MMBtu | Table 3.4-3 | 1.21E-02 | 5.28E-02 | 3.01E-03 |
| Formaldehyde | 7.89E-05 | lbs/MMBtu | Table 3.4-3 | 1.23E-03 | 5.37E-03 | 3.07E-04 |
| Napthalene | 1.30E-04 | lbs/MMBtu | Table 3.4-4 | 2.02E-03 | 8.85E-03 | 5.05E-04 |
| Polycyclic Aromatic Hydrocarbons | 8.20E-05 | lbs/MMBtu | Table 3.4-4 | 1.27E-03 | 5.58E-03 | 3.19E-04 |
| Toluene | 2.81E-04 | lbs/MMBtu | Table 3.4-3 | 4.37E-03 | 1.91E-02 | 1.09E-03 |
| Xylene | 1.93E-04 | lbs/MMBtu | Table 3.4-3 | 3.00E-03 | 1.31E-02 | 7.50E-04 |
| Total Hazardous Air Pollutants | | | | 2.45E-02 | 1.07E-01 | 6.11E-03 |

[1] Based on Full Standby Performance data from manufacturer

[2]PM2.5 emissions assumed to be 0.991 of hourly and annual PM10 PTE, per South Coast Air Quality Management District, Final - Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5

[3] Sulfur Oxides emissions are a function of sulfur content of fuel

Nebraska Department of Environmental Quality

# PTE Calculation For Truck Traffic On Haul Roads

**Rev. 06/2010**

**Paved roads {Draft AP-42 Chapter 13.IV (6/10)}**

*Equation (2): (modified)* $E = k \times \left(\frac{sL}{2}\right)^{0.98} \times \left(\frac{W}{3}\right)^{0.53} \times \left(1 - \frac{P}{4 \times 365}\right) \times \left(\frac{S}{30}\right)^{d}$

| | *k* | *d* |
|---|---|---|
| PM | 0.078 | 0.16 |
| $PM_{10}$ | 0.015 | 0.16 |
| $PM_{2.5}$ | 0.0037 | 0.16 |

**Unpaved roads {AP-42 Chapter 13.2.2 (11/06)}**

*Equation (1a): (modified)* $E = k \times \left(\frac{sC}{12}\right)^{a} \times \left(\frac{W}{3}\right)^{b} \times \left(\frac{365 - P}{365}\right) \times \left(\frac{S}{30}\right)^{d} \times (1 - CE)$

| | *k* | *a* | *b* | *d* |
|---|---|---|---|---|
| PM | 4.9 | 0.7 | 0.45 | 0.3 |
| $PM_{10}$ | 1.5 | 0.9 | 0.45 | 0.5 |
| $PM_{2.5}$ | 0.15 | 0.9 | 0.45 | 0.5 |

## Haul Road / Traffic Parameters

| Activity / Road Description | Road Type / Silt Value | | Roundtrip Length (feet) | | Truck Weight (tons) | | | Ave. Speed (mph) | Unrestricted Maximum Throughput (units/yr) | Ave. Truck Capacity (units/truck) | | Annual VMT |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | empty | full | empty | full | Ave. | | | | | |
| Denatured Ethanol Transport | P | 1.50 | 2,962 | 1,526 | 17 | 42 | 25.5 | 15 | 60,000,000 | 8,000 | gal | 6,375 |
| Denaturant Transport | P | 1.50 | 1,526 | 2,962 | 17 | 42 | 33.5 | 15 | 1,200,000 | 8,000 | gal | 128 |
| Ethanol Loadout | P | 1.50 | 3,142 | 1,346 | 17 | 42 | 24.5 | 15 | 582,201 | 25 | ton | 19,795 |
| DDGS Loadout | P | 1.50 | 1,346 | 3,142 | 17 | 42 | 34.5 | 15 | 672,000 | 25 | ton | 22,848 |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |
| | | | | | | | | | | | | |

## Emission Calculations

| | Emission Factors (lb/VMT) | | | Potential Emissions (tons/yr) | | |
|---|---|---|---|---|---|---|
| | PM | $PM_{10}$ | $PM_{2.5}$ | PM | $PM_{10}$ | $PM_{2.5}$ |
| Denatured Ethanol Transpor | 0.15 | 0.03 | 0.01 | 0.49 | 0.09 | 0.02 |
| Denaturant Transport | 0.18 | 0.03 | 0.01 | 0.01 | 0.00 | 0.00 |
| Ethanol Loadout | 0.15 | 0.03 | 0.01 | 1.49 | 0.29 | 0.07 |
| DDGS Loadout | 0.18 | 0.03 | 0.01 | 2.06 | 0.40 | 0.10 |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |
| **Total Annual Emissions:** | | | | **4.05** | **0.78** | **0.19** |

## Description of Constants/Variables

*E*: haul road emissions (lb/VMT)

*k, d*: dimensionless constants from Draft AP-4 Chapter 13.IV (paved)

*k, a, b, c, d*: dimensionless constants from AP-42 Tables 13.2.1-1 & 13.2.2-2 (unpaved)

*sL*: silt loading ($g/m^2$) of paved road surface

*sC*: silt content (%) of unpaved road surface

*W*: average vehicle weight (tons)

*P*: days/yr with at least 0.01" of precipitatio

*P* = 90 default = 90

*S*: mean vehicle speed on road (mph) default = 30, minimum =15

*CE*: unpaved road, dust control efficiency

*CE* = 0 % default = 0%

VMT: vehicle miles traveled

## Fact Sheet Attachment
## Equipment Leaks: FS005

**Volatile Organic Carbon Leaks**

| Process Stream | Equipment Component Source | Product | [A] Component Count[1] | Emission Factor (kg/comp.-hr) | [B] Emission Factor (lb/comp.-hr) | [C] = [A] x [B] Uncontrolled Rate[3] | [D] Subpart VV Control Effectiveness[2] | [E] = [C] x [D] Controlled Rate (lbs/hr) | [F] TOC Weight[4] (%) | [G] = [H] - [E] Emitted Water (lbs/hr) | [H] = [E] x [F] Emitted TOC (lbs/hr) | [I] = [H] x 8760 / 2000 Emitted TOC (ton/yr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Fermentation | Valves | Gas/Vapor | 0 | 0.00597 | 0.0132 | 0.00 | 87% | 0.00 | 13.00% | 0.000 | 0.0000 | **0.000** |
| | Valves | Light Liquid | 100 | 0.00403 | 0.0089 | 0.89 | 84% | 0.14 | 13.00% | 0.124 | 0.0185 | **0.081** |
| | Pumps | Light Liquid | 4 | 0.0199 | 0.0440 | 0.18 | 69% | 0.05 | 13.00% | 0.047 | 0.0071 | **0.031** |
| | Compressor Seals | Gas/Vapor | 0 | 0.228 | 0.5039 | 0.00 | 0% | 0.00 | 13.00% | 0.000 | 0.0000 | **0.000** |
| | Pressure-Relief Valves | Gas/Vapor | 6 | 0.104 | 0.2298 | 1.38 | 87% | 0.18 | 13.00% | 0.156 | 0.0233 | **0.102** |
| | Sampling Connections | All | 2 | 0.015 | 0.0332 | 0.07 | 0% | 0.07 | 13.00% | 0.058 | 0.0086 | **0.038** |
| | Open-ended Lines | All | 1 | 0.0017 | 0.0038 | 0.00 | 0% | 0.00 | 13.00% | 0.003 | 0.0005 | **0.002** |
| | Flanges (connectors) | All | 267 | 0.00183 | 0.0040 | 1.08 | 86% | 0.15 | 13.00% | 0.132 | 0.0197 | **0.086** |
| Distillation | Valves | Gas/Vapor | 11 | 0.00597 | 0.0132 | 0.15 | 87% | 0.02 | 81.70% | 0.003 | 0.0154 | **0.068** |
| | Valves | Light Liquid | 259 | 0.00403 | 0.0089 | 2.31 | 84% | 0.37 | 81.70% | 0.068 | 0.3015 | **1.321** |
| | Pumps | Light Liquid | 9 | 0.0199 | 0.0440 | 0.40 | 69% | 0.12 | 81.70% | 0.022 | 0.1002 | **0.439** |
| | Compressor Seals | Gas/Vapor | 0 | 0.228 | 0.5039 | 0.00 | 0% | 0.00 | 81.70% | 0.000 | 0.0000 | **0.000** |
| | Pressure-Relief Valves | Gas/Vapor | 0 | 0.104 | 0.2298 | 0.00 | 87% | 0.00 | 81.70% | 0.000 | 0.0000 | **0.000** |
| | Sampling Connections | All | 0 | 0.015 | 0.0332 | 0.00 | 0% | 0.00 | 81.70% | 0.000 | 0.0000 | **0.000** |
| | Open-ended Lines | All | 0 | 0.0017 | 0.0038 | 0.00 | 0% | 0.00 | 81.70% | 0.000 | 0.0000 | **0.000** |
| | Flanges (connectors) | All | 748 | 0.00183 | 0.0040 | 3.03 | 86% | 0.42 | 81.70% | 0.078 | 0.3460 | **1.516** |
| Ethanol Storage and Loadout | Valves | Gas/Vapor | 0 | 0.00597 | 0.0132 | 0.00 | 87% | 0.00 | 100.00% | 0.000 | 0.0000 | **0.000** |
| | Valves | Light Liquid | 139 | 0.00403 | 0.0089 | 1.24 | 84% | 0.20 | 100.00% | 0.000 | 0.1981 | **0.868** |
| | Pumps | Light Liquid | 4 | 0.0199 | 0.0440 | 0.18 | 69% | 0.05 | 100.00% | 0.000 | 0.0545 | **0.239** |
| | Compressor Seals | Gas/Vapor | 0 | 0.228 | 0.5039 | 0.00 | 0% | 0.00 | 100.00% | 0.000 | 0.0000 | **0.000** |
| | Pressure-Relief Valves | Gas/Vapor | 0 | 0.104 | 0.2298 | 0.00 | 87% | 0.00 | 100.00% | 0.000 | 0.0000 | **0.000** |
| | Sampling Connections | All | 0 | 0.015 | 0.0332 | 0.00 | 0% | 0.00 | 100.00% | 0.000 | 0.0000 | **0.000** |
| | Open-ended Lines | All | 8 | 0.0017 | 0.0038 | 0.03 | 0% | 0.03 | 100.00% | 0.000 | 0.0301 | **0.132** |
| | Flanges (connectors) | All | 316 | 0.00183 | 0.0040 | 1.28 | 86% | 0.18 | 100.00% | 0.000 | 0.1789 | **0.784** |
| **Total** | | | **1874** | | | **12.19** | | **1.99** | | **0.69** | **1.30** | **5.70** |

[1]Component counts are based on LDAR reports

[2]Emission factors taken from Protocol for Equipment Leak Emission Estimates, EPA-453/R-95-017. Table 2-1 and Table 5-2. Emission Factor for Flanges is an estimate based on 500ppmv leak definition LDAR efficiency

[3]Emission rate is taken from Protocol for Equipment Leak Emission Estimates, EPA-453/R-95-017, and based on the average emission factor approach for estimating emissions. See calculation in 2.3.1.

[4]TOC is considered to be worst case for each process stream identified.

## Fact Sheet Attachment
## Equipment Leaks: FS005

**Hazardous Air Pollutant Leaks**

| HAP Emission Calculation | | |
|---|---|---|
| **Hazardous Air Pollutant** | | **Emissions[1] (ton/yr)** |
| Acetaldehyde | 2.00E-04 | 1.14E-03 |
| Benzene | 2.50E-03 | 1.43E-02 |
| Carbon Disulfide | 2.00E-05 | 1.14E-04 |
| Cumene | 1.00E-03 | 5.70E-03 |
| Ethylbenzene | 5.00E-05 | 2.85E-04 |
| Methanol | 2.00E-04 | 1.14E-03 |
| n-Hexane | 5.00E-02 | 2.85E-01 |
| Toluene | 5.00E-03 | 2.85E-02 |
| Xylenes | 5.00E-04 | 2.85E-03 |
| **Total** | | **3.39E-01** |

[1]Emissions = Weight Fraction x Total Emitted TOC

## Fact Sheet Attachment
## Cooling Tower: EP-25

| | | | |
|---|---|---|---|
| Circulation rate: | 1,500,000 | gal/hr = | 13,140,000 Mgal/yr (based on 8,760 hrs/yr) |
| Drift loss percent[1]: | 0.005 | | |
| Water density: | 8.34 | lbs/gal | |
| TDS concentration: | 2,500 | ppm single sample event | |
| | 2,500 | ppm average annual rate | |

[1]From vendor specification

**Emission Factor Calculation**

Emission factor equation from AP-42, Section 13.4-2 (01/1995)

$$\text{PM/PM}_{10}\text{ emission factor} = \left(\frac{\text{ppm TDS}}{1{,}000{,}000\text{ lbs water}}\right)\left(\frac{8.34\text{ lbs}}{\text{gal}}\text{ water}\right)\left(\frac{1{,}000\text{ gal}}{1\text{ Mgal}}\right)\left(\frac{0.020}{100}\text{ drift loss}\right)$$

| | |
|---|---|
| 0.0010425 | lbs/Mgal single sample event (highest hourly rate) |
| 0.0010425 | lbs/Mgal average annual rate |

Hourly Emissions = (lbs/Mgal single sample event)(hourly throughput gal/hr)(1 Mgal/1,000 gal)
Annual Emissions = (lbs/Mgal average annual rate)(annual throughput Mgal/yr)/(2,000 lbs/ton)

| Cooling Tower Emission Summary | | |
|---|---|---|
| **Pollutant** | **Hourly PTE (lbs/hr)** | **Annual PTE (ton/yr)** |
| PM | 1.56 | 6.85 |
| $PM_{10}$ | 1.56 | 6.85 |
| $PM_{2.5}$[1] | 0.94 | 4.11 |

[1]PM2.5 emissions assumed to be 0.600 of hourly and annual PM10 PTE, per South Coast Air Quality Management District, Final - Methodology to Calculate Particulate Matter (PM) 2.5 and PM2.5

## Fact Sheet Attachment
## Wet Cake Storage: EP-26

Estimated wetcake production at MAAP/H 582,201 ton/yr
[A] Estimated wetcake production at MAAP/H 66.46 ton/hr

**Volatile Organic Compound Emissions**

| Volatile Organic Compounds | [B] Emission Factor[1] | [C] = [A] x [B] Potential Emissions | [D] Emission Rate at 30 MMgal/year[2] | [E] = [D] x 60 / 30 Estimated Emission Rate at MAAP/H | [F] Maximum Emission Factor | [G] = [F] x 8760 / 2000 PTE |
|---|---|---|---|---|---|---|
| | (lbs/ton wetcake) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (lbs/hr) | (ton/yr) |
| Acetaldehyde | 5.56E-05 | 3.69E-03 | 2.00E-03 | 4.00E-03 | 4.00E-03 | 0.0175 |
| Acrolein | 8.33E-06 | 5.54E-04 | 3.30E-03 | 6.60E-03 | 6.60E-03 | 0.0289 |
| Acetic Acid | 4.44E-03 | 2.95E-01 | - | - | 2.95E-01 | 1.2938 |
| Ethanol | 1.11E-03 | 7.38E-02 | - | - | 7.38E-02 | 0.3234 |
| Formaldehyde | 3.33E-04 | 2.22E-02 | 4.00E-03 | 8.00E-03 | 2.22E-02 | 0.0970 |
| Methanol | 6.94E-05 | 4.62E-03 | 8.00E-04 | 1.60E-03 | 4.62E-03 | 0.0202 |
| **Total Volatile Organic Compounds** | | | | | **0.4066** | **1.7809** |

[1]Emission Factors from Testing that occurred at DENCO (30 MMgal/yr ethanol plant) which produces 18 tons/hr of wetcake

[2]Based on emission testing at a 30 MMgal/yr ethanol plant, based on Method 18 Test Data

**Hazardous Air Pollutant Emissions**

| Hazardous Air Pollutant | Potential Emissions (ton/yr) |
|---|---|
| Acetaldehyde | 0.0175 |
| Acrolein | 0.0289 |
| Formaldehyde | 0.0970 |
| Methanol | 0.0202 |
| **Total HAPs** | **0.1637** |

**Fact Sheet Attachment**

**Denatured Ethanol Storage Tanks: EP-27, EP-28**
**Anhydrous Ethanol Storage Tank: EP-29, EP-30**
**Denaturant Storage Tank: EP31**
**Corrosion Inhibitor Tank: EP-37**

| | | |
|---|---|---|
| 200-Proof Ethanol | 60,000,000 | gal/yr |
| Denaturant | 1,200,000 | gal/yr |
| Denatured Ethanol | 61,200,000 | gal/yr |

| Tank ID# | Tank Capacity | Tank Contents | Annual Throughput (gallons/yr) |
|---|---|---|---|
| TK001 | 541,456 gal | Denatured Ethanol (50% of 61.2 MMgal) | 30,600,000 |
| TK002 | 541,456 gal | Denatured Ethanol (50% of 61.2 MMgal) | 30,600,000 |
| TK003 | 155,820 gal | Anhydrous Ethanol (50% of 60 MMgal) | 30,000,000 |
| TK004 | 155,820 gal | Anhydrous Ethanol (50% of 60 MMgal) | 30,000,000 |
| TK005 | 91,406 gal | Denaturant (2% of 60 MMgal) | 1,200,000 |
| TK011 | 2,000 gal | Corrosion Inhibitor (0.0099% of 61.2MMgal) | 5,670 |

| Tank ID# | TOTAL VOC Emissions (lbs/yr) | TOTAL VOC Emissions (ton/yr) | TOTAL Ethyl Alcohol Emissions (lbs/yr) | TOTAL Gasoline Emissions (lbs/yr) | 1,2,4-Trimethylbenzene (lbs/yr) | Benzene (lbs/yr) | Carbon Disulfide (lbs/yr) | Cumene (lbs/yr) | Cyclohexane (lbs/yr) | Ethyl Benzene (lbs/yr) | Methyl Alcohol (lbs/yr) | n-Hexane (lbs/yr) | Toluene (lbs/yr) | Xylene (lbs/yr) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TK001 | 430.660 | 0.215 | 253.610 | 177.040 | 0.009 | 1.292 | - | 0.004 | 0.775 | 0.323 | - | 5.340 | 1.077 | 0.642 |
| TK002 | 430.660 | 0.215 | 253.610 | 177.040 | 0.009 | 1.292 | - | 0.004 | 0.775 | 0.323 | - | 5.340 | 1.077 | 0.642 |
| TK003 | 395.870 | 0.198 | 395.870 | 0.000 | - | - | - | - | - | - | - | - | - | - |
| TK004 | 395.870 | 0.198 | 395.870 | 0.000 | - | - | - | - | - | - | - | - | - | - |
| TK005 | 1588.790 | 0.794 | 0.000 | 1588.790 | 39.720 | 39.720 | 0.079 | 0.159 | 7.944 | 23.832 | - | 23.832 | 79.440 | 79.440 |
| TK011 | 2365.890 | 1.183 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.000 | 0.090 | 0.000 | 0.000 | 0.000 |
| TOTALS (lbs/yr) | 5607.740 | - | 1298.960 | 1942.870 | 39.737 | 42.304 | 0.079 | 0.167 | 9.494 | 24.478 | 0.090 | 34.512 | 81.593 | 80.723 |
| TOTALS (ton/yr) | 2.804 | 2.804 | 0.649 | 0.971 | 0.01987 | 0.021 | 0.00004 | 0.00008 | 0.005 | 0.012 | 0.00005 | 0.017 | 0.041 | 0.040 |
| TOTALS (lbs/hr) | 0.640 | 0.270 | 0.148 | 0.222 | 0.00454 | 0.005 | 0.00001 | 0.00002 | 0.001 | 0.00279 | 0.00001 | 0.004 | 0.009 | 0.0092 |

NOTE: All Emissions calculated by using TANKS 4.09d

| Denatured Ethanol Speciation | | Denaturant Speciation | |
|---|---|---|---|
| Pentane | 5.73% | Pentane | 50.00% |
| Carbon Disulfide | 0.00% | Carbon Disulfide | 0.01% |
| n-Hexane | 1.24% | n-Hexane | 1.50% |
| Cumene | 0.00% | Cumene | 0.01% |
| Benzene | 0.30% | Benzene | 2.50% |
| Xylenes | 0.15% | Xylenes | 5.00% |
| Cyclohexane | 0.18% | Cyclohexane | 0.50% |
| Toluene | 0.25% | Toluene | 5.00% |
| Ethylbenzene | 0.08% | Ethylbenzene | 1.50% |
| 1,2,4-Trimethylbenzene | 0.00% | 1,2,4-Trimethylbenzene | 2.50% |
| Ethanol | | | |

## Fact Sheet Attachment
## Title 129, Chapter 20 Applicability

For process weight rates up to 60,000 lbs/hr: $E= 4.10\ p^{0.67}$

For process weight rates in excess of 60,000 lbs/hr: $E= 55.0\ p^{0.11}-40$

where E = rate of emissions in lbs/hr PM and p = process weight rate in tons/hr.

| Process | P | E | Unit PM emission rate |
|---|---|---|---|
| Grain Baghouses | 153,425 lbs/hr<br>76.71 tons/hr | 48.65 lbs/hr | 6.18 lbs/hr |
| Cooling Tower | 12,510,000 lbs/hr<br>6,255.00 tons/hr | 103.86 lbs/hr | 1.56 lbs/hr |

**Title 129, Chapter 20, Section 002**

| Total Heat Input (MMBtu/hr) | Maximum Allowable Emissions of PM (lbs/MMBtu) |
|---|---|
| 10 or less | 0.6 |
| Between 10 and 10,000 | $1.026/I^{0.233}$<br>Where I = total heat input in MMBtu/hr. |
| 10,000 or more | 0.12 |

| Process equipment | hp | MMBtu/hr | Allowable PM (lbs/MMBtu) | Unit PM emission rate (lbs/MMBtu) |
|---|---|---|---|---|
| Emergency Fire Pump | 290 | 2.03 | 0.60 | 0.31 |
| Emergency Generator | 2,220 | 15.54 | 0.54 | 0.03 |
| Boilers | | 184.112 | 0.30 | 0.01 |